Positioning the Kagera TAMP Project in the PES Landscape of East Africa

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Internship Report
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Abbreviations

ACODE	Advocates Coalition for Development and Environment
ACDI/VOCA	Agricultural Cooperative Development International/Volunteers in Overseas Cooperative Assistance
AMC	Akagera Management Company
APN	African Parks Network
ASARECA	Association for Strengthening Agricultural Research in Eastern and Central Africa
BRDT	BioClimate Research & Development
CAAC	Clean Air Action Corporation
CARE	Cooperative for Assistance and Relief Everywhere, Inc.
CATALIST	Catalyze Agricultural Intensification for Social and Environmental Stability
CCB	Community and Biodiversity Project Design Standard
CCBA	Climate, Community and Biodiversity Alliance
CCF	Community Carbon Fund
CDKN	Climate and Development Knowledge Network
CDM	Clean Development Mechanism
CHDI	Clinton Hunter Development Initiative
CIDA	Canadian International Development Agency
CIRAD	Agricultural Research for Development
DANIDA	Danish International Development Agency
DFID	UK Department for International Development
DNA	Designated National Authority
EAC	East African Community
EAOPS	East African Organic Products Standard
ECCM	Edinburgh Centre for Carbon Management
EDPRS	Economic Development and Poverty Reduction Strategy
EFR	Environmental Fiscal Reform
EPWS	Equitable Payments for Watershed Services
ERA	Ecosystem Restoration Associates
ERPA	Emissions Reduction Purchase Agreement
ES	Ecosystem Services
E & SA KG	East and Southern Africa Katoomba Group
FONERWA	National Environmental Fund, Rwanda
GlobalGAP	Global Partnership for Good Agricultural Practice
GTZ	German Technical Cooperation
HIVOS	Humanist Institute for Development Cooperation
ICRAF	World Agroforestry Centre
IFAD	International Fund for Agricultural Development
IMCE	Integrated Management of Critical Ecosystems
INBAR	International Network for Bamboo and Rattan
IPCC	Intergovernmental Panel on Climate Change
IRST	Institute of Scientific and Technological Research, Rwanda
ISAR	Rwanda Institute for Agricultural Science
I4EI	Institute for Environmental Innovation
Kagera TAMP	Kagera Transboundary Agro-Ecosystem Management Project
KARI	Kenya Agricultural Research Institute
LTR	Land Tenure Regularization
LWH	Land Husbandry, Water Harvesting and Hillside Irrigation programme, Rwanda
MEA	Millennium Ecosystem Assessment
MINAGRI	Ministry of Agriculture and Animal Resources
MINELA	Ministry of Environment and Lands

MINIFOR	Ministry of Mining and Forestry
MININFRA	Ministry of Infrastructures
NAFA	National Forestry Authority, Rwanda
NAHI	Nature Harness Initiative
NAPA	National Adaptations Programmes of Action on Climate Change
NELSAP	Nile Equatorial Lakes Subsidiary Action Program
NEMA	National Environmental Management Authority, Uganda
NESA	Network for Environmental Services in Africa
NFA	National Forest Authority Uganda
NORAD	Norwegian Agency for Development Cooperation
NRM	Natural Resource Management
NUR	National University of Rwanda
OLL	Organic Land Law, Rwanda
RDB	Rwanda Development Board
REDD	Reducing Emissions from Deforestation and Degradation
PEI	Poverty Environment Initiative, Rwanda
REMA	Rwanda Environmental Management Authority
PES	Payments for Ecosystem Services
PRESA	Pro-Poor Rewards for Environmental Services in Africa
RHODA	Rwanda Horticulture Development Authority
SAfMA	Southern African Millennium Ecosystem Assessment
SIDA	Swedish International Development Cooperation Agency
SCC	Swedish Cooperative Centre
SLM	Sustainable Land Management
SNV	Dutch Development Organization
TIST	Small Group and Tree Planting Project
TGB	Trees for Global Benefit
UEPB	Uganda Export Promotion Board
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
USAID	United States Agency for International Development
VCS	Voluntary Carbon Standard
VIRED	Victoria Institute for Research on Environment and Development International
WCS	Wildlife Conservation Society
WRUA	Water Resource User Associations, Kenya
WWF	World Wildlife Fund

Preamble

The following document is the report of an internship within the context of the **Kagera Transboundary Agro-ecosystem Management Project** (Kagera TAMP – GCP/RAF/424/GFF) undertaken with the Land and Water Division (NRL) of the UN Food and Agriculture Organization (FAO) from 22 September, 2010 until 20 December, 2010 based in Kigali, Rwanda. The work aimed at identifying and gaining an overview of the status quo of incentives for ecosystem service provision within the East African region and the Kagera riparian countries. The special focus was on drawing on existing payments for ecosystem service (PES) schemes in the region, as well as finding information on authorities, stakeholders and organizations active on the concept in the region and in particular in Rwanda. This report is furthermore intended to launch the debate on the role PES may play within the advance of the Kagera TAMP and on the role that the project managers/FAO may have in supporting capacity building on PES in the four countries, Burundi, Rwanda, Tanzania and Uganda.

The following activities were outlined in the Terms of References:

- Activity 1: Prepare an analytical inventory of ongoing activities and projects (ongoing and planned) related to PES and incentive measures in the four Kagera countries. In collaboration with ICRAF, PES in Kenya will also be taken into account as they may offer relevant experiences.
- Activity 2: Attend ASARECA international conference on payment for ecosystem services in the Central and Eastern Africa Sub-region on 20-22 October 2010 in Jinja, Uganda, identify partners and relevant activities.
- Activity 3: Contribute to the analysis of the institutional and regulatory framework in Rwanda (possibly Uganda, Tanzania, Burundi).
- Activity 4: Contacts, interviews, field visits and enquiries for a reconnaissance / scoping exercise to identify possible options for RES (see goal above) with attention to added value and improved livelihoods resulting from the generation of ecosystem services.
- Activity 5: Contribute to the organisation of a specific working group on RES during a regional Kagera TAMP workshop to be held tentatively in May 2011 and contribute to the preparation of a report and to the recommendations of this working group.

Based on the research undertaken in the region and the attended International Conference on PES in Jinja, Uganda, hosted by ASARECA, key actors involved in PES development in the region are identified in this report[1]. Thereafter a section on existing PES schemes in the four countries of the Kagera watershed, Uganda, Tanzania, Rwanda and Burundi[2] as well as Kenya is provided in order to share success stories, challenges and design principles of PES in the region. This section also elaborates on a number of PES cases located directly within the Kagera TAMP area or cases that are considered advanced and containing valuable lessons for PES in the region. This is followed by information on the prevailing political environment, possible important partners and activities in Rwanda concerning PES. Finally, a brief summary is given on the status quo of PES in the region and Kagera TAMP. An appendix provides the activity list, key contacts made, relevant organizations etc.. Further background policy documents and annual reports have been uploaded to the official website of Kagera TAMP.

[1] See Back to Office Report of the Jinja conference 2010, prepared with Mr. Gault, NRL.
[2] No PES scheme or carbon project was on the ground in Burundi while this report has been prepared.

Summary

Market based mechanisms and particularly payments for ecosystem services (PES) represent an increasingly disseminated mechanism to give value to ecosystem services and thereby include their provision/consumption in natural resource management (NRM) decisions. Such mechanisms are integrated in the logical framework of the Kagera TAMP. PES may also be supportive in achieving the key objectives and target indicators of the project, notably: implement sustainable land and agro-ecosystem management practices; increase in NRM-based income of farmers; reduction of sediment load in representative micro-catchments; training of farmers; and enabling regional cooperation. Within the Kagera TAMP, PES hold the potential to be applied for: restoring degraded watersheds and pastures; enabling protected areas for tourism and biodiversity; reforestation of degraded treeless landscapes; sustainable agro-ecological production systems.

In the East African region the PES concept is disseminating slowly with pilot projects on the rise. During the PES conference in Jinja, Uganda and the research in the Kagera TAMP area it became clear that there is a high need and interest to exchange information, create a well-connected regional PES network and a need to foster a more comprehensive understanding of PES in order to raise awareness on the possibilities that this mechanism contains for incentivating sustainable land management (SLM) . With the Network for Environmental Services in Africa (NESA) one step in this direction has been taken. In the next step towards the dissemination of PES in the region the focus should be on spreading the knowledge and capacity on PES, scaling-up existing experiences and mainstreaming PES into national policy frameworks and institutions. Making this a governmentally owned-process is therein of central importance.

Important ES in the region, possibly central in contributing additional funding for ES conservation are carbon schemes. The contribution of East Africa to the global carbon offset market is increasing slowly. Important developments are the increased activity of the BioCarbon Fund and the World Bank and the development of national programmes for climate change adaptation and mitigation as well as sustainable energy programmes. A growing number of Clean Development Mechanism (CDM) projects are being developed and all four countries of Kagera TAMP have assigned a Designated National Authority (DNA) and focal point for CDM projects.

Seven PES projects have been considered more closely. Two of these are directly within the Kagera TAMP area, both focusing on the ecosystem service (ES) relating to the carbon cycle. The additional cases are adding insights on PES schemes focusing on watershed management and biodiversity conservation and hold an informative position in the region. The schemes are contributing to foster the adaptation of different land-use practices as well as the organization of farmers into groups that foster cooperation beyond PES issues. Most PES schemes in operation in the region focus on carbon sequestration (reforestation projects), a few on biodiversity protection (e.g. shade coffee, organic production, community based conservation) and two established watershed management schemes have been identified (Uluguru Mountains, Tanzania and Naivasha project, Kenya).

A substantial limit to all projects is the issue of finding sufficient potential buyers that are willing to sign a binding commitment and that enable the project to move to a stable financing structure independent from additional financial sources and donors. Often also ES are considered as open access resource and ES stewards are at the same time consumers with a low purchasing power. Supportive national frameworks and regulating policies to create a reliable framework for PES projects are lacking. This is connected to limited capacities and knowledge on the potential of PES mechanisms. Showing the economic value of ES and the costs connected to their loss, thus building a business case is a valuable approach in the development of PES projects. Baseline studies have to be undertaken, critical ES and areas identified and the advance of national frameworks and assigned authorities fostered.

The role the Kagera TAMP can play in connection to PES can cover different aspects:

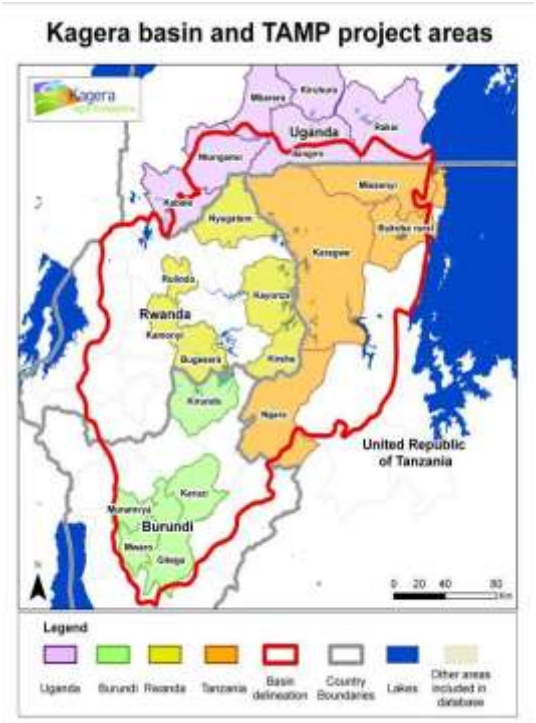
- Firstly, Kagera TAMP could seek cooperation with the PES ongoing projects that are immediately within the TAMP area and support their scaling-up or replication. The central actors here are Plan Vivo, Vi Agroforestry and ECOTRUST.
- Kagera TAMP could also focus on capacity building for PES at the national and regional level through: encouraging/supporting national authorities in expertise development; supporting national/ international NGOs active in the countries in their efforts to enhance PES; and supporting baseline studies/ analysis of the institutional environment concerning PES, in the frame of a workshop for example.

A third aspect may be the direct support of new PES projects. A number of actors present in Jinja hold experience with baseline assessments, PES preparation and development, ranging from legal to technical expertise. Amongst the actors that have voiced their interest in a possible cooperation with TAMP on PES are: Plan Vivo, ECOTRUST, WCS, ACODE, ICRAF, PRESA, WWF and VIRED.

1. Introduction

Natural resources in the East African region are under pressure and ecosystem service (ES) provision is not recognized in economic arrangements (prices, trade, etc.) nor by the institutional and policy framework (e.g. costs/benefits not accounted for and lack of enabling environment). Payments for ecosystem services (PES) represent an increasingly disseminated market-based mechanism to give value to ecosystem services and thereby include their provision/consumption into natural resource management decisions (i.e. recognized but their effective application lags behind) . The Millennium Ecosystem Assessment (MEA) defines ecosystem services as benefits received from nature, satisfying human needs without neglecting other species requirements and without being internalized in economic decisions, thus externalities (MEA, 2005). Ecosystem services are directly connected to human well-being and can be considered locally (in-situ), with ES being consumed and produced in the same location (as e.g. watershed management), or at regional or even global levels (e.g. carbon sequestration/storage) (Fisher et al. 2009). Four categories are differentiated in the MEA: provisioning, regulating, cultural and supporting services. The connection between ecosystem services and human well-being is also central in the Southern African Millennium Ecosystem Assessment (SAfMA). PES aim to create a market, to connect providers and beneficiaries/users of ES and thereby internalizing externalities and benefits of ecosystems into resource management decision making. The underlying in-kind rewards or direct payments made to land-users/farmers can contribute in bringing about changes in the management of natural resources as well as to support farmers in adopting different land-use methods by recognizing the economic value of ecosystems and aligning incentives with activities that sustain ES provision. Creating a link between ES producers and consumers is also crucial to enable sustainable decision making on resource use as this will have an impact on other users/producers. As the local budget for SLM is often very limited (the development focus often being on infrastructure, education and health) additional external funding or private payments are currently central to PES in the region. Unless SLM strategic investment frameworks have been developed, as through the GEF supported TerrAfrica programme to mobilize and harmonize SLM efforts and resources. ES produced by farmers include amongst others water capture and filtration, flood mitigation, managing cultural landscapes, biodiversity conservation and habitat provision, carbon sequestration (Daily, 1997).

PES hold the potential to integrate positive and negative externalities of ES provision/consumption and therefore can support conservation projects and link them to the development process, contribute to livelihoods of rural people through rewarding rural ES providers, provide employment benefits and incentives for farmers to adapt sustainable land use practices. In recent times, increasing attention is being given to PES by national governments, international donors and NGOs. Most existing schemes to date are situated in South America and Asia, with the PES scheme in Costa Rica being the most prominent example. Yet, also in East Africa PES are emerging and slowly taking up space on the political agendas. In the last years several inventories of ongoing and emerging PES have been undertaken by consultants of e.g. The Katoomba Group, UNDP, and international donor organizations such as USAID. These inventories reveal a growing number of *ad hoc* PES schemes that are being developed. The evidence for their effectiveness in terms of protecting/ enhancing ES and rural livelihoods on the ground is little explored as approaches are fragmented, supportive policy and institutional frameworks are lacking, and methodological challenges remain to be overcome. There is a need to take stock of what is going on in the East African region and what lessons can be learned/shared and which bottlenecks need to be overcome in order to enhance the potential of PES. Therefore the dissemination of experiences to raise awareness and understanding is important and transboundary projects and cooperation can play an important role.



The Kagera TAMP logical framework includes market-based mechanisms for sustainable resource management:

Outcome 4: Improved land and agro-ecosystem management practices are implemented and benefiting land users in all agro-ecosystems in the basin.

Output 4.3: Market opportunities and other cost-benefit sharing mechanisms for the provision of environmental services identified, demonstrated and promoted among land users, including payments for environmental services.

PES as incentives for sustainable land management (SLM) practices may further be supportive to the key indicator set for Kagera TAMP, notably, to:

- implement sustainable land and agro-ecosystem management practices;
- increase in NRM-based income of farmers;
- reduction of sediment load in representative micro-catchments;
- training of farmers; and
- enabling regional cooperation.

Kagera TAMP is one of the 30 projects under the GEF supported *TerrAfrica* SLM strategic investment programme for sub-Saharan Africa which aims at promoting SLM and improved cooperation and harmonization among national and international partners. Certain countries have already prepared a coherent SLM Strategic Investment Framework (CDIF) that on the basis of a stock-taking and identification of investment priorities among concerned sub-sectors. The Uganda CSIF prepared by the government of Uganda with support from the World Bank and FAO including inter alia PES.

The Kagera watershed is an important basin in East Africa covering over 59,700 km^2 , providing a quarter of the inflow into Lake Victoria and supporting the livelihoods (agriculture being the main economic activity) of ca. 17 million people. The vegetation in the watershed fulfills important regulating and buffering functions as well as contributing to the soil and water quality (FAO, 2010). Most of the rural population in the region depends on ecosystem services for their livelihoods. Yet increasing land degradation occurs in the Kagera watershed especially due to overstocking/overgrazing, continuous cropping with little or no inputs and productivity decline; encroachment of subsistence farming into new and fragile areas, overexploitation of forest resources, cultivation of steep slopes and inappropriate burning techniques (Baijukia, 2008). Within Kagera TAMP PES therefore hold the potential to be applied for: restoring degraded watersheds and pastures; establishing protected areas for tourism and biodiversity; reforestation of degraded treeless landscapes; supporting agro-ecological production systems (e.g. organic farming and shade coffee).

2. PES in East Africa[3]

At the international level, PES mechanisms enjoy increasing attention with national governments, international donors, and NGOs. A growing number of *ad hoc* PES pilot schemes are emerging primarily in Asia, Southern America and more recently also in Africa. Kenya and Uganda are currently counting the largest number of in PES projects in East Africa, followed by Tanzania. The East Africa region features a number of critical transboundary ecosystems that are falling outside of national policies for ES management. Central geographical areas for existing PES in East Africa are the Albertine Rift, the Eastern Arc and Mount Elgon Forests[4]. Transboundary projects such as Kagera TAMP can provide an important contribution. Other key actors active in the region on PES at the transboundary level are international organizations such as UNDP, UNEP, ICRAF (PRESA) and the East and Southern Africa Katoomba Group; NGOs such as the Association for Strengthening Agricultural Research in Eastern and Central Africa (ASARECA), WWF and CARE, as well as potentially the East African Community (EAC) by providing and enhancing regional policies and frameworks on natural resource management and PES in particular[5]. A great interest from organizations, research facilities and governmental bodies in the concept prevails, yet this is coupled often with limited understanding of the meaning, implications and roles of PES. This increases the likelihood of a vague understanding of the concept and therefore misguided expectations on the role or potential of PES; in the negative (seeing no real benefit of PES) and positive (PES as silver bullet for sustainable resource management) direction. The latter entails the risk of too high expectations on PES that are likely to be disappointed. PES can only function as one part of a set of mechanisms and tools and in certain conditions and should be considered in the context and setting of SLM approaches and policies and other issues. This makes awareness and capacity building central in the region.

Currently almost half of all PES schemes initiated in East Africa stop at the conceptual or design phase (Masiga, 2010). This is based on amongst others: limited funding; connected to this: insufficient interested and financially potential buyers; restricted development of national funds up to date; low level of cooperation with and engagement of the government; insufficient political support for further up-scaling and mainstreaming of projects; institutional and technical constraints; community level barriers; and limited market access. Furthermore, many existing PES schemes in East Africa are taking place in areas where customary land tenure prevails. This makes it necessary for project facilitators to cooperate and seek contact with multiple authorities, formal and informal which is a very time consuming process. National efforts fall short of promoting and institutionalizing PES and often high level politicians have limited knowledge on the mechanism leading in marginal involvement of national governments in PES enhancement. Some efforts to include PES into national policies have been made (see below). Still this has not yet resulted into an operationalization or mainstreaming of PES into the national frameworks. A number of sectorial laws can be applied to move PES forward and the potential of a supportive legal and political framework has to be considered. Key documents are:

- Constitutions recognizing the right to a "clean and healthy environment"[6], or "a healthy and satisfying environment" [7].
- Water and forest laws (played a role in the PES project of the WWF/CARE in Tanzania in the Uluguru Mountains), national poverty reduction plans (e.g. in Uganda and Rwanda),

[3] This outline should be read in connection to the back to office report on the PES conference in Jinja, Uganda (October 2010) presented together with Mr. Gault.
[4] Based on case studies presented by e.g. WWF, ECOTRUST, and Moi University.
[5] Central critical ecosystems identified by the EAC are: Sango Bay (Uganda and Tanzania), Mgahinga Volcanic (Uganda and Rwanda), and the Kagera watershed (Burundi, Rwanda, Tanzania and Uganda) (Okurut, 2010).
[6] Chapter 4 of the constitution of Uganda;
[7] Article 49 of the constitution of Rwanda. In Tanzania the Bill of Rights article 14 contains the "right to life and to the protection of life by society" which has been interpreted by the national High Court of Tanzania as containing the right to a healthy environment. Furthermore, Article 9 of the Constitution requires to ensure national resources are preserved and applied towards the common good (Pallangyo, D.M. (2007). Environmental Law in Tanzania; how far have we gone? *Law Environment and Development Journal*)

environmental action plans (e.g. in Rwanda), and possibly national adaptations programmes of action on climate change (NAPAs) especially in connection to mitigation projects.

- At the regional level the East African Community (EAC) and its protocols can play an important role. These are for example the Treaty of East African Community (2000), the EAC Protocol on Environment and National Resources (2010), the Protocol for Sustainable Development (Lake Victoria, 2004), Protocol of Wildlife Development (2008) and the Protocol of the Common Market (2009). These protocols containing specific provisions for recognizing the value of ecosystems (e.g. preamble of the Protocol for Sustainable Development) (Okurut, 2010). Still these protocols are not being fully operationalized into the national level, nor do they contain specific references to PES.
- In Rwanda, PES are explicitly mentioned as one mechanism under the Environmental Fiscal Reform overseen by the Rwanda Environment Management Authority (REMA). In Uganda the SLM Investment Framework developed under *TerrAfrica* mentions PES, and a policy for PES is under development, yet no publication date is given until now. Similarly in Tanzania a draft regulation to incorporate PES into the national water management policy framework is being prepared.

Sustainable financing is crucial to successful PES. The larger part of PES initiatives in Africa are funded through international development assistance, international conservation organizations and to a growing extent through governmental agencies yet with little involvement of the private sector (Ferraro, 2008). Another barrier observed is that often there is little coordinated enhancement of PES by national governments. This is certainly in part due to limited capacities, understanding and prioritization on the national level (ibid.). This is also possibly induced by a gap between the efforts of international and national actors to enhance PES without close cooperation with the national government - making the process of PES development not owned by the government. The increasing attention on PES at the international donor level bears yet another danger: the mere re-naming of for example, existing land management and community based resource management projects into "PES". During the PES conference in Jinja, Uganda it became clear that there is a high need and interest to exchange information, create a well-connected network and to foster a more comprehensive understanding of PES.

2.1. Key actors in the region for Payments for Ecosystem Services

National authorities are central actors for PES development. Some key authorities in the four riparian states are: the National Environment Management Authority (NEMA), Uganda; the Rwanda Environmental Management Authority (REMA), the Rwanda Development Board (RDB), and the National Forest Authority (NAFA); the Ministry of Natural Resources and Tourism, and the Ministry of Water and Livestock Development, Tanzania; the Ministry of the Environment and Water, Burundi[8]. Depending on the objective and ecosystem service the payment scheme is aimed at, different national ministries and authorities will play a role in the development and design of a PES. Finally, also research institutions and universities are crucial for PES development. Several universities in the region are already involved in baseline and feasibility studies, evaluations as well as monitoring for ongoing PES[9].

United Nations Development Programme (UNDP) is supporting a number of PES projects in Africa. Currently an inventory on PES in Eastern and Southern Africa is undertaken which will most likely be finished in early 2011. This inventory also contains an evaluation of ongoing schemes in year 3 or higher in order to find most successful approaches and methodologies taking the Millennium Development Goals as indicators (Consultant ENR Africa Associates Ltd. – Moses Masiga).

United Nations Environment Programme (UNEP) also supports ongoing PES and is fostering the REDD+ development in the region as well as capacity building on CDM development.

[8] See Appendix 3.

[9] Appendix 2 gives an overview of some research facilities and contact persons that already assured their interested in a possible future cooperation on PES with the Kagera TAMP.

The **World Bank** with its BioCarbon Fund is primarily focused on supporting carbon sequestration projects.

The **Association for Strengthening Agricultural Research in Eastern and Central Africa (ASARECA)** is funding PES projects in the region and is active in developing evaluation methods of PES and intergovernmental cooperation to create a PES umbrella organization.

The East and Southern Africa Katoomba Group (E & SA KG) is part of an international network aiming to promote, and improve capacities related to markets and payments for ecosystem services. The Katoomba Group has undertaken inventories on PES in Africa and is constantly updating their information base with the aim also to create a network and community of practice.

Pro-Poor Rewards for Environmental Services in Africa (PRESA) is an organization connected to the World Agroforestry Centre (ICRAF) and has an International Advisory Group (IAG) with members from various NGOs and institutions in several countries in Central and Eastern Africa. Its objective is "generating and sharing knowledge to build capacity on Payments for Ecosystem Services in Africa and beyond"[10]. PRESA is currently expanding its work on PES feasibility studies and during the Jinja conference, Sara Namirembe, the coordinator, agreed to take the Kagera TAMP area into consideration for potential cooperation on a new PES site development.

ECOTRUST is an environmental NGO based in Uganda. It initiated several national projects on natural resource management and nature conservation in close cooperation with the National Environment Management Authority (NEMA). One focus of ECOTRUST is to support organization and empower local communities and it is well known and enjoys considerable trust from communities and districts. ECOTRUST is the facilitator of the **Trees for Global Benefits** PES project in Uganda and has been providing technical support to developing PES projects outside of Uganda. Recently it has been approached by the Wildlife Conservation Society (WCS) to support the baseline studies and drafting phase of a potential PES in the South of Rwanda. Holding a high expertise on PES in the East African region this NGO also has a pool of experts at its deposal, e.g. through the **Victoria Institute for Research on Environment and Development International** (VIRED) a non-profit institute with a focus on areas of the great lakes in Eastern and Southern Africa, located in Kisumu, Kenya. This institute strives for capacity building on valuation of ES and quantification of trade-offs and supporting the set-up of pilot projects. Furthermore, VIRED is actively involved in establishing a community of practice on PES, and expand cooperation with universities in East Africa. During the conference in Jinja, Uganda (October 2010) the **Network for Environmental Services in Africa** (NESA) has been initiated which is currently hosted by VIRED. Partners of VIRED include the Kenya Agricultural Research Institute (KARI), Nature Harnessing Initiative (NAHI) Uganda and the Centre de Recherche de Yangambi (INERA, DRC). The institute furthermore is also undertaking inventories on ongoing PES.

Advocates Coalition for Development and Environment (ACODE) is an independent public policy research and advocacy think tank based in Kampala, Uganda. Their focus connected to PES is on the analysis of legal, political and institutional requirements of PES in Uganda. ACODE has already voiced its interest in working together with Kagera TAMP.

Plan Vivo is a UK-based organization developing community-based PES projects. The organization is active in two PES projects in the region[11] and involved in planned projects as e.g. in Mbulu District (Tanzania). WCS and the Clinton Foundation in Rwanda have approached Plan Vivo for their technical and monitoring support and certification of carbon centered schemes for easier access to the voluntary carbon market. The focus of Plan Vivo is on af- and re-forestation as well as agroforestry projects targeting the ES of carbon and biodiversity. The approach is to develop cost-effective, bottom-up and flexible approaches to sustainable land-use in developing countries. Participants usually sign a 10 year contract. Plan Vivo has also carried out a period of consultation into the possibility of including bamboo as a creditable activity under the Plan Vivo Standard. The findings were that bamboo planting should be

[10] PRESA website: http://presa.worldagroforestry.org/about/
[11] Trees for global benefit (Uganda) & Emiti Nibwo Bulora (Tanzania, Kagera district).

included as a creditable activity, due to the compelling livelihood and ecosystem service benefits. The organization is open for new project applications and initial contact has been established in the Jinja conference. No specific appraisal tools have been developed by Plan Vivo, yet all afforestation/ reforestation projects commonly use the CO2FIX tool. All carbon accounting methods used should be in compliance with IPCC Good Practice Guidelines. Additionally guidelines on estimating baseline carbon stocks in Plan Vivo projects exist. REDD methodologies are being applied in Plan Vivo projects in Mozambique and Mexico and a pilot REDD project is under development in Cameroon (funded by the Congo Basin Forest Fund) using the Plan Vivo System (the project developer is Bioclimate).

Vi Agroforestry is an international NGO based in Sweden. This NGO has seven regional projects around Lake Victoria on sustainable forest management and agroforestry[12]. Their Emiti Nibwo Bulora project in Tanzania is since 2009 also featuring a PES component, a project in Kenya since 2010 and similar developments are possible in Rwanda[13]. The focus is on carbon sequestration. Together with the BioCarbon Fund of the World Bank, Vi Agroforestry developed a new methodology for agriculture soil carbon to enable small scale farmers to access carbon markets. In Late 2010 the Emissions Reduction Purchase Agreement (ERPA) has been signed. The total value of the sequestration potential in the programme is over 5 million USD.

The World Wildlife Fund (WWF) and Cooperative for Assistance and Relief Everywhere, Inc. (CARE) are organizations working with PES in the region and they have developed a successful cooperation on Equitable Payments for Watershed Services (EPWS) in Kenya and in Tanzania[14]. A feasibility study for further potential watershed PES sites has been conducted by CARE between 2008-2009 under its Poverty, Environment and Climate Change Network [15]. WWF is currently undertaking feasibility and baseline studies in the Usumbara Mountains.

The **Wildlife Conservation Society (WCS)** is another international NGO working on managing national and international conservation projects as well as research and education programs that is active in PES project development in Eastern Africa. In Uganda, WCS is involved in the extension of the ECOTRUST PES project Trees for Global Benefits to the North of Uganda. In Rwanda, WCS is has a central role for enhancing the application of PES in the country, supported by USAID, and studies are undertaken for a potential PES scheme in the Nyungwe National Park. It has initiated a national PES working group in 2010 to facilitate capacity building and understanding of PES. Members include governmental authorities such as the Rwanda Development Board (RDB), Rwanda Environmental Management Authority (REMA), and National Forest Authority (NAFA) and it is an ongoing process of enlarging the group to all stakeholders and interested actors. The Kagera TAMP manager in Rwanda, Mr. Mashinga has also been invited to join the group. The aim of this group is also to foster the national development of a policy framework that operationalizes PES in a government owned process.

Active **donors** in the region for PES projects include: USAID (involved in TIST & with WCS), DFID (UK) (e.g. involved in TGB Uganda), SNV (NL), Danida (DK) (in Uganda and MEMA project, Tanzania), SIDA (SW) (Vi Agroforestry project Tanzania), the World Bank (especially through its BioCarbon Fund) and EuropeAID. Several international private actors are involved in carbon and biodiversity projects (see table of PES projects below).

[12] See also the Vi Agroforestry website: http://www.viskogen.se/English/Organisation.aspx
[13]The project manager in Rwanda has voiced his interest in future cooperation with Kagera TAMP.
[14]Naivasha Landscape (Kenya) &Uluguru Mountains (Tanzania).
[15] See also in the section on Rwanda.

3. PES projects on the ground

The aim of this briefing on PES projects in the Kagera TAMP region is not to give an exhaustive inventory of all schemes and PES-like projects in the watershed, but rather to focus on a number of advanced projects that have the potential to be scaled-up, containing important lessons for PES design in the region and be supported by the TAMP project. Most PES schemes in operation are focusing on carbon sequestration (reforestation projects), a few on biodiversity protection (e.g. shade coffee, organic production, community based conservation) and only two established watershed management schemes have been identified in the region (Uluguru Mountains, Tanzania and Naivasha project, Kenya)[16]. This shift towards carbon projects can partially be explained by the very complex nature of watershed and biodiversity PES schemes. Currently it seems easier to access the voluntary market for carbon trade as source of finances than finding potential and willing buyers for water or biodiversity services. Some schemes are governmental agreements located in protected or government owned areas, others are private projects between two or more private actors or NGOs. In addition, there a considerable number of natural resource management initiatives in countries with strong features of PES which are currently not yet considered under the term.

3.1. Overview of ongoing PES projects in East Africa

The definition underlying this overview is developed by Wunder et al. (2008: 835):

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

Special attention should be paid to the aspect of incentives/payments being conditional on the delivery of the ES in focus. As this inventory is also intended to contribute information on the structure and foci of existing PES in the region, a number of PES schemes are described in more detail below. These have been selected based on their representing a variety of ES including different countries and initiators and different stages of development. Only some schemes have been selected to be described in more detail see table 1 below.

[16] The PES scheme strived for by the WCS in Rwanda will yet also feature watershed ecosystem services. Further feasibility studies have been conducted by CARE/WWF identifying further possible sites as e.g. in the Usumbara Mountains, Tanzania.

Table 1: PES projects in East Africa containing possible lessons for Kagera TAMP

Project Name/Area	Objective of PES scheme	Initiator/facilitator	Buyer / seller	Contact
PES schemes directly within the TAMP area				
Emiti Nibwo Bulora (Kagera District, Karagwe Zone, Tanzania)* Initiated 2008	**Carbon** sequestration (agroforestry) Aim: 90,000 Plan Vivo credits sold by 2012.	Vi Agroforestry / Plan Vivo	Plan Vivo & Vi Agroforestry / farmers	Damas Masologo, (Project Manager SSC Vi Agroforestry) damas.masologo@viafp.org Grace Eustace, head of climate change (+ 255 76 730403302) grace.eustace@viafp.org
Small Group and Tree Planting (TIST) of Tanzania, Kenya[17], Uganda (One site in Uganda within TAMP area: Kabale District)* Initiated 2003	**Carbon** sequestration (tree planting to restore deforested areas) So far 4,553,409 trees were planted in TIST Uganda.	Clean Air Action Corporation / Institute For Environmental Innovation (I4EI)	Clean Air Action Corporation which in turn sells to interested companies / farmer groups	Charlie Williams President, Clean Air Action Corporation CharlieWilliams@CleanAirAction.com Joseph Rexon TIST josephrexon@tist.org http://www.tist.org/tist/tanzania.php Ara Baanyanga Director TIST, Uganda araban@tist.org (+256782301953)

[17] The TIST site in Tanzania is located in Morogoro, Tanga, Kigoma and Dodoma.

* Project is described in more detail below.

Projects outside of Kagera TAMP area covering further ES				
ReDirect - Nyungwe National Park, Southern Province, Rwanda* Initiated 2009	Trial pilot on direct performance based payments for **biodiversity** conservation	ReDirect (University of East Anglia (UK)) / partnering with Rwanda Development Board (RDB)	ReDirect / community	Nicole Gross-Camp - Researcher UEA n.gross-camp@uea.ac.uk
Uluguru Mountains, Tanzania - Equitable Payments for Watershed Services (EPWS) * Initiated 2008	Equitable Payments for **Watershed** Management	WWF & CARE / support from IFAD, ICRAF, PRESA	DAWASCO & Coca Cola / farmer	Lopa Dosteus - Programme Manager EPWS Programme, CARE International in Tanzania doslopa@gmail.com
Uchindile-Mapanda reforestation project, Southern Highlands, Tanzania [18] Initiated 2002, under VCS 2009	**Carbon** sequestration; Afforestation/ Reforestation of degraded grasslands [19] **Carbon** sequestration Reforestation of 10,814haand 7,565 ha into conservation; up to date:611,418 tCO^2 Expected from2008 to2020: 2,873,417 tCO^2 The Voluntary Carbon Standard (VCS) & Climate, Community and Biodiversity Alliance (CCBA) certification	Green Resources, AS [20]	Interested companies / Green Resources, AS	Zubair Zakir - Manager Green Resources, AS, Carbon Sourcing zubair.zakir@carbonneutral.com Sebastian Mng'ong'o - Morogoro Branch Manager Green Resources, AS sebbyraphael@yahoo.com M:+255732930053
Trees for Global Benefit (Bushenyi, Masindi&Hoima District, Uganda)* Initiated in 2003, latest expansion in 2009/2010	Carbon sequestration; Agroforestry and reforestation **Carbon** sale between 2003-2008: 139,575 tCo^2	ECOTRUST / Technical support – ICRAF, Plan Vivo	Tetra Pak (main buyer) & other varying interested companies/private actors / farmers	Pauline Nantongo - Director ECOTRUST pnantongo@ecotrust.or.ug Gerald Kairu - Project manager ECOTRUST ecp_gerald@hotmail.com
Kibale National Park,	Reforestation 8,800 ha average	Face the Future (NL)	Co-operative Bank and	**UWA Headquarters**

[18] See http://www.carbonneutral.com/about-us/media-centre/press-releases/first-forestry-vcs-credits-issued/&http://www.greenresources.no/Carbon/CarbonCreditProjects.aspx

[19] Forestry and Other Land Use (AFOLU) project

[20] Green Resources, AS is a private Norwegian company with 60 shareholders operating in Mozambique, Sudan, Tanzania and Uganda. In Tanzania Green Resources has handed in a project idea note Mnyera reforestation project; in Uganda Green Resources leads the Kachung Forest Project.

Uganda Initiated 1994[21] **Kibale& Mt. Elgon National Park, Uganda** Initiated between 1996-1998	storage capacity of 3.73 million tons of C02 over its 99-year FSC certificate until 2013;SGS-Qualifor **Biodiversity** conservation - Co-management ("rights for responsibilities"[22])e.g. shade-grown coffee in buffer zone[23]	/ Uganda Wildlife Authority and Forest Authority Uganda Wildlife Authority (UWA) (government deal)	others / Face the Future[24] Uganda Wildlife Authority (UWA) and National Forestry Authority / communities around National Parks	Plot 7 Kira Road Kamwokya P.O Box 3530, Kampala, Uganda. Tel: (+256) 414 355000, (+256)312 355000 Fax: +256 414 346291 Email: info@ugandawildlife.org
Rwoho Central Forest Reserve - Nile Basin Reforestation, Uganda[25] 2003 under the National Forestry and Tree Planting Act; under VCS since 2007	Reforestation of grassland areas **Carbon** sequestration **Biodiversity** Expected carbon sequestration 0.11 Mt CO2e by 2012, 2,137 ha VCS	National Forest Authority Uganda (NFA)	BioCarbon Fund / NFA[26]	National Forestry Authority Head Office Plot 10/20, Spring Road, P.O. Box 70863, Kampala - Uganda Tel +256-414-230365/6, +256-414-360400, 264035/6 Fax +256-414-230369 Email: **info@nfa.org.ug**
Western Kenya Small-holder Agricultural Carbon Finance Project (Nyanza and Western Provinces of Kenya)* Initiated 2010	**Carbon** project	Vi Agroforestry	Bio Carbon Fund[27] / farmer groups	Mr. Bo Lager, Programme Director Vi Agroforestry EastAfrica bo.lager@viafp.org
Kinangop grassland	**Biodiversity**	Nature Kenya, Darwin		Dominic Kamau Kimani (FOKP)

[21] The project has not taken a straight development as no emissions purchasing agreement has been signed and the project came under critique of mismanagement. Reforestation has taken place yet credits were not sold yet.
[22] See Ruhezwa et al., 2008. This approach is connected to the national revenue sharing programme of national parks.
[23] This component has been abundant after funding ran out and after it proved unfeasible to market the wild coffee successfully.
[24] It is not possible to assess if credits are already sold.
[25] http://wbcarbonfinance.org/Router.cfm?Page=Projport&ProjID=9644; the Nile Basin Reforestation Project was one of the first reforestation projects in Africa under the Kyoto Protocol
[26] Community groups participating are paid by NFA per tCO2 sequestered.
[27] The BioCarbon Fund is an initiative with public and private contributions administrated by the World Bank purchasing emission reduction certificates of reforestation and afforestation projects under the Clean Development Mechanism (CDM) as well as land-use sector projects falling outside of the CDM, e.g. the voluntary carbon market. In the Vi Agroforestry project in Kenya the Fund has the right to purchase 100 % of the certificates, yet Vi is also searching for other buyers in the future.

project, Kenya Initiated 2003	~72,000 ha Use-restricting and -modification leave land uncultivated, and encourage growth of grassland and shrubs.	Foundation / Friends of Kinangop Plateau (FOKP) (Community Based Organization (CBO))		dkk4.kimani@gmail.com
Naivasha-Malewa Project, Kenya	**Watershed** management	WWF & CARE	Lake Naivasha Growers Group, Lake Naivasha Water Resource Users Association (LANAWRUA)	**Project Coordinator:** Naivasha Project WWF- Kenya country office Contact: Nancy Njenga- Project Assistant - nannjenga@gmail.com Josephat Nyongesa - Natural Resource Project Economist WWF nyongesajm@yahoo.com **Project Manager:** Payment for Environmental Services, CARE-Kenya,
PES schemes under development/planned				
Gishwati Forest Reserve, Rwanda Initiated 2008[28]	**Carbon** sequestration Under VCS First pilot envisioned to be 100 to 150 ha in Nyabihu District.	Ecosystem Restoration Associates (ERA) / Ministry of Forests and Mines & National Forest Authority	Interested companies / ERA	Mrs. K. Zukowska - Project Manager - Africa ERA - Ecosystem Restoration Associates kornelia.zukowska@eraecosystems.com
Nyungwe National Park (Western Province, Rusizi & Nyaruguru Region, Rwanda)[29]	**Water services, carbon& biodiversity** conservation In exploratory phase	Wildlife Conservation Society (WCS) Rwanda / ECOTRUST	Potentially: tea factories in the region, carbon market (still to be explored)	Mr. M. Masozera – Director WCS mmasozera@wcs.org Mr. C. Karangwa - Sustainable Finance Manager WCS kacharles4@yahoo.fr

[28] The project would mainly be on government owned land and the credits from the reforestation project, to be sold on the carbon market, would be signed over to ERA to be reinvested into the communities. Currently ERA is waiting for the Carbon Rights Transfer Agreement to be signed by the Ministry of Forests and Mines. It envisions reforestation of steep slopes in the former Gishwati Forest reserve with native tree species. The project will be financed through the subsequent sale of carbon credits. ERA is also working on developing an A/R and REDD project in the Kibira National Park in Burundi, yet has not received an official agreement from the national government.

[29] The WCS conducted feasibility studies, conducted first consultations with potential private sectors ES buyers and undertook a biomass assessment. In 2011 ECOTRUST will support the further development of a PES. The ES focused on will be water, biodiversity and potentially carbon (with Plan Vivo) (see also under the section on Rwanda).

Same and Mwanga Forest Plantation Project, Tanzania Initiated 2009[30]	Reforestation of degraded or arid lands (Off-farm rehabilitation) - CDM Baseline Methodology to be employed: AR-AM0003 Expected: 200,000 ha; 90,000 tCo2 per year	Safarijet Services Limited[31] / Technical support: Centre for Energy Environment Science and Technology		Mr. Milton Lazaro - Managing Director lazaro@safarijet.com (+255 784 888 767)
Usambara Mountains Tanzania	**Biodiversity** conservation; **(eco)certification** systems Feasibility studies ongoing; in past one carbon pilot project **Watershed** protection	PRESA and ICRAF WWF		Mr. H. Vihemäki - ICRAF Associate Expert Site Leader, Landscape Mosaics Project H.Vihemaki@cgiar.org and Mr. M. NdeshiM.Ndeshi@cgiar.org Mr. I. Mwanyoka - Assistant Policy Officer imwanyoka@yahoo.co.uk

[30] Project Idea Note (PIN) forwarded to DNA for Letter of Non-Objection.
[31] Is a private bank that is currently acquiring land for reforestation projects. The carbon revenue will be reinvested in Tanzania and 10 % will be spent on community projects.

3.2. PES-like mechanisms in the region and further promising programmes

(a) Price premiums[32] paid for guaranteed biodiversity/watershed conserving/CO2 emission reducing production processes. These include:

- Organic production & Eco-labelling[33]: certification for organic production is increasing in Eastern Africa. In **Uganda** some 206,803 producers were certified in 2007, and in Tanzania 90,222 (FiBL & IFAOM, 2009) making these two countries together with Kenya the fastest growing and most important organically certified producers. In Rwanda and Burundi the sector is relatively less developed and no domestic markets have been developed. **Tanzania** has drafted a National Organic Agricultural Development Programme to enhance support to organic agriculture, certification and regulations. The existing National Agricultural Policy also refers to organic agriculture. In **Uganda** the government and specifically Uganda Export Promotion Board (UEPB) and the Uganda National Bureau of Standards has been most supportive in enhancing organic certification, organic exports and standards. An organic policy is being developed since 2003 by the Ministry of Agriculture and NGOs (UNEP-UNCTAD, 2010). In **Rwanda** organic certification is encouraged through the Ministry of Agriculture (MINAGRI) and Rwanda Horticulture Development Authority (RHODA). Yet neither a national system for organic certification nor a specific policy to enhance organic agriculture is in place at the moment. The **East African Community** has developed the East African Organic Products Standard (EAOPS) which has been adopted by Kenya, Tanzania, Uganda, Rwanda and Burundi in 2007 (EAS 456:2007). Another important standard applied in East Africa is the Global Partnership for Good Agricultural Practice (GlobalGAP).

***-Fairtrade*:** includes a standard for social, economic and environmental sustainable development. Environmental standards include the application of environmentally sound agricultural practices through minimized and safe use of agro-chemicals, waste management, soil fertility and water resources maintenance and no use of genetically modified organisms (GMOs). The standard also promotes organic certification with its producers[34]. The products most frequently certified by *Fairtrade* in the Kagera TAMP area are coffee and tea. In Rwanda, two coffee and one tea cooperatives are certified as well as three individual coffee and one individual tea producers[35]. One coffee union is certified in Tanzania (Kagera Coffee Union) and one cooperative (Gumutindo coffee cooperative) and one private company (Mabale growers tea factory) in Uganda.

- Shade coffee: initiatives on shade coffee e.g. through ICRAF and their project CAFNET exist especially in the South of Uganda and some emerging initiatives in Rwanda (Western Province)[36].

(b) Revenue sharing programmes connected for example to national parks, such as the programme in the Kibale and Mt. Elgon National Park, Uganda. Here it is important to differentiate between existing revenue sharing programmes and PES. In PES projects, payments have to be conditional to a specific service delivered and attached to this service only.

(c) Hydropower projects. Payments for watershed services stem from five general sources: industrial water users, municipal water suppliers, hydroelectric power suppliers, and tax revenues (Ferraro, 2009). In the Kagera watershed hydropower exists and potentials should be explored.

(d) Energy saving and efficiency programs: In most of the countries in the region, particularly in Uganda and Rwanda several projects for energy efficiency and renewable energy sources are fostered. This includes e.g. energy efficient cooking stoves or domestic biogas projects.

[32] Discussion prevail in how far labeling is a PES as the premium price is not guaranteed for the farmer and can only be achieved if farmers have market access.
[33] Biodiversity conserving business
[34] See: http://www.fairtrade.net/aims_of_fairtrade_standards.html
[35] For more detail see below.
[36] See: http://www.worldagroforestry.org/eastafrica/programs/cafnet

(e) Sustainable/eco-tourism: tourism is an important sector in East Africa contributing to an increasing extend to the national gross domestic products. (Eco) tourism with special attention to biodiversity conservation, community projects etc. can be enhanced in the form of PES if fees are earmarked to specific ecosystem services. ES central to such schemes usually focus on landscape beauty, biodiversity conservation or carbon sequestration.

3.2.1. Carbon projects in the region

The contribution of East Africa to the global carbon offset market is increasing slowly, Uganda being most advanced in making large-scale contributions. Recently the Common Market for Eastern and Southern Africa (COMESA) initiated a project to support carbon trading projects in the region with a budget of $50 million. Uganda was also one of the first Sub-Saharan countries together with South Africa to engage in large scale in the global carbon market (ibid). In most carbon projects the Community and Biodiversity Project Design Standard (CCB standards) is applied. Projects at the moment are focusing primarily on voluntary markets rather than regulated/compliance markets. Efforts to become applicable for CDM projects and to mainstream the concept into the national strategies are undertaken in several countries. All four Kagera riparian states have by now assigned a Designated National Authority (DNA) for. Forest definitions have been refined in Uganda and Rwanda to include agroforestry and to facilitate the applicability of the term CDMs. This is not yet the case in Tanzania which will not allow for any af- and reforestation projects under the CDM mechanism. Screenings for the potential of REDD projects are ongoing in Tanzania and Uganda. The Uganda Carbon Bureau is an important actor in Uganda with experience in supporting CDM and carbon project development as well as REDD projects[37].

Carbon sequestration as ES is holding a very prominent position in the region. In conversations held during the internship it appeared that many stakeholders on the governmental as well as organizational level primarily think of PES in terms of carbon af- and re-forestation projects. As mentioned above, carbon projects are increasing fast, yet also have to be handled with care as it also has to be guaranteed that sufficient buyers for carbon credits can be found. This concern has been mentioned by several project managers of ongoing PES schemes, especially connected to the question of scaling-up of the projects. In case of state owned project areas another problematic feature of carbon projects in the region is connected to carbon rights transfer agreements between project initiators and governmental authorities. Uncertainties about definitions, rights and governmental support also have an effect on the CDM market for af- and reforestation projects. This has been the case in the Kibale National Park project in Uganda between the Uganda Wildlife Authority and FACE in the past and also e.g. in the development of the reforestation project of the Ecosystems Restoration Associates (ERA) in the Gishwati area in Rwanda. Currently CDM is not widely applied to land-use projects particularly in Sub-Sahara Africa as these have specific methodological and technical requirements, high validation costs and long-time scales for project validation.

[37] Contact: Bill Farmer – chairmen UCB (billfarmer@ugandacarbon.org)

3.3. In-depth case studies of selected PES projects

Seven PES schemes of the above mentioned cases were studied more in-depth in order to provide detailed information on the project design, strong design principles or difficulties encountered in PES projects in the region[38]. The schemes include:

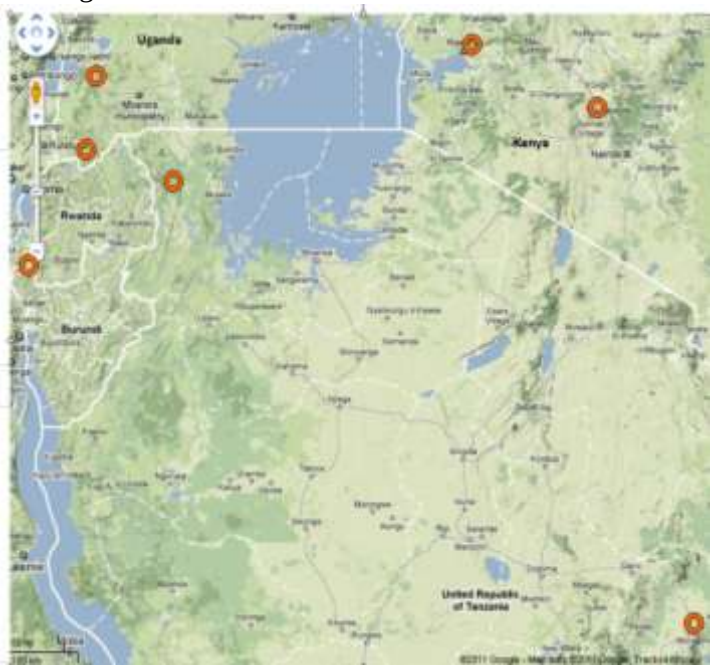


Figure 1: ◎ Location of in-depth studied PES projects.
Source map: Google, 2011

- Two schemes operating directly within the Kagera TAMP area, the Small Group and Tree Planting (TIST) project in Uganda and the Emiti Nibwo Bulora project in Tanzania.
- Two well established PES schemes facilitated by key actors on PES in the region: the Uluguru Mountains Equitable Payments for Watershed Services (EPWS) in Tanzania by WWF/CARE and the Trees for Global Benefit project, Uganda facilitated by ECOTRUST. The projects were initiated by organizations involved successfully in PES in the region: Vi Agroforestry and WWF/CARE in Kenya. Both actors are involved in two further PES schemes in Kenya that will briefly be touched upon.
- In order to include a project focusing on the ES biodiversity in a protected area, the ReDirect project in the Nyungwe National Park will be elaborated upon.

3.3.1. Background data on the Small Group and Tree Planting project (TIST)[39] - Uganda

Location, initiator and objective

The Small Group and Tree Planting project (initiated 2003) is located in three districts in the South of Uganda - Bushenyi, Kabale and Kanungu. TIST[40] is a project initiated under the Clean Air Action Corporation (CAAC) located in Tulsa, Oklahoma (USA). This Corporation is the initiator and facilitator of all TIST projects. It is one of four similar TIST projects in East Africa focusing on the ES of carbon sequestration (Tanzania, Uganda and Kenya). Further projects of TIST exist in India, Honduras, and Nicaragua. The objective of the scheme is promoting sustainable agricultural management, basic business management and reforestation of degraded landscapes linked to carbon sequestration certificates (Williams, 2011). In Uganda it emerged out of the observation of a needed remedy against landslides that was expressed by local leaders and the National Environmental Management Authority (NEMA). The project is implemented and ongoing since 2003. The project is open to further applications of interested

[38] For the questionnaire applied to gain more insights see Appendix 4.
[39] As the project is internally funded there are no official annual reports but the website http://www.tist.org/tist/uganda.php contains information and data on existing sites.
[40] TIST was initiated in 1999 in Mpwapwa, Tanzania by the Anglican Bishop Simon Chiwanga of the Diocese of Mpwapwa (DMP) and a team of missionaries from Truro Church in the USA and the Clean Air Action Corporative (CAAC). The focus was on organizing the community members into self-supporting, cooperative Small Groups. See also http://www.tist.org/tist/aboutus/goalsobj.php

farmers. A further project is planned to be established in Rwanda in the near future. Expected environmental benefits are (ibid.):

- Erosion control (through both improved agriculture and trees)
- Shade and windbreaks for crop land
- Nitrogen fixation in soil
- Improved soil fertility from sustainable agriculture
- Natural habitats for bees, birds, small animals
- Improved biodiversity
- More grass
- Raised water table and improved rainfalls
- No addition of contaminants or pollutants
- Sequestered carbon from the planting of indigenous species of trees and improved agriculture techniques

Ecosystem Service Providers, buyers and promoted land-use

ES providers are small-scale farmers in the three participating districts/20 sub-districts. Currently 5,315 participants are registered covering an area of ca. 2,100 ha. In order to qualify for payments farmers must sign a greenhouse gas reduction contract with the CAAC and have to plant the specified number of trees, complying with specifications on spacing and a limited % of their total landholding (at least 500 per small group). Trees than have to be quantified after 6 month by a TIST quantifier. The payment consists of a fixed per tree payment (0.02 US$/"well-cared-for" tree/year for the first 20 years) and 70 % of the net revenues generated from sale of carbon credits. The payment of 0.02 US$/"well-cared-for" tree/year was determined through an ex ante economic analysis and consultations with farmers. It is also based on the value of the carbon credits and the fact that farmers were very interested in planting trees.

Required land management changes for the reforestation of degraded landscapes are: tree planting for timber, medicines, or fruit trees and intermix with crops; agroforestry, endemic species as well as fruit tree planting and mixed species are encouraged; endemic species and mixed cultures are promoted (Baanyanga, 2010). In addition trainings are conducted to enhance sustainable agricultural management, and basic business management. Timber, fruit and medicine trees are additional sources of income for the farmers. The carbon credit sale is yet an additional source of income. Sustainable agricultural practices the project aims to promote are based on the guidelines of conservation farming (FAO). A potential obstacle may be the preference of farmers to plant timber trees and rather focus on one species as e.g. eucalyptus (Baanyanga, 2010). It is not likely that tree planting would occur on the prevailing scale without support of the PES scheme (ibid.). CAAC sells the credits to interested companies and in the future it is considered to deliver the existing carbon certificates in Uganda to an institutional buyer. Currently there are two companies purchasing the credits (both are resellers). Prices for carbon credits are depending on the voluntary market.

Facilitating actors and monitoring

The scheme was designed by the Clean Air Action Corporation (CAAC) in cooperation with the Institute For Environmental Innovation (I4EI) (international NGO receiving funding from the Berkeley Reafforestation Trust (NGO UK), and USAID in other countries as Kenya and Tanzania). Up-front costs are covered mainly through the corporate revenues of the CAAC and the Berkeley Reafforestation Trust (NGO UK) that funds sustainable development aspects of the project. TIST under the CAAC is the intermediary between buying companies and participating communities. The latter are informed about the performance through regular meetings, newsletters and trainings. The role of TIST is financed through the corporate revenue of CAAC as well as through carbon revenue. Since TIST is an international approach that is constantly developed with shared attributes operational costs are considered globally (between

US$6 and US$10 million) (Williams, 2011). Payments flow to the CAAC and thereafter are delivered to the communities by TIST field staff. Further key actors for developing the project were the National Forest Department (NEMA) for technical support and assessment of locations for tree plantations; the National Agricultural Advisory Services (under Ministry of Agriculture) as well as ECOTRUST for technical support and training.

Monitoring is done by district quantifiers located in the different counties. They work with GPS and count the trees, take pictures, measure the distance and monitor that farmers keep to the guidelines. The first visit is done after 6 month. The goal is to have monitoring taking place on an annual basis. No annual reports are published since the project is internally financed. Field data can be found on the project website. Verification will take place by an approved verifier once carbon credits are included in a carbon standard. In Kenya this is ESI under the VCS.

Key national actors in the project development were the National Forest Department; NEMA for technical support and assessment of locations for tree plantations; the National Agricultural Advisory Services (under Ministry of Agriculture) as well as ECOTRUST for technical support and training; local chiefs and community groups as e.g. religious groups. Trainings etc. are organized in the Small Groups outside of existing administrative and political channels and monthly node meetings of different groups are organized. The project is open to further applications of interested farmers. A further project is planned to be established in Rwanda in the near future.

Co-benefits and effects

So far 4,553,409 trees have been planted in the participating communities. In case farmers do not comply with guidelines on land set aside for crop growing potential negative effect on food production. Contracts are made for 60 years and after the first 20 years trees may be harvested and replanted. It is expected that farmers reinvest the carbon revenue into tree nurseries and trainings on tree planting in order to enable self-sufficiency after an initial phase (Baanyanga, 2010). Disputes and non-compliance are settled within the communities/groups with support of local chiefs. Legal remedies are available in case of breach of the contractual agreement. Up to date no breach has occurred.

Currently the carbon revenues are not sufficient to cover the operational costs of TIST in Uganda (Williams, 2011). Trees still have to mature. The special approach of TIST is the very strong focus on cooperation with local chiefs in the project selection and development as well as the organization of farmers into small groups that are central in the application, implementation and monitoring of the project. These structures can than also be used for other capacity and knowledge building as e.g. training on how to build energy saving cooking stoves or sanitary and health education (Baanyanga, 2010). In general strong local institutions and organizations emerging from PES schemes can also help to access credit schemes for e.g. seeds or small enterprises. Selection criteria for participants are not very targeted which has an impact on the inclusion of poor small-scale farmers. Technical specifications for promoted species etc. are only non-binding recommendations depending on the good-will of the farmer. Despite the absence of clear enforcement and penalties, the principles of collective action and social pressure through local chiefs seem to be effective in the project.

Co-effects of the scheme are income diversification through fruit trees or timber. Carbon sales are encouraged to be reinvested in nurseries and the project uses the emerging small groups to foster other aspects as e.g. training in building energy saving cooking-stoves. The special approach of TIST is the very strong focus on cooperation with local chiefs in the project selection and development as well as the organization of farmers into small groups that are central in the application, implementation and monitoring of the project. These structures can than also be used for other capacity and knowledge building as e.g. training on how to build energy saving cooking stoves or sanitary and health education. In general strong local institutions and organizations emerging from PES schemes can also help to access credit schemes for e.g. seeds or small enterprises.

Small-scale carbon schemes by design face high transaction costs (Wunder & Boerner, 2010). TIST tries to avoid this by reducing monitoring costs, developing a global basic framework for its projects and

emphasizing the active role of local institutions and farmer groups. A frail point of the TIST may be that most technical specifications as e.g. on tree species are not obligatory but rather recommendations to farmers. Farmers are also encouraged not to plant the major part of their landholdings with trees to still leave space for agriculture. Yet again, this is only a recommendation depending on the good-will of the farmer. In case of non-compliance, there are no clear regulations for consequences. Disputes and non-compliance are settled within the communities/groups with support of local chiefs. The direct delivery of the cash payments are also prone to steeling as the field stuff has to drive at times long distances and payments are announced in the communities. Therefore in the future TIST is exploring the opportunity to use transfer services through mobile phone providers. Furthermore, are there no explicit mechanisms in place that make the project focused on small-scale farmers only. Communication within the project is frequent, with so-called cluster meetings being held on almost a monthly basis and a monthly newsletter is distributed with articles and reports written by the participating farmers.

3.3.2. The Emiti Nibwo Bulora project, Tanzania

Location, initiator and objective

This scheme in Tanzania is situated in the Kagera Province, Karagwe Distirct, Nyaishozi, Bugene and Kaisho zones. The project was initiated by Vi Agroforestry, under the Lake Victoria Regional Environmental and Sustainable Agricultural Productivity Programme (RESAPP). Project development was under the Vi Agroforestry Kagera Office. Through the promotion of small scale agroforestry systems (boundary planting, dispersed interplanting, fruit orchard, woodlot) this PES scheme aims to increased soil carbon storage as well as carbon sequestration in biomass. The project creates Verified Emission Credits (VERs) to be sold on the voluntary carbon market through Plan Vivo. The project is expected to contribute to the mitigation of climate change and greenhouse gas emissions and income diversification, soil conservation and improved land use and capacity building. The emissions reduction capacity is 40,000 tCO2/year (Vi Agroforestry, 2010). The scheme was initiated in 2008, and in 2010 the project has been certified as Plan Vivo project. First payments were made in 2010. The project is envisioned to have a duration of 11 years. The prime attention of the scheme is increased soil carbon storage as well as carbon sequestration in biomass through agroforestry (tree planting) and promoting sustainable land use management techniques (Vi Agroforestry, 2010). Used measurements are based on determining the annual (stem) volume increments (m3/yr.) of trees.

Ecosystem Service Providers, buyers and promoted land-use

Currently, 23 farmers are participating, covering 15.9 ha (Masologo et al., 2010). Individual plot sizes under plan vivo ranges from 0.06 to 1.0 ha. Payments are done in ten years in five installments i.e. 1st, 2nd, 3rd, 5th and 10th year. In total the pilot group will receive TZS 11,166,000 (US$ 7360) in the five installments in the 10 years of their contracts. The piloting group has received the 1st payment in June 2010 (14 qualified farmers). Every farmer has his/her own amount to be paid depending on amount of tCO2 his/her plot will sequester. The payment is 60 % of the revenue from the carbon emission reduction purchase. In the first installment these participants received 30 % of this share (in total TZS 1,848,400 (US$ 1218) with the highest individual payments mounting to TZS 252,000 (US$ 166) (ibid.). Subsequent payments are expected to be made on group bank accounts enabling group savings. This is also connected to a loaning system assisted through the Vi Agroforestry project. In order to qualify for the payments participants have to adhere to their personal Plan Vivo which features technical specifications, numbers of trees to be planted etc. Based on the land tenure structure, no women are direct participants of the scheme, however, the activity is a family business and gender mainstreaming is considered at various stages of implementation.

Land use changes promoted are: Boundary planting, woodlot, fruit orchard and dispersed inter-planting (Vi Agroforestry, 2010). Tree planting is restricted to native and naturalized species. Grazing, cutting trees for any use during the contract period is not allowed (use-restricting). Due to expected soil and water quality improvement, yield increase and income diversification through agroforestry farmers would benefit also without carbon credits. The project aims to contribute to capacity building,

livelihood/income diversification and improved land use (yield increase) (Masologo et al., 2010). In the region at the moment there is a lack of tree planting by small-scale farmers. Customary ownership with testimonial from local authorities is accepted yet this is identified as risk factor. The buyer of the ES for the pilot group is SCC-Vi Agroforestry. For the newly recruited groups buyers are expected to come from private companies in Sweden yet so far no concrete buyers have signed a contract. Payments from buyers are deposited with Vi Agroforestry which than are distributed onto farmers individual bank accounts. The first payments in 2010 have been in cash as participants were still in the process of opening their group bank account (Masologo et al., 2010).

Facilitating actors and monitoring

The scheme was designed by Vi Agroforestry with technical support and carbon baselines conducted by Camco (Kenya) and initial feasibility studies were carried out by U&W (2007) (ibid.). Camco also made the technical specifications for the 4 agroforestry systems that are promoted in this project. The facilitating party is Vi Agroforestry that is also the central collecting point for payments. The performance of the scheme is shared in the annual report. Monitoring will be undertaken on an annual basis for the carbon credits, yet Vi field staff is always present to monitor the implementation and tree planting and support farmers. The project has been verified under Plan Vivo in 2009. When recruiting farmers, applications from farmers are verified by village government to prove to us the ownership of the land to the applicant. Contracts are made for 10 years. After initial capacity building and distributing tree seedlings the project is expected to carry itself (Vi Agroforestry, 2010).

Co-benefits and effects

The project operates through participatory community engagement process and builds on structures and channels initiated under the larger sustainable land management project of Vi Agroforestry (Masologo et al., 2010). On the national level the project is closely cooperating with the district and regional office of the Ministry of Natural Resources. Vi-Agroforestry has so far received more than 1,000 applications to join the scheme. Land tenure issue is not a top priority of this scheme as customary ownership with testimonial from local authorities is accepted; the issue is also identified as a risk factor. Farmers currently do not hold land title deeds, yet are in the process of acquiring titles. Important policies for developing the scheme included the Land Act (1999&2007) which enables tenure of land over long time periods and protects existing rights in land ownership by statutory and customary rights alike. The Village Land Act (1999) regulating how each village may declare its village land and the National Strategy for Growth and Reduction of Poverty, Tanzania. On the national level the project is closely cooperating with the district and regional office of the Ministry of Natural Resources. Due on the governmental priority on poverty reduction, climate change adaptation and mitigation and carbon sequestration the project found support on the authority level.

3.3.3. Western Kenya Smallholder Agricultural Carbon Finance Project

Location, initiator and objective

This is the second PES carbon project of SSC-Vi Agroforestry in East Africa. It is situated in 27 locations in the Nyanza Province (Siaya & Kisumu District) and Western Province (Bungoma District) of Kenya. The development of this project started in 2007 and implementation in 2009. At the moment the project is in the implementation phase and project validation is expected in end 2010/beginning 2011 (Lager, 2011). The Emission Reduction Purchase Agreement (ERPA) between Vi Agroforesty and the Bio Carbon Fund has been signed in 2010 (Vi Agroforestry, 2008). First payments expected to start in 2011/2012. The overall duration of the project is envisioned to be 30 years (until 2009). The developer of the project is Vi Agroforestry while the Joanneum Research, Austria and Unique Forestry consultants, Germany have been instrumental in the development of the methodology. The World Bank Carbon Finance Unit and the Swedish International Development Cooperation Agency (Sida) have provided financial support.

The objective is to reduce greenhouse gas emissions through carbon sequestration by trees and soil (through Sustainable Agricultural Land Management (SALM) practices). Other expected outcomes are:

increased and diversified food supply; climate change adaptation; increased production of marketable agricultural and agroforestry products; improved capacity of farmers to assess market information; strengthened farmer organizations; increased tree cover; income diversification through carbon revenue. Assumed total amount sequestered over a 20 year period, 2009-2029 is 1.2 $MtCO^2$. The ES under focus is carbon sequestration through soil management and tree planting (biomass) (Lager, 2011). The project has produced a carbon finance document, an emission reduction purchase agreement as well as monitoring guidelines and developed a carbon appraisal methodology[41]. In order to establish a baseline, 200-300 farmers were sampled. In the baseline assessment, the present predominantly agricultural systems have been mapped and a modelling has been developed to estimate biomass and soil carbon sequestration. The development of the methodology was financed by the World Bank.

Ecosystem Service Providers, buyers and promoted land-use

Currently 10,000 small-scale farmers are registered with an average of 0.5 ha per farmer, in total covering 45,000 ha. Registration to the project is group-based, meaning that farmer groups enter a contract with Vi Agroforestry that is signed by all members of the groups (Lager, 2011). Participants were selected based on their willingness to join the scheme. The PES scheme promotes use-modification land-use mainly focusing on agroforestry. Different SLAM practises that are promoted based on the different categories have been identified (cropland management, restoration of degraded lands, bio-energy, livestock management).

- multiple cropping (agronomy, agroforestry, agro-silvo culture, shade growing of perennial crops, silvo-pasture; improved tillage & residue management; water harvesting for agriculture, terracing, erosion control)
- restoration/rehabilitation of degraded land (organic amendments to restore soil productivity; riverbank tree planting)
- livestock management (promotion of zero grazing and fodder, manure).

Tree planting and sustainable soil management are beneficial activities for farmers independent of carbon credits. For farmers the cost consist mainly their own labor and improved seeds (Lager, 2011). To determine if participants qualify for payments as well as the level of payment a scoring system has been developed. Still there is the need to find and calculate a benefit sharing system. In the first period Bio Carbon Fund has right to purchase 100% yet emissions reduction purchase agreement signed assigns only some % to the Fund. The rest can be purchased by interested companies focusing on voluntary market. No other buyers are identified as to now. The income of the carbon revenues is split into 60% farmer groups, 35% for the project implementation, 5% administration and marketing.

Facilitating actors and monitoring

Farmers are contracted by Vi Agroforestry which is also distributing the payments. In order to support and monitor progress one Vi Agroforestry field adviser is attached to each of the 27 locations providing advisory services. Farmer groups need to hold a bank account for the carbon payments (Lager, 2011). Monitoring is based on activities in combination of modeling using Roth model. The project is verified through a third party. The annual report is written by Vi Agroforestry. Financial support comes from the Foundation Vi Planterar träd ("We plant trees"); Swedish International Development Agency (Sida); Sida, Lake Victoria Initiative (LVI) ; World Bank Carbon Finance Unit and in the development of the project through the carbon revenues (ibid.).

Co-benefits and effects

Due to its early stage the project is in it is not yet possible to measure any impact or ES delivery. In case of non-compliance and conflicts, grievances procedures have been developed (Vi Agroforestry, 2008). Contracts are signed for a period of 10 years. Leakage risk is expected to be insignificant as no land conversion to other land uses and land set aside etc. are required. Activities are carried out exclusively on

[41] See also: http://wbcarbonfinance.org/Router.cfm?Page=BioCF&FID=9708&ItemID=9708&ft=Projects&ProjID=58099; http://www.v-c-s.org/methodology_salm.html&http://siteresources.worldbank.org/INTARD/Resources/335807-1236361651968/Timm_RWsideevent.pdf

the sites. The project has close links to the Lake Victoria Basin Commission (LVBC) of the EAC. Farmers hold legal titles to land. Extension plans of the approach exist in East Africa. It is expected that the carbon revenue will cover the operational costs of the project.

3.3.4. The Uluguru Mountains Equitable Payments for Watershed Services (EPWS) –Tanzania

Location, initiator and objective

The scheme is located in the Ruvu River - Kibungo sub-catchment. The ultimate aim of the project is to cover the whole basin and possibly also the East Usumbara Watershed. The Ruvu River catchment is an important supplier of water to Dar es Salaam. The valleys in the catchment have in the past been marketed by declining spoil productivity and heavy soil erosion, especially due to increased land pressure and unsustainable land use technologies (mix of fanya juu / fanya chini (terracing) / grass and riparian buffer strip). The project aimed to introduce incentives for sustainable and alternative land use systems and technologies as terracing, boundary planting, no more slash-and-burn etc. in order to decrease the water turbidity and improve the quality of life for participating communities. The objective of the scheme is

"To modify unsustainable land use […] in watersheds to conserve and improve reliable supply/flow and quality of water; To improve quality of life of the communities through substantial benefits to the rural poor hence contributing to poverty reduction" (Lopa, 2008).

The project has two phases:

- Phase I (2006-2007): studies, mapping of potential buyers/sellers; hydrological assessment; Kibungo Juu hotspot; land use change interventions/solutions and communities; seller livelihood analysis and capacity assessment; preliminary buyer's profiling; cost-benefit and legal analysis. A land-cover change and soil analysis has been undertaken and sustainable land-use measures identified. A cost analysis of implementation costs of SLM practices (one-off establishment costs + annual maintenance costs+ annual opportunity costs for land-use change) was undertaken. Furthermore, the stakeholder mapping and buyer profiling identified 2 potential and able buyers, the Dar es Salaam Water Supply and Seward Corporate (DAWASCO) and Coca Cola Kwanza Limited followed by an assessment of their willingness to pay. A special feature of the design phase was the business case prepared for potential buyers to convince them on the benefit from the project. This study listed the current water treatment costs and figures on water quality/turbidity as well as the potential benefits. Sensitization and mobilization meetings were conducted in 2008 to convince farmers to engage in the project implementations. Open meetings were organized to inform villages on the project and PES. A number of farmers volunteered and registered to engage in the implementation. These farmers formed farmers' groups in each project village who received various technical trainings.
- Phase II: implementation (from 2008 onwards). Contract with farmers were signed in 2009 and the aggregation of land-owners into farmers' groups was fostered.

Ecosystem Service Providers, buyers and promoted land-use

The EPWS pilot scheme in Tanzania was launched in 2008 envisioned to end in 2011 yet an extension for another three years to fortify and expand the project is currently assessed. The scheme is in its operational phase. Drivers are the WWF and CARE under the Equitable Payments for Watershed Services (EPWS) programme financed by DANIDA (DK). The project is targeting the improvement of water quality (less turbidity) and quantity in the Ruvu river, focusing on the Kibungo sub-catchment as pilot area. A hydrological assessment has been conducted under phase I of the project which identified the Kibungo sub-catchment as hotspot. Furthermore, land-cover change analysis as well as land-use measures and soil analysis have been conducted. Promoted land use-modification practices to limit water run-off and improve resource management are: soil conservation technologies as bench terracing, af- and reforestation, boundary/contours plating with grass and fruit plants (pineapple), agroforestry, riparian

restoration, sugar cane strips, carbon crops planting, no-tillage and no-burn practices and grass planting along contours. A use-restricting aspect is the restoration of riparian (buffer) zones of the watershed. Specialization on high value crops as beans, tomato, cabbage and bananas as well as the application of animal manure are expected to support the livelihoods of participants. The measures will have a positive effect for participants independent of the PES scheme.

The scale of this pilot scheme is on the Kibungo sub-catchment. Currently four villages (Kibungo, Lanzi, Nyingwa, Dimilo, Lukenge) participate. About 650 farmers whose subsistence activity is agriculture have engaged in implementing improved land use change practices (Lopa, 2011). Interested farmers (land-owners) have been organized into a farmer group network and 5 farmer groups . In principal 352 farmers were verified to qualify for payments after measuring and mapping farms and in 2010, 144 farmers received a first payment (ibid.). Farmers on average hold < 2 ha of land. Participating farmers need to implement technologies/improved land-use practices specified in their management plan and are informed about the costs and benefits of proposed technologies and receive trainings and supervision (Lopa, 2010). The appropriate use of the land and maintenance of the technologies (e.g. stabilizing ridge edges, clearing land with tree planted, thinning, pruning etc.; and the control of fire on their lands) is than monitored in the following years. Payments made to individual land-owners are performance based (actions adopted) and are calibrated based on the size of landholdings, size of converted land, opportunity costs, technology/land-use change applied, maintenance costs and labor input. The land size converted under new technologies/land use is measured in cooperation with the participants. In case of non-compliance and insufficient management no payments are made. The aim is group payments to spread the benefit to whole community and to overcome limitation of the scheme to land owners (Lopa, 2011). The level of payments was established in studies on the costs of implementation per technology determined by labour inputs and opportunity costs (for loss of production). Costs to adopt the promoted land use vary between US$ 200 and US$ 50 per acre. The project supports farmers with inputs such as hand hoe etc. to ensure high rate of technology adoption. The local and tenure system has been assessed on the livelihood study. Participants own small pieces of land which are mostly inherited from their elders.

Stakeholder mapping and buyer profiling identified 2 potential and able buyers, the Dar es Salaam Water Supply and Seward Corporate (DAWASCO) and Coca Cola Kwanza Limited (Lopa, 2008). After extensive negotiations DAWASCO (signed 2008) and Coca Cola (2007) agreed to the scheme in a non-binding agreement to a Memorandum of Understanding with the ES providers (Lopa, 2010). No guarantee could be given as to how high their return, if any will be. DAWASCO agreed to pay US$ 100,000 in four years and Coca Cola KL US$ 200,000 in the same period. Through a business case exercise the water treatment costs and potential savings for the two buyers have been calculated and used as reference point for the negotiations. The payment is connected to the performance of farmers to adopt promoted technologies. DAWASCO so far paid about US$ 5,060 in 2009. In order for WWF/CARE to pay on their behalf, the NGOs entered into annual contractual agreements with the village leaders. Participants receive initial inputs and trainings to enable adopting the promoted technologies. In order to assure continuation application and use of the technologies the programme provides such supports every year. Originally it was planned to have two installments/year, yet due to delay and difficulties in the adaptation of the proposed land-use/technologies, the first payment to 144 participants (ca. TZS 2.03 million i.e. US$ 1376) has only been made in 2010. Payments are in form of in-kind payments (e.g. seeds etc.) and monetary through the village authorities/councils and a CARE/WWF consortium to farmers that already implemented at least part of the SLM management plan (Lopa, 2010) .

Facilitating actors and monitoring

The scheme was designed by the WWF in cooperation with CARE, connected to the international programme for Equitable Payments for Watershed Services (EPWS). Funding came from DANIDA, CARE and WWF. Experts from responsible national authorities, e.g. the Forestry Authority are hired for technical specification of suitable land-use and plant species. Important actors are also the village councils that engage in the whole project implementation process as facilitators and supervisors. Providers and users are brought together through a CARE/WWF consortium. CARE/WWF hire experts

from responsible national authorities, e.g. the forestry authority for technical specification of suitable land-use/species. Payments are going from the buyers to the Village Council as autonomy local authority consists of village chairperson, village executive officer and village council members totaling to 25 leaders and distributed to the farmers accordingly. The WWF/CARE consortium is supporting this effort. The project initiated an intermediary group overseeing implementation, mobilizing farmers and fostering institutional development. This group consists of members from key sectors as e.g. the Ministry of Water, the Directorate of Water Resources, the Wami-Ruvu Basin Water Office; local communities; private companies CSOs and CARE/WWF.

Hydrological monitoring stations have been positioned at different locations in the watershed (installation in March 2010) with technical support of Wami-Ruvu Basin Office which is water authority and the custodian of the basin. Involved parties in monitoring are the village councils, CARE field staff, trained farmers, national water authorities. It is envisioned in the future to foster peer review and enhance the training of farmers on monitoring. CARE/WWF as programme initiative facilitators report to buyers. Verification is done through local authorities 2/year. 170,000 trees have been planted between 2009-2010 with a survival rate of 85 %, and terracing and buffer zones have been fostered successfully. It is too early in the project to assess if the water turbidity has decreased yet a sediment reduction has been observed. The actual improvement of the water shed services is also dependent on the scale of the intervention which cannot be reached in one or few years. Currently the project covers a micro-catchment yet the aim is to cover the whole watershed (Lopa, 2010). Monitoring also includes soil testing and results from a test in late 2010 have shown that average moisture level in areas with terraces/ fanya juu is 1.6% which is higher than areas without structures (0.3%). Also average soil compaction is higher (3.05km/m2) in areas with no terraces compared with areas with terraces (1.0505km/m2). This implies that crop performance in areas with interventions has improved in terms of crop growth rate and yields (ibid.).

Co-benefits and effects

Farmers receive training on SLM techniques, tree planting and management, nursery creation, agronomic practices and animal husbandry. Regular study tours and pilot sites visits are organized to exchange experiences. It is not likely that the proposed land use techniques would have been adopted on this scale without the scheme. These technologies were introduced many years ago and very few were adopted by the local farmers such as agroforestry and reforestation (Lopa, 2011). People were not practicing the contour farming in appropriate way either. With the presence of EPWS programme a number technologies have been implemented by local farmers. The people are integrating with other activities to improve their farming such as livestock keeping which were not important livelihood activities before the presence of our EPWS programme. The project at the moment only covers the Kibungo sub-catchment which makes it hard to make commitments or attempt to change the overall quality and quantity within the larger catchment. There are several activities going on in the catchment that can undermine the efforts of Kibungo Juu communities in providing watershed services. Some of these activities include illegal gold mining in the river floor and banks; poor sanitation; unsustainable land uses.

Farmers in the selected catchment are small-scale and depending on agriculture for their livelihoods, yet face increasing land pressure and declining soil quality. So far only land-owners are included in the scheme. General speaking, the Kibungo Juu community members are very poor such that distinguishing them is always difficult. However, as per quick assessment conducted several times by programme team, it has been found that the middle class of the wealth ranking of the Kibungo Juu area are the one engaged in the initiatives. Under phase I a seller livelihood analysis and capacity assessment has been carried out. Through improved land use/management it is expected that farmers can increase their livelihood. Furthermore, cash crops are promoted and the connection to local markets fostered. Production levels in some areas of the project have been increased three fold. The farmers have been engaged in planting tomato and cabbage which have enable to obtain about US$7000 through selling tomato and cabbage on farm and at farm gate. Revenues obtained from agricultural products were used for purchasing inputs, building materials like iron sheet, nails and timber for their houses and animal shed construction and also for covering school fees and treatment costs. The project in its current form is still depending on support by its main donor DANIDA for covering the operational costs and additional buyers are needed to

consolidate the scheme. Potential interest/willingness to pay of a Tanzania brewery is emerging. There is also hope to benefit from the Eastern Arc Trust Fund for conservation. Based on close cooperation with the national authorities in the whole development process the involvement of the governmental authorities increased. The project also substantially supported the development of the awareness for a necessary regulatory framework and engagement of the national authorities.

The project was initiated through an elaborate phase of sensitization and mobilization meetings in 2008 to interest farmers to engage in the project implementations. The approach of WWF and CARE is very much based on creating a business case for potential buyers to show benefit of PES scheme. The project also demonstrates how long the negotiations can last before any agreement is reached. Strong focus was placed on organizing farmers into farmer groups and networks. Disappointment in the exclusion of other interested villages (equity dilemma) prevails that might impact the project's success. Important policies that were applied for developing the scheme were the Land Act 5 (1999) recognizing customary ownership of land. The national policy declares all land as public land, issuing no land titles to individual farmers. The village authorities manage the land on behalf of central government and are entitled to enter contracts. Another policy was the Water Resources Management Act: Paragraph 96 (2009: 406) states that, "Water Basin Boards may announce charges with respect of 'payments for environmental services'". Instruments for economic incentives are also found in the Environmental Management Act (2009), Cap. 191 (Lopa, 2010).

Village councils engage in the whole project implementation process as facilitators and supervisors. Therefore they also receive a certain amount of money from the project. Another important national partners were the Ministry of Water, the Water Basin Authority, the Uluguru Nature Reserve Office and the Wami-Ruvu Basin Water Office in Morogoro. The project is further supported by the Uluguru Mountain Agricultural Development Project (UMADEP) under the Sokoine University of Agriculture. To foster the drafting of a PES framework into the national policies is another aspect the project tries to take up (Lopa, 2010). The project initiated an Intermediary Group (IG) overseeing implementation, mobilizing farmers and fostering institutional development. This group consists of members from key sectors as e.g. the Ministry of Water, the Directorate of Water Resources, the Wami-Ruvu Basin Water Office; local communities; private companies CEOs and CARE/WWF. In order to ensure the long term existence of the scheme this IG was first considered to play a key role. This idea has been declining in the last time and no mechanism is in place yet (Lopa, 2011). A fundamental hurdle to overcome here is that limited knowledge and appreciation of the mechanism prevails at the administrative level where regulations are drafted. The programme has trained 25 farmers to be expert farmers to establish community-based extension agency.

3.3.5. Naivasha-Malewa Project, Kenya – Watershed PES

Location, initiator and objective

Another project of WWF/CARE is the **Naivasha-Malewa Project** located in the Malewa river basin, Central Province, Kenya. Two critical sites were selected as pilots: the Upper Turasha (639 ha) and Wanjohi (4680 ha) area. The project is on sub-catchments level. This PES project is designed similar to the EPWS project of CARE and the WWF in Tanzania. The scheme was initiated under the larger WWF management project, the Integrated Water Resource Management (IWRM), in cooperation with CARE. The Ramsar site Lake Naivasha and the Malewa catchment are threatened by environmental degradation and loss of biodiversity. The project is connected to a larger WWF management project, the Integrated Water Resource Management (IWRM)[42]. The objective of the scheme is "to develop a viable mechanism for payments for watershed services that delivers sustainable natural resource management and improved livelihoods and serves as a pilot and learning model for further expansion and replication" (CARE & WWF, 2010: 9). Improved watershed management is crucial for the catchment. The project is aiming to address the decline in water services (quality and quantity). Ex ante baselines studies on hydrological

[42] The Integrated Water Resource Management (IWRM) Programme focuses on livelihood improvement, environmental sustainability and policy development.

quality etc. as well as socio-economic studies have been undertaken. Selection criteria for PES pilot sites in the watershed included: "(i) Water yield from the sub-basin-surface and ground flow (ii) Sediment yield from sub-basin (iii) Population density and poverty (iv) Land use/land cover dynamics and (v) Potential buyers and sellers" (CARE & WWF, 2010: 4). Five sub-basins have been selected. Two sites with a critical focus were selected as pilots: Upper Turasha (639 ha) and Wanjohi (4680 ha), both situated in the Malewa river basin and the central province of Kenya.

Ecosystem Service Providers, buyers and promoted land-use

The contracts between buyers and sellers were signed in 2009 and the first payments have been made in May 2010. The WWF/CARE project will officially end in late 2011, yet the annually renewed contracts between sellers and buyers will continue. ES stewards in the scheme are Small scale farmers in the identified hot spots (in total 565 with another 150 already applying the promoted land use technologies voluntarily; these are to be included in the scheme in 2011). The average size of landholdings of participants ranges from 2-10 acres (0.8-4.05 ha).

Payments are annually to individual farmers. The sum is fixed to UDS$17/ participant in the first three years. The payment level was based on land use technologies promoted as well as in situ benefits farmers are receiving from implementing the scheme and available project funds at that time. This was agreed by sellers and buyers after a rigorous negotiation process was undertaken by the sellers and buyers. A business case study was done which established the opportunity costs that farmers would undergo as a result of setting aside land for conservation. This was too high for the buyers to afford since the concept was not yet operational. Payment is through voucher system, each voucher is worth US$17. Payments were based on a series of negotiation meetings between the buyers and sellers who could than give this input to revise the draft contracts which were than discussed together in the seller-buyer forum. Conditions to qualify for payments are based on adopting promoted land uses and technologies. The payment level was based on land use technologies promoted as well as in situ benefits farmers are receiving from implementing the scheme and available project funds at that time. During verifications in the field, those farmers who have not met agreed conditions are not awarded the ex situ benefits. Promoted improved land-use and technologies are: riparian protection areas, agroforestry, indigenous tree planting (95 % survival rate), contours grass strips, high value crops and other SLM and soil/water conserving practices (e.g. bench terraces). Especially agroforestry and soil protection technologies can be expected to benefit farmers independently of the PES scheme. Participants have to contribute the labour, material inputs (fodder crops, tree seedlings, and high value crops) are provided by CARE and WWF. Depends on kind of trainings costs are ranging from Kshs 20,000 (US$ 244) local community units meetings to Kshs 300,000 (US$ 3, 662) for high level seller-buyer meetings. Current buyers are the Lake Naivasha Growers Group and Lake Naivasha Riparian Association (LNRA)[43]. The legal agreement has been signed on their behalf by the Lake Naivasha Water Resource Users Association (LANAWRUA). They pay to WWF/CARE which than distribute the payments to sellers. The first payment mounted to USD $ 10,000 (Njenga & Nyongesa, 2010).

Facilitating actors and monitoring

Central for the project design were the WWF and CARE. Technical support and baselines were undertaken in cooperation with national universities. Funding teamed from DGIS through WWF NL, WWF international, CARE international and CARE Kenya. Initial sensitization meetings with the local Water Resource User Associations (WRUAs) were organized to select target groups, connect to the provincial administration and to organize field visits and capacity/understanding of PES (Njenga & Nyongesa, 2010).

[43]An association of large-scale horticulture farmers around the lake.

Payments are delivered through the WRUAs facilitated by WWF/DARE on behalf of the buyers using voucher system has been introduced that allowed participants to receive agro-inputs at agreed and convenient retailers. By the time WWF/CARE retreat from the project the WRUAs will take over the facilitating role completely. Hotspot farms were identified based on the location of the farm, geographical factors as e.g. steep slopes, distance to rivers etc., poorly cultivated farms, farms with water unfriendly trees, farmers that are land-owners and willing to adopt change/participate. Technical advice and measurements stems from national authorities on the micro and meso level were involved as the Ministry of Agriculture, the Kenya Wildlife Service (KFS) and the Water Resource Management Authority (WRMA). The opportunity costs of participating providers are covered through the payments of the sellers. Sellers and buyers are brought together in a forum facilitated by WWF/CARE and in connection to Water Resource Users Associations (WRUAs). Contracts are renewed annually.

Four staff gauges in respective rivers of intervention (Wanjohi, Kinja, Karoroha and Turasha) have been installed as well as four turbid meters. On-farm verification and monitoring is undertaken by the buyers and support institutions (e.g. LANARWUA) as well as by the sellers separately. Biannually consultants are hired for evaluation and monitoring. In case of conflict or non-compliance WRUAs are responsible for conflict resolution meetings etc. Observed effects are increased tree cover, reduced soil erosion. There is a 95% survival rate of the agro forestry trees, grass strip planting and endemic agroforestry trees, riparian land restoration. Promoted practises are also applied by non-participants. It is not possible to say to what degree this is taken over from the scheme. Assistance is necessary primarily in the beginning for capacity building and tree seedling distribution. Contracts were endorsed/signed for one year, renewable with revised terms and conditions agreeable between sellers and buyers. Current contracts are still valid. Problematic are complex and dynamic land ownership due to inheritance and land use change. In case of non-compliance and conflicts the WRUAs are the facilitating institutions.

Co-benefits and effects

The approach is realistically pro-poor arrived at after community participatory sensitization on PES scheme (Njenga, 2011). Trainings on SLM techniques, livelihood improvement, soil and water conservation exercises, tree planning, contour planting, riverbank protection, organic farming, proper use of agricultural chemicals, good farm planning, adoption of high value crops, farming as a business, contact farming, coping with climate change, and farming diversification, etc. were conducted by WWF/CARE. Expected co-effects are livelihood expansion (provision of firewood, sale of fruits, reduced cost of fruits purchase and health improvement), capacity building and intuitional strengthening on community level (WWF & CARE, 2010). The project is expected to cover its operational costs (Njenga, 2011).

Major challenges for the project include: complex and dynamic land ownership due to inheritance and land use change; degraded public lands that influence the water quality yet is not under the scheme; high interest of more participants; limited commitment of new buyers. Plans are developed to upscale the project internally and externally. The project built on existing Water Resource Users Associations (WRUAs). The project put strong emphasis on creating a buyer-seller forum that is envisioned to take over the project facilitation once WWF/CARE retreat from their facilitating role (Njenga & Nyongesa, 2010). Kenya currently has no specific PES policy. Water Act (2002) provides for water user fees by large scale users that are to be invested in catchment management. This is, however, not yet operationalized. The Lake Victoria Basin Commission of EAC features strategies for targeting Ecosystems, Natural Resources and Environment.

3.3.6. Trees for global benefit project (TBG) – Uganda

Location, initiator and objective

Trees for global benefit project (TBG) in Uganda (Bushenyi, Masindi & Hoima District) led by ECOTRUST (national NGO). The project is on-going and was initiated in 2003, latest expansion in 2009/2010. Out of the pilot in Bushenyi between 2003-2006 TGB was expanded in 2007 to the districts of Masindi (Pakanyi, Kajurubu and Budongo)and Hoima(Kiziranfumbi and Kidoma parish) Kabwoya and

Kyangwalisub-counties), most recently (2009/2010) the Kasese district was added. The objective of the project in the initial pilot phase was to test PES in Uganda and to see how they may be operationalized and which technical/design lessons could be drawn from it (Nantongo, 2010). The project aims to increase livelihoods of participants through tree planting and agroforestry and to increase the soil and water quality. Planting trees (carbon sequestration) is used to qualify for carbon credits. Financial support in the beginning was given by DFID (UK) which was also a major actor in approaching the government of Uganda (forest division) to enable the pilot project. Driving actors were the Bio-Climate Research & Development (BRDT) with support from the Edinburgh Centre for Carbon Management (ECCM). ECOTRUST was approached to be the facilitating body (implementation, administration and management) and ICRAF was subcontracted for technical support (ECOTRUST, 2010). The project is certified through the Plan Vivo System (in 2003) and in 2008 the project was verified by the Rainforest Alliance.

Ecosystem Service Providers, buyers and promoted land-use

About 500 farmers have received carbon payment which translates to over 100 ha and another over 300 farmers are at different stages of verification. Over 200 farmers are currently on the waiting list. Five installments are made in the first 10 years. The amount depends on how many trees are planted/how much carbon sequestrated. The level of payments are based on technical specifications for different farming systems as carbon sequestration potential varies in different land use systems, tree species and environmental conditions (ECOTRUST, 2010). Payments are transferred by ECOTRUST using village banks or cooperative structures, if in place (Nantongo, 2010). The carbon sequestration/ha in a farming system is quantified in the monitoring processes. Farmers receive payments based on reaching the milestones set in their individual Plan Vivo management plan which defines the objective of the participant. In order to qualify for the payment of 30 % of the saleable carbon value, farmers have to have planted at least 50 % of the number of trees specified in their management plan. Farmers wishing to participate have to buy the first 50% of trees of their management plans or be trained for tree nurseries. Costs for seedlings are relatively high; however, a credit system for seeds is in place. Promoted use-modified land use are boundary tree planting and agroforestry systems consisting of mixed intercropping and woodlots of native tree-species, and fruit orchards (Mango, Avocado, Jack Fruit) to generate livelihood benefits. PES give necessary incentives and financial support for tree planting. Yet, it is difficult to say if farmers would not engage in tree planting without the scheme as ECOTRUST has already been involved in some of the project areas in tree planting initiatives.

Facilitating actors and monitoring

The carbon credits from the 12 producer groups are sold through ECOTRUST and Plan Vivo. The system is an ex-ante buying of the credits by Plan Vivo which then in turn sells the certificates to: Tetra Pak (main buyer), yet also varying on an annual basis different companies, consultancies, private actors as e.g. The Carbon Neutral Company, INASP[44], The Katoomba Group (2008), Camco, U&W (consultancy firm, Sweden), Live Climate and others. Monitoring is undertaken 2/year by ECOTRUST field coordinators and technical managers and through peer reviewing of the various associations (Nantongo, 2010). Selected individual farmers out of associations receive training for this purpose. Specific monitoring protocols have been developed. The trees are counted and the tree growth of farmers in their 5th year of participation is measured using the Diameter at Breast Height (DBH) methodology to measure the flow of the ecosystem service of carbon sequestration. This is done by trained participants and through ECOTRUST staff that are based in project offices in all existing sites. Reporting is done by ECOTRUST, verification through the Rainforest Alliance. Capacity of participating farmers in carbon management was enhanced and farmers acquired simple carbon accounting and monitoring techniques.

Co-benefits and effects

The project is self-sustaining with funds from the certificates sold and money from the funding of ECOTRUST donors. Operational costs in 2008 mounted to USD $100,318. In order to cover the

[44]International Network for the Availability of Scientific Publications

operational costs ECOTRUST receives a percentage of the sold carbon credits. Initial start-up costs were provided for by DFID (UK department for international development) and project expansion is supported by e.g. PRESA, USAID through the Wildlife Conservation Society (WCS) managed WILD North project, IFAD through the World Agroforestry Center (ICRAF) and World Bank through ASARECA accounting for about 30% of the project expenses (ECOTRUST, 2010). Assistance for the scheme is especially based on the initial phase with capacity building, organizing farmers into groups and training on tree planting and nursery building. Contracts are signed for 25 or 50 years. In case of noncompliance with the agreements ECOTRUST places a one year break of financing for this installment, however, ECOTRUST is trying to take a very case-specific approach taking into account the reasons for failure. A Community Carbon Fund (CCF) has been created that finances capacity building and trainings as well as spreads the benefits of the project to the wider community through a certain percentage form the carbon sales (Nantongo, 2010). Diversification of livelihoods is targeted through agroforestry, fruit trees and wood lots. In the beginning a socio-economic assessment was conducted including clarification on land-holdings, tenure security and possibilities for land set aside. A socio-economic impact assessment was repeated in 2008. A farmer led approach is applied to identify preferred farming systems (Nantongo, 2010). In Uganda in most cases customary tenure is widely spread and can be processed into legal titles yet this is still culturally not perceived as necessary. High land fragmentation prevails. ECOTRUST closely works with chiefs of villages and with inheritance documentation to establish prove of land tenure. National authorities that work together with ECOTRUST range from the Wildlife Authority in areas of national parks, the National Forest Authority (NFA) for reforestation or the National Environmental Management Authority (NEMA). A national PES policy is under development by the national government, yet will still take considerable time to be established (Nantongo, 2010). A request has been handed in from the Tree Talk programme (national NGO) of the Straight Talk Foundation for ECOTRUST to conduct a feasibility study and prepare a concept for a possible expansion of TGB to Northern Uganda, West Nile and Mt. Elgon area. Supportive national policies were the National Forestry and Tree Planting Act (2003) as well as the National Environment Act (1995) (ibid.).

A number of issues emerged in the cause of the project that make it difficult to encounter non-compliance especially due to miss-management or natural disasters/extreme conditions as e.g. drought (ECOTRUST, 2010). The process of the interested farmer from application to being allocated a buyer is extensive and involves verifying the land tenure status. Carbon financing is only possible as long as a farmer can provide prove of long-term tenure rights (ibid.). In Uganda in most cases customary tenure is widely spread and can be processed into legal titles yet this is still culturally not perceived as necessary (Nantongo, 2010). High land fragmentation prevails. To cope with the situation ECOTRUST closely works with chiefs of villages and with inheritance documentation to establish prove of land tenure. National authorities that work together with ECOTRUST range from the Wildlife Authority in areas of national parks, the National Forest Authority (NFA) for reforestation or the National Environmental Management Authority (NEMA).

A number of issues emerged in the course of the project that make it difficult to encounter non-compliance especially due to mismanagement or natural disasters/extreme conditions as e.g. drought. The process of the interested farmer from application to being allocated a buyer is extensive and involves verifying the land tenure status. Carbon financing is only possible as long as a farmer can provide prove of long-term tenure rights. In Uganda in most cases customary tenure is widespread and can be processed into legal titles yet this is still culturally not perceived as necessary. High land fragmentation prevails. ECOTRUST closely works with chiefs of villages and with inheritance documentation to establish prove of land tenure. A request has been handed in from the Tree Talk programme (national NGO) of the Straight Talk Foundation for ECOTRUST to conduct a feasibility study and prepare a concept for a possible expansion of TGB to Northern Uganda, West Nile and Mt. Elgon area. A possible agreement of understating might be established as well as a partnership with Wildlife Conservation Society with funding from USAID. ECOTRUST already conducted a baseline surveys to establish the feasibility of utilizing carbon credit schemes for community groups and schools in Northern Uganda for tree farming and identified new extension sites in Agoro Pageagu Central Forest Reserve (CFR) in Kitgum, Mt Otzi CFR in Moyo, East Madi Wildlife Reserve and Zoka CFR in Adjumani, and Murchison Falls National

Park in Amuru. Furthermore, TGB will mainly target community forests in the Masindi and Hoima Districts as they are part of the Bugoma Budongo wildlife corridor. Lessons from managing the scheme are intended to be used for developing similar schemes under REDD (Reduced Emissions from Degradation and Degradation).

ECOTRUSTS is very active in Uganda already for 10 years, enjoying considerable trust with local communities and also good relations with national authorities. The biggest challenge for the project at the moment is the large request for further famers/communities to join. This goes beyond the technical and financial capacity of ECOTRUST. The growth of the project has positive effects (economies of scale) yet also negatively affects the monitoring and technical support that can be provided. ECOTRUST has a number of interns working as field assistance as well as Master students undertaking research. Soil erosion and watershed protection are not currently included in the project, yet are planned to be in the future. A model is under development by ASARECA to bundle these ES into the scheme. ECOTRUST is focusing on a community-based approach to protected areas and important watersheds in the selection of further potential sites for expanding the project. They have received requests from local governments/communities to become part of the project, yet are focusing on areas where funding is available through partners for the technical assessment, feasibility/baseline studies and site exploration (e.g. PRESA has been funding the extension to the Hoima district). They also have possible community groups that could be mobilized in the south of Uganda, e.g. in Kabale.

3.3.7. ReDirect - Conservation of biodiversity in the Nyungwe National Park, Rwanda

Location, initiator and objective

ReDirect - Conservation of biodiversity in the Nyungwe National Park, Rwanda taking place in four cells in the Southern (Nyaruguru & Nyamagabe District) and Western Province (Rusizi District). This PES scheme is a research project initiated in 2009 and is a 3 ½ years pilot until 2013 with funding from the European Union (overall funding 1,000,000 €) (Gross-Camp et al., 2010). It is a research project conducted by the University of East Anglia, UK developed in close cooperation with the Rwanda Development Board (RDB) and the Wildlife Conservation Society (WCS). The area of the project is directly neighboring to the national park and frequent human activities and resource abstractions prevail. Communities around the park are often marked by a high degree of poverty and dependence on resources from the buffer zones or inside of the park (Gross-Camp et al., 2010). The objective of the scheme is to create evidence for the effectiveness of PES as mechanism to combine development and conservation objectives. The focus is on whether PES are legitimate, equitable and effective in conserving natural resources/biodiversity in the Nyungwe National Park (ibid.). Expected outcomes are livelihood expansion and a reduced dependency on natural resources out of the park of the bordering communities.

Ecosystem Service Providers, buyers and promoted land-use

The ES under focus is biodiversity conservation in the Nyungwe Forest National Park, Rwanda. The natural resources and biodiversity of the Park are under threat from increasing human pressure and activities within the protected area. Baseline situations were established though household surveys and initial scoping of indicators for human activities in the park areas (mapping of human threat in park). Biodiversity proxy method:

- Baseline surveys encounter rates of
  - Trail system
  - Human activity as e.g. beehives, mining
  - Snares presence

Furthermore, 4 additional communities are part of the scheme that serve as control group and that are not included under the scheme.

The providers of the ES are the four selected cells/communities including approximately 3,675 households. Most participants own land, yet without any kind of formal land tenure rights (Gross-Camp, 2011). In initial sensitization meetings 20 representatives for the negotiations for contracts were

selected in each participating cell. In the selection of the representatives equal representation of men and women is encouraged. Representatives receive a nominal stipend (500 – 1000 RWF/ US$ 0.83-1.67) for their time.

The main focus of the scheme is on indicator of human activity in the Park. In addition to this focus however, the project aims to stimulate alternative sources for resources that are developed in cooperation with the participating communities (priorities). Communities are supported to find supply alternatives and receive training in e.g. on tree nurseries. This has led to especially tree planting being favored by communities. Initially this has primarily been resulting in the planting of eucalyptus and grevillea. Especially the first is a debated species in Rwanda and both are incompatible with crops. Therefore in the current state the project eliminated support for these two species and organizes training on promising agroforestry species together with ISAR and ICRAF (early 2011) (Gross-Camp, 2011). Supporting alternative livelihoods and sources for natural resources outside the park is beneficial for the participants independent of the PES scheme. One popular alterative, tree planting is very complex to be assessed in terms of additionally. A catalogue of indicators is checked for assessing if the communities qualify for payment include (ibid.):

- Combined Encounter Rate of human activities in the National Park (NNP)
- New trails (In the NNP)
- Mining (In the NNP)
- Sensitization (NNP/RDB) – awareness of the population based on a random subsample done once annually
- Sensitization (ReDirect) – awareness of the population based on a random subsample done once annually
- Decrease in gender gap for awareness of ReDirect and NNP/ RDB
- Number of new trees planted (exotic species – excluding *Eucalyptus spp.* and *Grevillea*)) - Outside the NNP, private or public lands
- Number of trees planted (indigenous species) -Outside the NNP, private or public lands
- Number of bamboo planted) - Outside the NNP, private or public lands
- Assistance provided by the community to RDB (crop-raiding, fire and other threats to the Park)

Each indicator is valued with a certain amount that is in the positive case added, in the negative case deducted (cell specific amounts). The conditionality is therefore a mix of ES performance (based on the indicators for biodiversity) and adopted technologies. The annual payments are monetary and made on household level, yet are community based meaning that all members of the community receive the same amount[45]. The payment level was based on a prior study[46] that calculated the average annual household income (ranging from $US 127 to $US 778) and proportion of income coming from forest resources (<1% to 60%). Opportunity costs to abandon the use of park resources and to adopt changed land-use have been calculated arriving at the crude average of 15,000 RwFr (ca. 25 US$)/household/year (lump sum)[47]. Through household level surveys and consultations were carried out for a livelihood assessment. Findings were that the opportunity costs varied between the involved communities and a mean value had to be drafted. Willingness-to-pay and willingness-to-accept scenarios have been drawn in the initial survey and livelihood surveys are made before and after the project. Reservations were voiced by national authorities that the scheme is rewarding communities to adhere to existing regulation and restrictions (Gross-Camp et al., 2010). According to Swallow et al. (2007), this concern is also expressed by other critics of the mechanism. In order to encounter this, the payments were not differentiated based on the

[45] The decision to have equal payments to all members is positive for the project's equity yet led to discussions in the communities as to the issue of free riding (with 7 % of the members not owning any land) and varying opportunity costs. It was discussed and explored in behavioral economic games in the open meetings.

[46] Masozera, M. and J. Alavalapati (2004) Forest dependency and its implications for protected areas management: a case study from the Nyungwe Forest Reserve, *Scandinavian Journal of Forest Research*, 19 (suppl. 4): 85-92.

[47] In total annual forest based income is calculated to be 25 US$ (ranging between 2-72 US$). Opportunity costs have been found to vary largely in between different individuals and communities. This is likely to have an impact on the success of the scheme as for some individuals the lump sum does not cover their opportunity costs.

level of illicit activities and respective opportunity costs (Gross-Camp et al., 2010). In order to encounter this, the payments were not differentiated based on the level of illicit activities and respective opportunity costs. Opportunity costs of different communities vary greatly. This is likely to have an impact on the perceived legitimacy and equity. Furthermore, were there initial difficulties to explain the use of an equitable payment scheme also benefitting members not having any land. A certain % of the payments made go directly to the community. Each participating community could decide how high the % shared are and results varied largely ranging from 10-80 %. Participants received 5,000 RwFr (ca. 8.50 US$) unconditional up-front payments to cover transaction and other initial costs as e.g. for opening a local bank account. Each community additionally receives an annual fixed budget of ½ million RwFr (845 US$) that are predominantly for monitoring activities determined by the project but also have some flexibility to be spent on their priorities, e.g. on training for monitoring, tree planting and nursery establishment.

Facilitating actors and monitoring

Proxies applied to measure biodiversity loss/conservation are: observing and documenting trail systems in the park, signs for human activity as e.g. beehives, mining or snares presence (Gross-Camp et al., 2010). These are measured every four month. This is also undertaken with the support of students from the National University of Rwanda (NUR). Monitoring generally is organized internally through community members that were selected by the cells (4-6/cell) and external through field staff of ReDirect, the RDB and NUR interns. Community Monitors (CMs) keep a log book on activities and report to the RDB and report on measures adapted e.g. to reduce crop loss. The CMs receive a small monthly sum and are voted for by the community. External monitoring focuses on livelihood surveys and the mentioned parameters. Furthermore, regular meetings with community monitors and organizational partners are organized. All monitoring staff meets every 4-6 weeks. Especially in the sensitization phase frequent meetings were necessary. The costs therefore are difficult to be précised (Gross-Camp, 2011).

Co-benefits and effects

One of the major developments observed are improved relations between RDB and the cells in which the scheme operates (Gross-Camp et al., 2010). People also generally speak of a greater respect for the no use laws in the NNP and indicate that they help enforce this by speaking with others that continue to use Park resources. It is difficult to clearly establish to what degree tree planting is likely to have occurred also without project. There is some concern is the scheme may also be supporting activities that would occur also without the incentives (Gross-Camp, 2010). Promoting agroforestry is a clear additionality of the scheme, however. The complexity to balance the cell level with the sector or national level regulations and programmes might have an impact on the success of the project. The project aims to have long-term impacts on establishing alternatives for natural resources from the national park. Contracts between ReDirect and communities are renewed annually to be more adaptive and flexible on emerging issues/developments[48]. In case of breaching the contract a termination thereof or return of payments in subsequent installment may follow. In case of non-compliance in some indicators payments are reduced and a financial penalty can be raised.

The area targeted by the project is marked by a high incident of poverty. Payments are made to all community members, no matter if they are owners of land or not (7 % of the involved people do not own any land). Furthermore, a certain percentage of the payments go directly to the communities. The project encourages long-term benefits through tree planting etc. Communal funds are also used for livestock schemes that benefit the poorest of the communities. The project shows that opportunity costs for individuals and varying communities vary greatly. Therefore, it is extremely complex to select one common payment level as this will be too little for some communities. On the other hand, however, establishing one common payment has an impact on the perceived equity of a scheme which is an important condition for success. Furthermore, the project brings attention to the criteria of legitimacy and

[48] One unexpected development was that many farmers used the income to plant more eucalyptus, a controversial species. As it is not the interest of the project to foster this development, this will be addressed in the next round of contracts.

equity that are key principles for successful and well-accepted long-term PES schemes (Gross-Camp et al., 2010). Annually renewed contracts enable the scheme to be flexible to emerging unforeseen issues etc. The selection process of the 20 representatives of each community is an essential aspect of the project. The distribution of payments on the SACCO accounts as well as ensuring that activities paid out of the community fund are truly supported by the whole community have proven to be demanding further attention and support. As learning by doing approach and pilot to actually prove the feasibility and potential of PES, the ReDirect project may play an important role here on the national and international level. Despite the substantial lessons that can be shared through the project experience, the project is not widely known on the national level. Since the Organic Land Law in 2005 certification and registration of land-ownership is ongoing, yet the region of the project is not yet covered.

3.4. Summary

The above described PES schemes are in different phases yet all share the objective of ES delivery as well as livelihood diversification and the diffusion of sustainable land management technologies. Most ongoing payments for ecosystem services schemes in the region are still in an early development stage. This implies that impacts of the projects are hard to be quantified and thus their success to reach their long-term objectives cannot easily be assessed. Nevertheless, these PES schemes are successful in fostering the adaptation of different land-use practices as well as the organization of farmers into groups that foster cooperation beyond PES issues. Four of the studied schemes were developed in sites that already were part of a land-use project of the facilitating actor. The pre-existing trust relationships and institutions can be considered to have been supportive to the projects.

The PES schemes in Tanzania and Uganda have experienced positive support from the respective governments to the schemes. Still no scheme is embedded in a supportive regulatory framework that facilitates the internal as well as external up-scaling. A substantial limit to all projects is the issue of finding sufficient potential buyers that are willing to sign a binding commitment and that enable the project to move to a stable financing structure independent from additional financial sources and donors. The long-term success of a PES however, is very much dependent on this factor. Communicating and raising awareness of the value of ecosystem services to key stakeholders and ministries. Showing the economic value of ES and the costs connected to their loss, thus building a business case is a valuable approach in the development of PES projects.

4. The institutional and political context in Rwanda

Key aspects in Rwanda

Similar to other countries in East Africa the national context of Rwanda sees an increasing interest and awareness for PES at governmental as well as NGO level. Workshops have been conducted on how PES can potentially be introduced and a national working group coordinated by REMA has been created. The working group will be process-focused and serve as a think-tank to envision the process of operationalising PES. Kagera TAMP has become a member of the national PES working group in Rwanda. Individual actors in Rwanda are well informed about PES and staff members of the RDB as well as NAFA participated in the international conference on PES in Jinja, Uganda. Several organizations and NGOs are aware of the potential of PES and are interested in capacity building workshops etc. and SLM projects that may be supplemented by PES mechanisms are on the ground. Yet, uncertainties on how to actually apply the mechanisms on PES in the national policy and institutional context prevail and communication and capacity building needs to be enhanced. A number of national policies and laws exist that assign an important position to environmental and resource management and that are supportive to PES. A national regulatory framework is yet missing. In Rwanda, the Kagera TAMP is focusing on the districts of Nyagatare, Kayonza, Kirehe, Bugesera, Kamonyi and Rulindo.

The national economy of Rwanda is very much based on agriculture with 90 % of the rural population working in the sectors accounting for 37 % of the GDP. Yet land and resource pressure is high due to a high population density, increasingly small fractured plots of land, steep slopes and soil erosion and rather low productivity in the agricultural sector. This has a negative impact on ecosystems and results in decreasing ecosystem services. PES can be considered as potential mechanism to enhance sustainable resource management and open new sources of funding for ES conservation.

4.1. PES in the Rwandese context

Similar to other countries in East Africa the national context of Rwanda sees an increasing interest and awareness for PES on the governmental as well as NGO side. Workshops have been conducted on how PES can potentially be introduced. On the other hand however, it also is lacking supportive laws and regulations or an assigned national PES authority for capacity building. The only existing PES in Rwanda, the ReDirect research project is not well known amongst other national authorities not directly involved in the project. The potential of PES (especially beyond carbon projects) does not seem to be very well known. Clear frameworks and proceedings for project development are necessary to overcome the reservations and uncertainty about the governmental support to PES that prevails on the side of private actors and NGOs interested in the mechanism.

In order to succeed and potentially be up-scaled PES should be well embedded into a regulating framework and institutions. Therefore, governmental support is crucial to the success and development of a supportive framework for PES. This should best be a government-owned process. Individual actors in Rwanda are well informed about PES and staff members of the RDB as well as NAFA participated in the international conference on PES in Jinja, Uganda. Yet, uncertainty on how to actually apply the mechanisms on PES in the national context prevails. Experiences and expertise on PES as e.g. the ReDirect project are not communicated well enough within the country. In Rwanda, as in other countries in the region, it is therefore crucial to foster the awareness on the potential and meaning of PES and

exchange of knowledge especially on the governmental level. A hurdle to overcome is that no one existing authority holds the mandate to become the sole responsible institution for PES development. Forestry projects should be addressed by the Ministry of Mining and Forestry (MINIFOR) and NAFA, projects concerning protected areas/national parks fall into RDB's responsibility etc. REMA with its broad mandate and experience with public expenditure on environmental priorities is a key actor in PES development, yet it is necessary to create a common understanding and vision on PES integration into national policies based on all stakeholder institutions.

4.1.1. Policy context

A number of national policies and laws exist that assign an important position to environmental and resource management and that are thus supportive to PES. Rwanda's constitution (2003) contains the obligation to protect the environment (Article 49). Rwanda furthermore is signatory to a number of international conventions, including the **Convention on Climate Change** (1992), the **Convention to Combat Desertification** (1991), the **Vienna Convention** for the Protection of the Ozone Layer, the **Convention on Biodiversity** (signed 1992), the I**nternational Convention on International Trade in Endangered Species** (CITES) and the **Ramsar Convention** on the protection on Wetlands.
The **National Vision 2020** contains the need to integrate the environment into development plans, the need to diversify energy sources also through transboundary cooperation. This document aims at reversing deforestation, reducing soil erosion and siltation of rivers and water, alleviate shortage of firewood and charcoal and electricity, achieve a total of 250,000 ha permanent green cover (30%) and sets the goal of total electrification and connection to water grid. The national **Economic Development and Poverty Reduction Strategy** (EDPRS- 2008-2012) under the second Poverty Reduction Strategy places emphasis on the importance of environmental protection as well as sustainable natural resource and ecosystem management for human and agricultural development[49]. The strategy emphasizes cross-sectoral cooperation to define environmental priorities.

The **Organic Law N° 04/2005** contains modalities for the promotion, protection and conservation of the environment. It protects watersheds and water bodies (Article 51) e.g. through the duty of the state to install measures to control soil erosion; decentralized responsibilities for the protection and conservation of the environment (e.g. through afforestation, swamp and river management and proper management of reserved areas) (Article 61). This is further consolidated in the law on soil and water conservation (1982). The Organic Law also features under Article 73 a clause on possible tax incentives for industries or individuals that promote the environment.

The **National Forest Policy** (2010) promotes a forest management and use plan to increase permanent forest cover as well as agroforestry. The **National Water Policy** recently adapted provides for the protection of ground and surface waters and lays the foundation for wetland and water catchment protection and buffer zones.

A **National Strategy and Action Plan for Biodiversity Conservation** has been drafted that aims at protecting ecosystems and natural resource availability as well as the protection of wetlands and I**ntegrated Management of Critical Ecosystems (IMCE)**. Within the IMCE the Akagera watershed has been identified as one of the four key areas in Rwanda.

Through the national settlement policy the government of Rwanda is promoting grouped settlements to approach the highly fragmented land-use and to free land. Furthermore, it promotes diversification of income through alternative sources. Market access and sustainable production systems are central in the national Agriculture Sector Policy (2004) and the Strategic Plan for Agricultural Transformation (2004). In the Environmental Fiscal Reform[50] developed by REMA supported by the Poverty Environment Initiative (PEI) of UNDP and UNEP, features economic mechanisms, regulations and taxation mechanisms for environmental management. PES are mentioned here as a possible economic instrument

[49] Can be found at the website of MINCOFIN.
[50] The latest reform of a national EFR aims to coordinate EFR incentives such as taxation, tax rebates and exemptions, full cost pricing of natural resources, subsidies and e.g. PES.

for sustainable environmental management and poverty reduction and as potential additional source of funding for environmental management (REMA, 2010). Within this initiative REMA and MINIFOR and the Ministry of Environment and Lands (MINELA)[51] strive for the integration and mainstreaming of the environment into district planning, national policies, budget planning for implementing the EDPRS. Under REMA currently also a Clean Development Mechanisms policy is being prepared.

National funding for the environment is earmarked to different areas as e.g. the Climate Change Adaptation Fund, the National Forestry Fund (1998) and the National Water Fund (proposed 2008; not yet in place). The activities these funds aim to support may overlap. In order to streamline extra-budgetary funds the Organic Law No 04/2005 determining the management and use of land, provided for a **National Environmental Fund (FONERWA)** for which operationalization notes have been developed by REMA. FONERWA will merge similar existing and potential future funds. The fund is referred to under the Organic Law N° 04/2005 (04/2005):

> "Title IV: INCENTIVES TO PERSONS THAT CONSERVE THE ENVIRONMENT, Article 71: Any activity aiming at controlling soil erosion and drought, one that aims at afforestation and forestry, using renewable energy in a sustainable manner, using modern cooking stoves and any other means that can be used to protect forestry, may receive support from the National Fund for Environment."[52]

According to Article 72 of the Organic Law the fund is envisioned to offer support to various actors as public institutions, the private sector, associations and individuals. The legal settings and the operationalization of the fund still needs to be adopted. The fund will play an important role for PES as avenue for potential PES schemes and for mobilizing resources. FONERWA could be initiated as a unit under national authorities such as REMA, MINELA or MINECOFIN (REMA, 2010b).

The National Land Policy was adopted in February 2004 followed in 2005 by the **Organic Land Law determining the use and management of land in Rwanda (OLL N° 08/2005)**[53]. This law contains references to the productive and sustainable use of land (Article 62). Under the OLL land registration is mandatory (Article 30) and customary land rights have effectively been abolished. Rights previously obtained however, are protected and land ownership by the occupants is recognized. The OLL as framework legislation also features principles on land-use and ownership, principles on land lease and land consolidation. Security of land tenure is provided for under Article 3 expressing that the state guarantees rights to own and use land. The state has supreme powers in managing the national land in the public interest and in a sustainable manner. The right to own and use land lies with any legal personality that acquired the land through purchase from competent authorities or through custom as e.g. inherited land, or land acquired through means recognized by the national custom as gift, exchanged and shared (Article 5). These people are allowed to own the land on long-term lease in conformity with the OLL. Article 7 states that land rights acquired through custom or written law are protected equally. OLL article 11 recognizes land ownership rights of individuals acquired through custom or written law. State owned land (Article 12) is a public domain and includes lakes and rivers as well as underground water and wells; land reserved for environmental conservation; state infrastructure and boundaries; land used by public administrative organs or for public activities. Another categories are private state owned land (Article 14), district, town or municipality land (Article 17), or private district, town or municipality land (Article 18). All people subject to Article 5 are considered to possess their land under a statutory lease (Article 22; with effect from September 15, 2005).

The **land tenure reform program (2008)** defines land rights and lays out necessary institutional arrangements for the implementation of the land registration. **Systemic Land Tenure Regularisation (LTR)** is ongoing since 2006 through the National Land Centre (NLC) and the Land Titles Office of the Registrar (by presidential order N° 53/01, 2006).

[51] Formerly Ministry of Natural Resources (MNIRENA)
[52] Organic Law N° 04/2005, retrieved from: http://www.minela.gov.rw/IMG/pdf/Organic_Law_determining_the_modalities_of_protection_conservation_and_promotion_of_environment_in_Rwanda.pdf
[53] A copy of the OLL can be found on the Kagera TAMP website.

1) Notification of areas for an LTR Programme
2) Local information dissemination-public meetings and sensitisation,
3) Appointment and training of Land Committees and Para-Surveyors
4) Demarcation of land, marking of boundaries on an image of photograph
5) Adjudication; recording of personal details, issuing a claims receipt, recording objections and corrections simultaneous with demarcation
6) Publication of adjudication record and compilation of a parcel index map
7) Objections and corrections period finalising the record and disputant lists
8) Mediation period for disputes.
9) Registration and Titling – preparation and issuance of Documents.

Box 1: The nine steps of Land Tenure Regularisation (LTR), Rwanda
Source: Didier G. SAGASHYA, Deputy Director General, National Land Centre

LTR is an administrative undertaking in order to recognize and secure existing land rights and convert these into legally recognized rights. Registration is ongoing in all 30 Districts with Adjudication and Demarcations. So far the focus has been on the City of Kigali and the surrounding. Trial areas for the LTR were in the Gasabo, Musanze, Karongi and Kirehe districts. Almost all cells of the Kirehe District are covered by now and registration is carried out on a demand led basis. In total, 791 cells have so far been covered. Corrections and objections to land mapping and planning have started. It is estimated that by June 2012 all land will be demarcated and adjudicated with some of the plots waiting for title issuance. Land lease is regulated through the Ministerial Order N° 001/2008 (04/2008).

The national Vision 2020 as well as the **Economic Development and Poverty Reduction Strategy (EDPRS)** focus on land-use management and land administration as key factors for sustainable development increased land productivity and reduced conflicts (REMA, 2010). The majority of land owners still hold their land based on customary arrangements. About 15 % of rural households do not own land, 60 % hold less than ½ ha and the remaining percentage owns ca. 1 ha (Rurangwa, 2004). Land registration needs to be fostered and institutional capacities strengthened. Land titles and security to the right to use land is a central factor for PES and registration will have to be fostered to create clear conditions.

4.1.2. Key institutions for natural resource management and PES development in Rwanda

- National authorities: Rwanda Environment Management Authority (REMA), National Forestry Authority (NAFA),the Ministry of Infrastructures (MININFRA), Rwanda Development Board (RDB), Ministry of Mining and Forestry (MINIFOR) and Ministry of Environment and Lands (MINELA), Ministry of Finance and Economic Planning (MINECOFIN), Ministry of Agriculture and Animal Resources (MINAGRI), Ministry of Local Government (MINALOC), National Land Centre (NLC) and Rwanda Utilities Regulatory Agency (RURA);
- National research institutes such as the Rwanda Institute for Agricultural Science (ISAR) and the National University of Rwanda (NUR);
- National and international NGOs in the field of environmental management, conservation, poverty reduction and livelihood development;
- International donors.

With a broad mandate to oversee and facilitate coordination of implementation of national environmental policies **REMA** is a central governmental institution and curator for developing a framework and regulations for PES in Rwanda and in enhancing first pilot projects. Awareness on PES is present in this authority and in a next step of operationalizing PES or engaging in a pilot project needs to be enhanced. REMA is a member of the national PES working group and coordinated a national workshop to raise awareness on PES in December 2010. The workshop confirmed the notion of a national working group and made recommendations to establish a core team coordinated by REMA as well as to initiate a series

of policy dialogues on PES. Under the Protected Area Biodiversity Conservation Project (PAB)[54] with support of the Destination Nyungwe Project (DNP) funded by USAID, a feasibility study of PES for biodiversity as well as watershed protection, climate regulation, and scenic beauty in the Nyungwe Forest National Park has been conducted. The focus of the agency is thus on how PES can be best be applied and embedded in the national context and potentially also on the transnational level (e.g. international water management or carbon). A biodiversity policy is being developed under PAB that will contain the lessons learned. REMA furthermore is the Designated National Authority for CDM projects in Rwanda and it prepares the national communication on climate change adaptation and mitigation. The second national communication for UNFCCC has been prepared by REMA containing options for climate change mitigation and adaptation. The focus of this communication is on CDM and reforestation potential.

The **Ministry for Infrastructure (MININFRA)** coordinates national energy and water supply projects also under RECO/RWASCO[55]. **MINAGRI** is a key actor for sustainable agriculture projects. Another important actor is the **Rwanda Development Board (RDB)** whose mandate comprises the management of all national protected areas as well as the development of commercial projects. RDB is a key partner of the ReDirect PES project. Central for PES is the department for tourism and conservation (T&C). The **National Forest Authority (NAFA)** is responsible for the coordination of national reforestation projects, forest management, as well as tree planting for energy. NAFA is responsible for developing the national carbon policy which will be providing the legal framework for developing carbon/af- and reforestation projects (expected to be finalized in early 2011). Awareness on PES exists in this institution and there is high demand to participate in capacity building workshops and learn more on the potential and technical design principles of PES schemes. NAFA together with MINIFOR are also centrally involved in developing a national bamboo policy framework in cooperation with the International Network for Bamboo and Rattan (INBAR).

Organizations/NGOs active in environmental resource management in Rwanda

An important NGO active for PES development in Rwanda is the **Wildlife Conservation Society (WCS)**. WCS is also involved in other PES in the region such as the TGB project expansion to the North of Uganda. In Rwanda the NGO is especially active in the area of the Nyungwe National Park and has already conducted baseline studies and stakeholder mapping for a potential PES with the tea factories surrounding the national park as potential buyers. First meetings with the private parties have been arranged and they have declared their potential interest to participate if clear regulations are put in place by the government to reduce uncertainties and to crease a stable environment. A biomass appraisal of the Nyungwe National Park has been undertaken by consultants in late 2010. In 2011 ECOTRUST will support the PES scheme development in the Nyungwe region. Another potential partner in case carbon is considered as one feasible ES of the scheme is Plan Vivo. One potential source of funding might steam from CIDA Canada.

WCS with support from USAID has initiated a national PES working group in October 2010 that aims to include key governmental, NGO or international organization stakeholders[56]. Initial members include staff from RDB Tourism and Conservation (T&C), NAFA, and REMA and in the first meeting the Terms of Reference for the national working group were discussed. The working group will be process-focused and serve as a think-tank to envision the process of PES operationalization. One prime aim of this working group is to build capacity on PES and to foster the development of regulations and legal regulations. It is to include all major

[54] Funded by GEF and supported by the UNDP.
[55] RECO: Rwanda Electricity Corporation & RWASCO: Rwanda Water and Sanitation Corporation. Nationwide 23 branches exist. The annual report of RECO can be found on the Kagera TAMP website.
[56] The protocol of the first meeting as well as the workshop in December 2011 can be found on the Kagera TAMP website.

governmental authorities, and NGOs involved in ES management. Key institutions listed in the first meeting include: RDB T&C; REMA; NAFA; MININFRA (water department); MINAGRI; WCS and MINELA. The Kagera TAMP project manager Mr. Mashinga has also been invited to join the working group. Between 17-18 December 2010 a workshop was organized, coordinated by REMA to identify further interested and key stakeholders and to promote the concept of PES and to develop a common agenda for enhancing the mechanism. At national level WCS plays a leading role in PES expertise and is currently also undertaking an institutional analysis. In this regard and with wit regard to organize a PES workshop in early 2011 WCS would be interested to cooperate with Kagera TAMP. Furthermore, WCS has been exploring opportunities for enhancing transboundary cooperation in the Akagera National Park and the counterpart on the Tanzanian side. It is currently looking for a financial partner to initiate a project in this area.

The **Nile Equatorial Lakes Subsidiary Action Program (NELSAP)** of the Nile Basin Initiative contains a number of new water storages for irrigation and improved agriculture as well as hydropower projects will be developed in the future. Currently an Integrated Water Resource Study is carried out by consultants to identify priority investment areas sponsored by SIDA and NORAD. PES are considered possible mechanism to be applied in hydropower services and water storage management and that will be assessed in a second study. Especially with the agreement of understanding signed in 2010 with Kagera TAMP, NELSAP is open for potential collaboration in this field. Awareness raising with project managers is already undertaken and the NELSAP regional project manager Mr. Kabenga has also been invited to join the national working group on PES. NELSAP does not, however, hold any funds for PES as to now. NELSAP is interested to be up-dated on PES development within the Kagera TAMP. One site selected by NELSAP for a hydro-power project within the area of the Kagera TAMP is located at the Rusumo falls on the border between Rwanda and Tanzania. This project envisions the construction of a dam and will also be connected to the Bugesera region in Rwanda and Burundi. Developing PES on developing infrastructure projects such as hydropower may be advantageous as it is usually more difficult to implement a new concept or additional payments/costs in an existing setting. This project, however, is still in the feasibility and social impact assessment phase.

ICRAF Rwanda holds a number of SLM projects such as high quality shade coffee in the Western Province under the CAFNET project; bamboo planting projects in national park buffer zones in cooperation with the Rwanda Bamboo Society; and agroforestry. In the Nyabihu site ICRAF also supports farmers to purchase trees and support them in the initial costs for land-use changes. One aim of these projects is also to organize farmers in cooperatives and associations. Together with WCS ICRAF is exploring the feasibility of agroforestry and carbon sequestration in Rwanda. In late 2010 the two organizations organized a workshop to extract key barriers and aspects for research in this field (see below). ICRAF also holds expertise in carbon appraisal tools. In cooperation with the Institute of Scientific and Technological Research (IRST) a number of carbon sequestration studies have been conducted. In Rwanda ICRAF is not involved yet in any PES activities, yet an agreement for close cooperation with REMA in the development of a PES framework is initiated. In the East African region ICRAF is involved in several PES schemes through providing technical advice and developing technical specifications for land-use schemes.

Notes ICRAF/WCS workshop Kigali, Rwanda (19/11/2010)

The meeting featured participants from:

- ICRAF
- WCS
- MINAGRI
- (REMA) invited yet did not participate
- (RADAR) invited yet did not participate
- Institut des Science Agronomique du Rwanda (ISAR)
- Clinton Foundation
- Rwanda Farmer Association
- Higher Institute of Agriculture and Animal Husbandry

AIM: SWOT of agroforestry; find obstacles for adoption of agroforestry particularly in smallholder farming; find incentives for agroforestry; find research gaps → report of workshop to be produced and distributed amongst stakeholders and policy makers.

The discussion was structured into a Strength, Weaknesses, Opportunities and Threats analysis beginning with a group brainstorming and thereafter two groups comparing the SWOT identified. This is to be the basis for identifying a research agenda.

Main factors agreed upon in the first round were:

- Strength
  - Income diversification
  - Soil improvement
- Weaknesses
  - Perception of representative of farmer association: Too little investment in capacity and awareness building in Rwanda on farmers level (need to foster understanding of possible benefits, e.g. field visits) & need to better communicate research findings to farmers/local authorities
  - ISAR: technology constraints
  - All participants agreed that there is limited coordination and communication on agroforestry (national authorities, research organizations, local level)
  - Extension services were criticized for being little supportive
- Opportunities
  - Favorable political environment
  - Carbon market
- Threats
  - Changing governmental policies
  - Population growth
  - Lack of alternative sources of energy

Box 2: Workshop Agroforestry Adoption and Carbon Sequestration, Rwanda

Vi Agroforestry: The NGO is working within the Vi-LIFE regional project in Kenya, Tanzania and Uganda. The principal donor is SIDA (Sw). The focus of the work is on small-scale farmers (from 1 – ½ ha) that have farming as principal income activity in the districts of Rulindo, Gatsabo and Gishumbi through a hotspot approach in collaboration with local authorities. Core activities of Vi include terracing, climate change mitigation and adaptation (especially energy-saving stoves, renewable energies); micro-financing and enterprise development; local institutional capacity building (e.g. farmer groups); technical and material support for agroforestry; monitoring and evaluation capacity building; nursery development and seed distribution. Through the programme and field staff present in the districts Vi has developed strong relationships in the districts they are operational in as well as structures for monitoring and capacity building. The NGO is interested in the potential of adding carbon sequestration certification and possibly ES bundling (e.g. water management) to its ongoing projects similar to other Vi projects in the region. Main barriers perceived by the NGO are that it will be difficult to find buyers, and that currently voluntary carbon market projects in Rwanda seem to face challenges in the project development and the fact that no clear policy framework is in place. Still, Vi is very interested to be updated on the

proceedings of the Kagera TAMP and emerging potential aspects of cooperation. The staff of Vi Agroforestry in Rwanda has been trained by staff of the Dutch funded **Catalyze Agricultural Intensification for Social and Environmental Stability** (CATALIST) project. This project focuses on intensive agriculture and promotes amongst others agroforestry as soil fertility technology in the Great Lakes Region in Central Africa. This project was complemented by the Sustainable Energy through Wood (SEW) component that is aiming at supporting tree and agroforestry planting in the region and possibly in Rwanda (Breman, 2010).

The **Clinton Hunter Development Initiative (CHDI)**: The CHDI has initiated an agroforestry/tree planting project in 2007/2008 in five districts in Rwanda:

- three in the Eastern province: Bugesera, Kayonza and Gatsibo
- two in the Western Province: Karongi and Risizi.

The project includes 5,000 farmers and ca. 2 million trees have been planted up to date. Land-use systems promoted include boundary planting, fruit orchards and wood load. Participating districts were selected in cooperation with the President's Office and NAFA. Initial information meetings were held in the selected communities and later interested farmers could register with the project. Free seedlings have been distributed and capacity building for tree planting (spacing, seedlings) and carbon sequestration has been provided. The project was developed in line with Plan Vivo project guidelines and the application of the project to become certified for carbon trading has been accepted by REMA. The funding of the project and up-front costs steamed largely form a private donor in Iceland and the Clinton Foundation. The private investor stopped in 2009 due to the financial crisis (Uwimana, 2010). The project is therefore not pursued further. Field staff however, is monitoring the proceedings and provides technical advice for tree planting. A pre-feasibility assessment has been undertaken by the CHDI and a carbon base line study and technical training has been undertaken by the Edinburgh Carbon Credit Management Centre (ECCM). The project is now looking for funding to proceed in the efforts to become a Plan Vivo project. Trees are already planted, yet not all comply with the technical specifications of Plan Vivo (e.g. spacing etc.). Furthermore, the issue of trust would have to be investigated, as participating farmers entered the project with the perspective of becoming certified for carbon certificates. These expectations could so far not be fulfilled which might have an impact on the relationship between participants and the CHDI. The CHDI is also involved in national coffee projects (certification of shade coffee and coffee washing stations) and a soy oil plant project in the Eastern Province, Kayonza.

CARE Rwanda is currently not active in PES, yet the NGO undertook an appraisal of PES potential for catchment management (2008/2009) in East Africa under its Poverty, Environment and Climate Change Network [57]. The area of research in Rwanda was focused on the Yanze catchment an important area for the water supply in Kigali situated located in the districts of Rulindo (Ngoma and Shyorongi Sector), Nyarugenge (Kanyinya Sector) and Gasabo (Jari Sector). The final report could not be written as the water company there accidentally deleted the records of water treatment costs. As such, CARE was not able to undertake a financial proposition for watershed investment - critical to such studies. Promoted SLM technologies and land-use systems envisioned included terracing, bamboo and tree planting, agroforestry, and the creation of buffer zones. Due to technical complications and a lack of funding this project was not pursued and no current plans for PES exist. The national focus of CARE is on microfinance, public health and governance. Two environmental projects are ongoing: soil management and efficient cooking stoves (Southern Province) and land tenure and reform in cooperation with the International Gorilla Conservation Programme in the Virunga landscape in the Northern Province.

INBAR is an intergovernmental network on bamboo and rattan with 36 member states that offers technical support and works through national authorities, NGOs and cooperatives. Rwanda joined the INBAR network in 2006. In 2007 INBAR together with IFAD produced a consumption and production study for bamboo in Rwanda. Studies for best species have been produced together with ICRAF and NAFA. On behalf of the MINIFOR and in cooperation with NAFA, INBAR is currently preparing a

[57] The focal point is in Kenya Mark Ellis-Jones (markellisjones@gmail.com) and Neil Burgess (neil.burgess@wwfus.org). The feasibility study as well as hydrological and socio-economic studies of 2009 can be considered in agreement with CARE.

national policy framework for the promotion of bamboo to income level importance with focus on ecosystem services as watershed management and biodiversity. In November 2010 a first draft was presented in Kigali. Mapping of existing bamboo resources and nurseries has been undertaken. The project is still in the scoping phase and no pilot areas have been selected yet. The first draft focuses on the guidelines provided by the Vision 2020 and contains four components of the role of bamboo: additional biomass production; charcoal production; enhanced agriculture through e.g. manure, terracing (soil fencing); and construction and handicrafts. There is a potential for collaboration between INBAR and TAMP on transboundary level in promoting bamboo for ecosystem service protection. Contacts have been established between the Kagera TAMP team and INBAR and possibilities of overlapping objectives or potential integration with the Globally Important Ingenious Agricultural Heritage Systems (GIAHS) have to be explored. INBAR has published a document exploring the potential of bamboo in connection to carbon sequestration and voluntary market projects[58]. Bamboo has been found to hold potential for the VMC and INBAR has also been approached by Plan Vivo to develop carbon projects based on bamboo planting.

SIDA (SW) Rwanda has a bilateral agreement with the national government and does not support specific projects but supports national authorities. Focus areas are cooperation with the National Land Centre on land tenure legalizations and capacity building as well as natural resource management and climate change. SIDA (SW) initiated an environmental programme in cooperation with REMA and NAFA and is in favor of applying PES in Rwanda. SIDA also intends to encourage REMA to enhance PES application and is interested in being informed on the development of the Kagera TAMP on this mechanism. On the regional level SIDA (SW) supports the Vi-Life project, the WCS and the Lake Victoria project on watershed management together with the World Bank.

GTZ (D) does not have an environmental focus in Rwanda. It supports four operational hydropower projects that are based on agreements with private sector partners. Partners have to draft a management plan and an impact assessment which might also include community based replanting of water catchments. Community members receive an incentive for this planting which could well be developed into a PES scheme.

SNV (NL) is involved in the hydropower project together with the GTZ as well as in national domestic biogas projects in East Africa (Rwanda, Tanzania and Uganda) and is cooperating with HIVOS to certify the emission reduction and develop a regional CDM project[59]. Within the domestic biogas project SNV would be interested to explore possible cooperation with Kagera TAMP e.g. on studies on manure application and exploring renewable energy possibilities in Rwanda.

USAID is involved in the TGB PES project in Uganda and is supporting the efforts of the WCS for PES development in the Nyungwe Park in Rwanda and on the national level. This is in line with the tourism investment project "Destination Nyungwe". USAID in Rwanda is based on bilateral cooperation. The financial support given to WCS is based on this development phase. Once a PES scheme is in place the cooperation and support of USAID is not yet agreed. In the past support was given to SLM projects in cooperation with e.g. the international NGO ACDI VOCA. At the regional level the USAID regional office based in Nairobi, Kenya is also supporting SLM projects.
Another potential donor for PES schemes mentioned by actors in Rwanda is the Canadian International Development Agency (**CIDA**).

4.2. Sectors and projects for PES possibilities

Potential for PES in Rwanda within the Kagera TAMP lies in provisional ES as food, fuels, fresh water and fibre provision, regulating services as purification of air and water, mitigation, biodiversity and soil fertility maintenance as well as enriching ES as social relations and values and aesthetic values (see Duraiappah, 2002). A number of projects exist in Rwanda that initiate capacity and structure development

[58] The article can be found on the Kagera TAMP website. Bamboo projects will have to focus on the voluntary market as so far no methodology to calculate the carbon sequestration potential.
[59] See also the section on carbon projects in Rwanda.

beneficial for ecosystem management or that are within the Kagera TAMP area that hold the potential to be supplemented with the PES mechanism.

One central national project that lays the foundations for ecosystem management is the **Integrated Management for Critical Ecosystems (IMCE)** project under REMA[60]. Under this project a management plan (2008) for critical ecosystems in Rwanda has been produced. Four critical ecosystems that have been identified in Rwanda: Rugezi, Kamiranzovu, Akagera and Rweru-Mugesera. The protection of wetlands is identified as central issue and different categories of wetlands have been developed. Up until today projects for ecosystem management have been developed in 10 districts. Through the IMCE local management committees are created that are centrally involved in the development of community based integrated management plans. IMCE has four components:

> 1: Development of a policy and regulatory framework for sustainable wetland and natural resource management;
> 2: Capacity building and institution strengthening for integrated ecosystem management;
> 3: Development and implementation of community-based integrated ecosystem management plans for critical ecosystems;
> 4: Project management and coordination (REMA, 2010a)."

Key activities for the IMCE in the Kagera ecosystem include:

1. Protection of 20 m around wetland through planting of Pennisetum grass and/or agro forestry trees in the Akagera complex;
2. Training of WAMACO Members on different topic relative to protection and ecotourism;
3. Creation of a Watershed Management Committee (WAMACO) in each sector around a wetland area for sensitizing the population on wetland protection;
4. Baseline studies for management plan outlining key activities (2008) [61] and participatory diagnostics approach;
5. Rapid Wetland inventory (2008) (Nkeramihigo, 2010).

The approach taken in the IMCE is strengthening local institutions and supports capacity building on natural resource and ecosystem management. In 2010 REMA/Rwanda was awarded the Green Globe Award for the restoration of the Rugezi – Bulera-Ruhondo wetland under the IMCE. Central aspects of the project included resettlement of human population, tree planting and removal of livestock.

The **Land Husbandry, Water Harvesting and Hillside Irrigation (LWH)** project of the MINAGRI was initiated in 2010 until 2014 with support from the World Bank as lead donor (34 mil. US$). Other donors include: USAID (10 mil. US$), CIDA Canada (8 mil. US$) and the Japan International Cooperation Agency (JICA) (commitment for expansion to Bugesera and Ngoma). The project selected eight sites for enhancing sustainable land management. These include the districts of Kayonza, Nyanza, Karongi (2 sites), Bugesera (2 sites) and Gatsibo (2 sites). The two Karongi sites have already been imitated. Bugesera is intended to be included in the long term, yet no sites have been selected so far as there is insufficient funding at the moment. In the next phase it will be expanded to Kayonza where sites have already been selected. Planned components of this site include dam construction, soil conservation techniques as terracing, boundary planting and irrigated agriculture[62].

Watershed management is one possible ES that may become central for establishing a PES scheme. Potential consumers of water ecosystem services are RECO/RWASCO large scale factories that are self-supplied industries directly extracting water from

[60] The project is financed through GEF and implemented by the World Bank.
[61] Hard copies are available at REMA.
[62] Studies are available with MINAGRI and on the Kagera TAMP website.

rivers or through the national providers e.g. for tea/coffee, sugar and beverages (e.g. KABUYE SUGAR WORKS or Brasseries et Limonaderies du Rwanda (BRALIRWA)). In total, 15 water treatment plants exist nationwide, supplying 22.999.197 m3 water in 2009[63].

Table 2: Industry types contributing to water withdrawal
Source: MINITERE, 2005

Industry types	Number
Agro-processing	40
Chemical industries	29
Printeries and paper industries	14
Metal works	10
Mining	7
Non metals & fabrication	6
leather and tanning	3
Textile	2
Electricity, gas and water supply	1

Yet also water services for electricity production plays a role. **Hydropower** currently makes up 50 % of the national electricity sources with 27.3 MW produced through hydropower sites in the country and a slightly smaller figure of additional imported hydropower[64]. The maximum potential calculated at the moment is 85 MW. 65% of total hydropower in Rwanda comes from run-of-river installations. In the past years, however, hydropower at the two largest sites in the country, Ntaruka and Mukungwa, have decreased noticeably. Electricity costs in Rwanda are quite high compared to other countries in the region with consumer paying 112 Fr/kwh (US$ 0.19) (132 Fr/kwh (US$ 0.22) incl. VAT). A governmental programme based at the Prime Minister's Office (2010- 2017) fosters the development of hydropower projects that are potentially also connected to CDM projects. MININFRA is the central institution for hydropower projects. Private actors that connect their hydropower station to the national grid are paid 70 Fr/kwh (US$ 0.12) by RECO. GIZ (D) and SNV (NL) cooperate on a project that supports private partners in developing their own hydropower project. Four projects have been initiated and contracts signed in Phase I and under Phase II two further sites are under construction. The GIZ/SNV provide 50% of the construction costs and private partners have to match at least with 15 %. Partners also have to draft a management plan that has to be approved by MININFRA and REMA conducts an environmental impact assessment. If the project is cleared a purchasing agreement is signed with RECO for potential future integration into the national grid. The ES of hydroelectricity holds some potential in Rwanda, yet the districts covered by the Kagera TAMP do not fall into the hotspots of the Sher atlas for potential hydropower projects. One potential site as mentioned above may be at the Rusumo falls in cooperation with NELSAP.

[63] See Appendix 5 for overview table.
[64] See http://mininfra.gov.rw/index.php?option=com_content&task=view&id=202&Itemid=341. Figures provided by RECO for the power supply vary with a total of 98.8 MWH from national hydropower plants and 62.3 MWH imported. Other electricity sources include thermal power, solar power and methane gas, diesel and others. See Appendix 8 for table.

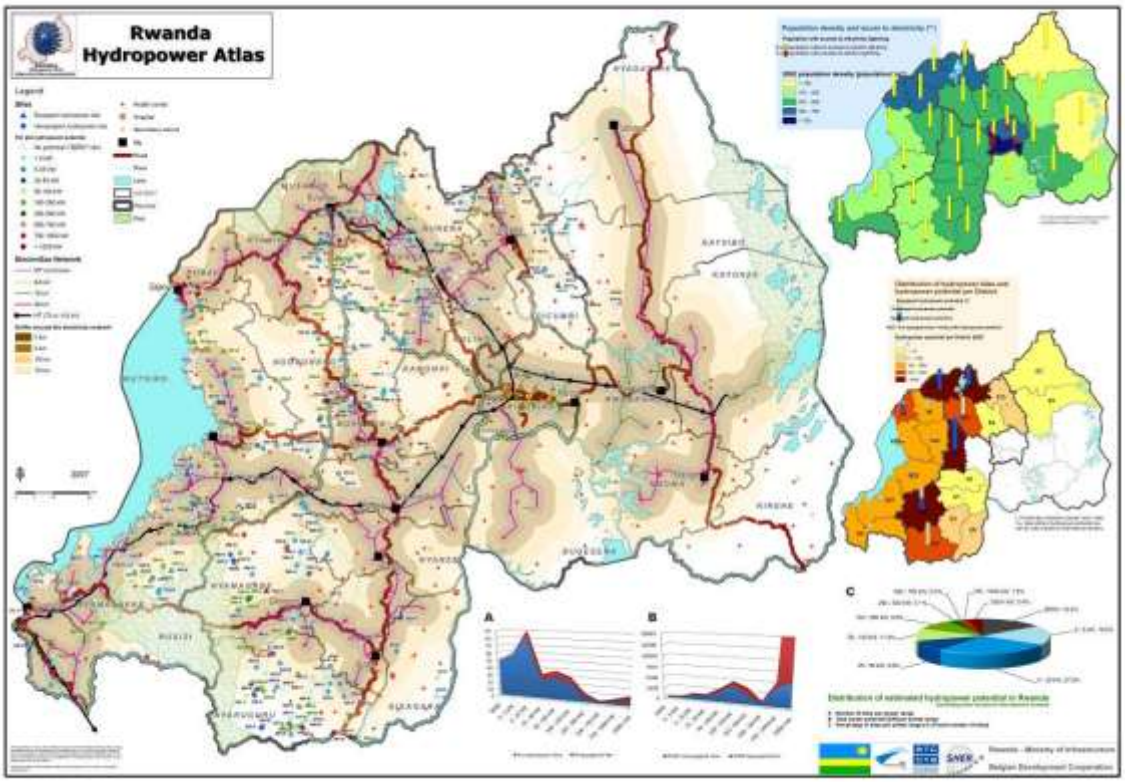


Figure 2: Hydropower atlas Rwanda
Source: SHER (2009) Hydropower study Rwanda on behalf of MININFRA and BDC (B)

Another watershed management project within the Kagera TAMP area in Rwanda is the **Kirehe Community-based Watershed Management Project (KWAMP)** initiated by IFAD in cooperation with MINAGRI (2009-2015). The area in the Kirehe District (Eastern Province) has been identified by the national government as important system for watershed management. It covers 22,500 households and has a total grant of US$ 26.7 supported through the World Food Programme, and the GTZ. Focus of the project is institution building on community level (e.g. community support centers), empowering small-scale and landless farmers to undertake market-led investments, irrigated agriculture (2,000 ha), 20,000 ha intensified cultivated catchment area, and improved road access.

Protected areas are central in providing ES as biodiversity conservation, water purification, and partial stabilization of the climate and aesthetic values (e.g. landscape beauty and tourism). Rwanda has five protected areas out of which three are national parks covering ca. 8 % of the total national area. Apart from the rich biodiversity of these areas, they are of key importance to the national tourism sector. Tourism is one of the most important sectors and in 2008 made up 5.3 % of the national GDP (US$ 197.7 million). Due to resettlement and human interference the last years led to a decrease of these areas. Initiatives to enhance tourism as well as the national revenue fund try to approach this issue. Under the national revenue sharing fund under the RDB assigns 5% of the total gross revenue earned in the three parks into a common pool which is than distributed to the three national parks. The Volcano National Park receives the ration of 40 %, Nyungwe National Park 30 % and the

Figure 4: Location of protected areas in Rwanda
Source: USAID, 2008

Akagera Park 30 %. The fund is earmarked to support community projects around the national parks e.g. in participatory natural resource management projects (e.g. with CARE) or in infrastructure development[65].

The **Akagera National Park** was established in 1934 and falls under the International Union for Conservation of Nature (IUCN) category II [66] of national parks. The national park bordering with Tanzania is a savanna and wetland ecosystem with 200 ha of gallery forests, covers an area of 1,085 km2 and falls within the area of the Kagera TAMP. Resettlement activities led to a reduction of protected park area by about two-thirds which resulted in an immense impact on the ecosystems and biodiversity. Today poaching and human interference form a constant threat to the protected area and its flora and fauna. The high herding density in the surrounding of the park of 65 cattle per km2 (in the Umutara region) also forms an increasing source of conflicts[67]. In the past the GTZ project "Projet de Protection des Ressources Naturelles (GTZ-PRORENA-AKAGERA)" took place in the park ending in 2000. It supported a survey and demarcation of the new boundary of the park as well as supporting the park infrastructure, aerial survey together with IFAD and the development of a tourism plan. A study undertaken by CIRAD suggested the reforestation of the area and the introduction of intensified agriculture and pasture management in the surrounding communities to combat human intrusion into the protected area. Buffer zone management which falls under the mandate of the RDB needs to be improved. The park management is undertaken by the Akagera Management Company (AMC) a Rwandan registered company, with board representation appointed by RDB and the African Parks Network.

The African Parks Network (APN) and the RDB signed a 20 year management agreement in 2010 for the joint management of the park with a budget of approximately US$10 million in the first five years of the project. The APN is a non-profit park management institution currently managing five parks in four African countries. The five year business plan is currently being prepared and the park manager, Mr. Haveman, is very interested in cooperating on overlapping objectives with the Kagera TAMP. Furthermore, payment systems for ecosystem services are one tool that the APN aims to apply in the national parks under its management[68]. In the objectives of the AMC emphasis is also placed on community projects and community support to conservation as well as cooperation with the Tanzanian authorities to ensure the integrity of the area. There are plans from the national government to increase cooperation with the Wildlife Division in Tanzania to combat poaching through joint monitoring and protection, however, no extensive cooperation is envisioned beyond this at the moment. Increased cooperation for the extension of the park on the Tanzanian side is a potential project of interest for the WCS.

Between 2008-2011, UNDP has been active in the sustainable land management project funded by GEF with technical support from ICRAF, ISAR and the University of Rwanda. Demonstration projects with control groups are ongoing in four districts in the Western and Northern Province. Key aspects of the programme include terracing and agroforestry. UNDP also supports REMA on capacity building for climate change mitigation and adaptation. UNDP together with UNEP run the **Poverty and Environment Initiative (PEI)** (ending 2011). This initiative aims at mainstreaming the environment into different policy areas in annual working plan and supports a review of the Environmental Fiscal Reform

[65] The annual revenue fund reports can be assessed with the RDB or on the Kagera TAMP website.
[66] IUCN bases the categorization of protected areas on the management objectives. Category II National Parks are: protected areas primarily managed and protected for ecosystem protection and conservation excluding exploitation or usage that may harm the ecosystems on the area. National Parks in this category offer scientific, educational and spiritual opportunities (IUCN, 2010).
[67] In 1998 the density of cattle in the region was estimated to be two-and-a-half-fold less with 103,000 heads.
[68] See http://www.african-parks.org/apffoundation/index.php?option=com_content&task=view&id=34&Itemid=72.

and environmental public expenditures. Aspects of this project include energy-saving cooking stoves and biogas, reallocation of people from vulnerable ecosystems in the Gishwati area as well as concentration of settlements to free land in the Gitcumbi district.

With the Strategic Plan for Agricultural Transformation (2005) and the Crop Intensification Programme (2008) the market orientation of the agricultural sector is slowly developing. Still the creation of a domestic market for **certification for organic farming** is not well advanced in Rwanda yet. Most farmers apply little to no chemical fertilizers or pesticides however the latter is expected to increase in the future especially to control diseases of coffee, tomato and potato plants. As chemical inputs are expensive national policies for food and income security seek for alternative strategies that encourage organic production systems. Responsible agencies for certification are the Rwanda Bureau of Standards (RBS) as well as the Rwanda Horticulture Development Authority (RHODA) and a further important actor is the NGO Rwanda Organic Agricultural Movement which promotes organic agriculture. RHODA oversees horticulture certification. Currently three companies are engaged in organic production certified by ECOCERT (SW) and IMO[69]. MINAGRI has a project on awareness raising and organizing of farmers to become certified for organic productions. There is no domestic market for organic products and no system for organic certification or promoting policy is in place and EAPOS is not applied. The organic standard policy was under the Ministry of Agriculture until 2010 and has only recently been handed over to the RBS. RBS has developed an organic standard and is drafting a scheme for certification. Standards already applied are the East African Organic Standard and GlobalGAP. Fairtrade certification is so far limited to the tea and coffee sector[70]. In Rwanda two coffee and one tea cooperatives are certified as well as three individual coffee and one individual tea producers[71]. Several organizations are active in the field of agricultural product certification as e.g. SNV, IFAD, ICRAF and the CHDI.

4.2.1. Carbon projects in Rwanda

REMA oversees carbon projects and is the national DNA reporting to the Ministry of Land and Environment (MINELA). MINELA prepared the **second national communication on climate change** in late 2010. This document contains currently possibilities and recommendations for climate change mitigation and adaptation. A number of government projects that are undertaken on the national level as e.g. reforestation activities are not yet considered under climate change mitigation and adaptation. **Clean Development Mechanism** projects are connected to the EDPRS. A capacity building project was initiated in 2009 positioning REMA as the central authority in CDM and carbon market development as well as to support awareness raising in the private sector and their engagement in CDM projects. In 2010 REMA issued a new definition of forest to the UNFCCC secretariat that enables agroforestry to fall within the definition. This enables agroforestry projects to qualify as CDMs. The development of a framework and enhancement of CDM projects is the current priority of REMA in carbon projects. A national strategy and implementation plan for the carbon market is expected in early 2011. At the moment three areas are central to the CDM project development:

- Energy production and efficiency (e.g. cooking stoves, hydropower)
- Forestry
- Waste treatment.

The approach to mitigation and adaptation in Rwanda is still fractured. While REMA is the DNA a **national carbon policy** is currently being developed by NAFA which also is the focal point for REDD projects. The department on climate change mitigation and adaptation overseen by the Ministry of Land and Environment. REMA coordinates collaboration with NAFA, RDB and MINAGRI. RDB is the focal point for contractual agreements especially in case of government projects and protected areas. Policy making and mandates are fractured which is a hurdle e.g. especially for projects targeting the voluntary carbon market. Improved coordination and cooperation seem important for the future. Efforts to improve

[69] Products/companies that are certified so far include: Ikirez (essential oils); Covean (manure); Floris (apples and bananas).
[70] The focal point in Rwanda for Fairtrade is: Pascasie Nyirandege, Liaison Officer Fairtrade Labelling Organizations International e.V. Rwanda-Burundi-DRC; p.nyirandege@fairtrade.net.
[71] Cooperative Assopthe ashonga – COCAGI; KOAKAKA; Coopac.

coordination etc. are under way.The **Climate and Development Knowledge Network (CDKN)** has been commissioned by the Minister's Office to conduct the Rwandan Climate Change and Low Carbon Development Project. This is a 9 month project (end June, 2011) aiming at undertaking an inventory of the status quo on mitigation and adaptation projects in Rwanda and how they may best be mainstreamed and integrated into one coherent policy framework and to develop a national strategy. PES are considered as one mechanism and key stakeholders will be approached on their perspective and knowledge on PES. A meeting took place in December 2010 with two CDKN researchers and Mr. Anania and the national project manager Mr. Mashinga. The Kagera TAMP will be mentioned in the inventory as one transboundary project with potential benefit for climate change and low carbon development and potentially be invited to join the national strategy development stakeholder board. The project is managed by the Smith School of Economics and the Environment at Oxford and received financial support from **DFID (UK)**. DFID Rwanda is mainly supporting projects through the government and has also been supporting a study on the Economic Impacts of Climate Change in Rwanda in 2009 under REMA[72].

Several carbon and CDM projects are in different stages of development73. Most are private projects with two governmental projects under MININFRA on hydropower and energy efficiency. One registered project with UNFCCC/CDM is initiated by the MININFRA and RECO/RWASCO. It is a nationwide energy efficiency **electro-gas project** supported by the World Bank initiated in 2006, certified in late 2009 (until 2018). The second project is a planned **hydropower project at Lake Kyvo and Nyabarongo**. A further candidate for carbon certification under development is the **national domestic biogas programme**. The national domestic biogas project is undertaken by MININFRA with support from SNV (NL) and aims to establish 5,000 biogas stations throughout the country. Stations already exist in 30 districts with a higher concentration in the North. This programme has not yet agreed to sell the emission reduction to HIVOS. The organization has an option to the emission reductions of the first 2000 digesters built but contract has not been signed yet and is still being reviewed by the national government. The programme did a baseline study and developed a "PDD" to the requirements of the HIVOS Climate Fund that operates with its own validation and verification system in the voluntary market. The idea is to include the programme eventually in a multi-country CDM Programme of Activities for domestic biogas of the East African Community. Farmers participating in the programme receive a subsidy to the construction costs and in turn sign away their rights to the emission reductions to the programme. So the programme is the owner of the emission reductions.

REDD+ potentials in Rwanda have not been approached intensively and the potential is considered to be limited. Yet there are two potential projects: one by NAFA focusing on forest and tree cover in state and district forests, and one in connection to the Congo Basin Forest Fund (CBFF) by the Woods Hole Research Centre (WHRC) for the four Congo Basin countries with the emphasis on capacity building on forest policy and management.
Further carbon/CDM projects that are in the validation/development phase:

- Mana Limited (US company): purification of water through UV;
- Neuro Light: distributing lights in rural areas run by pedal machines;
- Ecosystem Restoration Associates[74] (ERA; contact person Mrs. Zukowska: kornelia.zukowska@gmail.com) Gishwati Forest Reforestation (Voluntary Carbon Standard on ex-ante carbon credits);
- Agroforestry project of the Clinton Foundation Forestry project in the Eastern Province (aim: Plan Vivo certification)[75] ;

[72] This study is available under http://www.rema.gov.rw/ccr/climate_change_report.html.
[73] A list of the projects and the process for project application can be found on http://www.rema.gov.rw/dna/ .
[74] http://www.eraecosystems.com/projects/africa/rwanda/. See also inventory on future PES above. This project has been initiated in 2008 with contacts to the Mining and Forestry (MINIFOR) and Mines and NAFA. The Carbon Rights Transfer Agreement has not been signed yet by MINIFOR. A pilot side is envisioned in the Nyabihu District of about 100 to 150 ha. Most of the land in question for the project is government owned. Money from the carbon credits would go to community support.
[75] This project started tree planting already in 2007, yet has not been applying to become certified as there is a lack of funding for the project. For more details see note on Clinton Foundation under important actors.

        - Extension of Volcano National Park and connection to the voluntary carbon market applying both ISO 14064-2 and the CCB (contact Mr. Mehlman: ptmehlman@yahoo.com)
    - Nyungwe National Park forestry management
    - Eco-Fuel Global LLC (Walnut Creek, California, USA) and Eco Positive (UK) Jatrova project aiming at biodiesel as well as reforestation certification in Eastern Province near Akagera National Park; agreement signed October 28, 2009 between RDB and Eco-Fuel as part of a larger Sub-Sahara Africa bio-fuel strategy; 10,000 ha or marginal land provided by government;
    - New Forest Company (buffer zone reforestation in Gishwati)
    - The Charcoal Project[76] (biomass), nationwide.

[76] See http://www.charcoalproject.org/2010/10/rwandan-widows-and-orphans-launch-breakthrough-waste-to-energy-program/ .

5. Outlook –Kagera TAMP and PES

Based on the baseline survey, the Jinja conference as well as conversations with organizations and authorities working in the Kagera region, the role that Kagera TAMP could play in connection to PES cover different aspects.

1. Kagera TAMP could seek cooperation with the PES projects that are immediately within the TAMP area and support the scaling-up of the projects. The central actors here are Plan Vivo, Vi Agroforestry and ECOTRUST.
2. Kagera TAMP could yet also focus on capacity building for PES on the national and regional level through: encouraging/supporting national authorities in expertise development; support national/ international NGOs active in the countries in their efforts to enhance PES; and by supporting baseline studies and institutional analysis of the institutional environment concerning PES.

The four countries have different experience levels with PES. While Uganda and Tanzania already feature a number of schemes PES in Rwanda are only slowly moving ahead. In Burundi, no activities in this direction have been initiated so far. This supportive role could be one opportunity for the Kagera TAMP to be involved in promoting and establishing understanding and valuation of PES mechanisms. Kagera TAMP has become a member of the national PES working group in Rwanda.

3. A third aspect may be the direct support of new PES projects. A number of actors present in Jinja hold experience with baseline assessments, PES preparation and development, ranging from legal to technical expertise. Amongst the actors that have voiced their interest in a possible cooperation with TAMP on PES are: Plan Vivo, ECOTRUST, WCS, ACODE, ICRAF, PRESA, WWF and VIRED. PRESA and Plan Vivo are continuously scoping for new areas/projects for PES and ECOTRUST is involved in PES project development in the Southern Province in Rwanda and also provides advice to other PES projects in East Africa.

A number of community based natural resource management projects, hydropower projects, reforestation/agroforestry projects are taking place in the four countries and in-depth studies would have to assess if PES could be a feasible and valuable aspect to add value to these projects. Structures and institutions as e.g. farmer field schools created through other aspects of the Kagera TAMP would be supportive structures.

4. It has become clear that there is an interest and increase of PES projects in the region, yet there is a great need for communication and exchange of knowledge on PES in order to raise awareness on the possibilities this mechanism contains for SLM incentives.
5. Furthermore, options exist for scaling up and institutionalization of PES within the national legal and political framework. Here the Kagera TAMP project can contribute with its transboundary approach and expertise. Most political actors seemed to have little to no knowledge on the concept and therefore often place no priority on the development of a PES framework etc.. Awareness of the value of ecosystem services needs to be enhanced. Many actors though of PES in terms of carbon projects or traditional donor-based conservation/livelihood projects only. Also few organizations and NGOs working in the region have really been considering the concept in its full potential up until today.
6. Interest in PES is high, especially to learn about case studies that show the efficiency on the ground. The creation of mutual understanding of the concept and its potential value as well as awareness raising and capacity building is crucial in designing and enhancing payments for ecosystem services within the Kagera TAMP. The aim of this phase therefore should be to increase awareness at the national and local level of importance of ES and create the capacity and basis for valuation of ES provision.
7. A first workshop for the project team and interested potential partners could be organized as they play a key role in implementing and fostering PES in the region[77]. Practitioners and project managers of ongoing PES should be invited to share their experiences and to discuss possibilities for applying PES within the Kagera TAMP. In a second workshop concrete PES project sites could be discussed

[77] Key PES documents and articles have been upload to the official website of the Kagera TAMP.

together with potential stakeholders etc. to identify potential ES, further stakeholders and land-use changes. In order to enhance PES in the region and to make it a governmentally owned process governmental authorities involved in natural resource management and PES specifically should be part of the workshops. The first workshop should cover issues such as:

- Information on what ecosystem services are and their importance and how their value can be expressed/calculated;
    - Typology with examples if ES fail: provisioning, regulating and cultural services
- The importance of environment management for sustainable development/poverty alleviation;
- The logic of market based mechanisms for natural resource management and PES specifically;
- Typology of PES;
- Strength, weaknesses, opportunities and threats (SWOT) of PES in the region (e.g. through somebody from the Katoomba Group or PRESA);
- Case studies in the region presented by the project managers (focus on projects in the TAMP area or projects facilitated by key organizations in the region that might support the Kagera TAMP as e.g. the Vi Agroforestry PES project in Tanzania, TGB from ECOTRUST or the EPWS in Tanzania from WWF/CARE; ReDirect).

Expected outcomes of the first workshop:

- Shared understanding of the role and potential of PES, especially within the Kagera TAMP and national authorities;
- Shared knowledge and technical approaches for the analysis of PES in the region (SWOT, etc.) and the design of PES
- Established close collaboration and partnership with important actors for PES project development;
- Enhanced cooperation between organizations, NGOs and research facilities creating a community of practice.

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Appendix 1: Activity list and contact details

Table I: Overview of expert consultation in connection to PES potential (Oct-Dec 2010)

Date/location	Objective	Involved actors	Discussion and main output	Documents acquired
15/10/2010 Kigali	PES in Rwanda	Mr. M. Masozera – Wildlife Conservation Society (WCS) Rwanda	PES project is being developed in Nyungwe National Park Rwanda on carbon and watershed; initiator of national committee on PES	Biomass feasibility study REMA study on potential of PES
16/10/2010 Kigali	PES in Rwanda	Mr.Mashinga – national coordinator of Kagera TAMP	Importance of first awareness raising and creating common understanding of PES and the value of ES	
18/10/2010 Kigali	Environmental Fiscal Reform, Rwanda	Mr. A. Mulisa (REMA)	Questions on land use and tenure rights, environmental fiscal reform, FONERWA and legislation connected to economic incentives for environmental resource management	Environmental Fiscal Reform
18/10/2010 Kigali	Bamboo and agro-forestry Rwanda	Mr. N. Johnson (Bamboo Society & head of REGNOF)	Questions on bamboo in Rwanda, carbon sequestration, agro-forestry and land rights	
18/20/2010 Kigali	NELSAP	Ms F. Kayigamba (Environmental officer NELSAP)	NELSAP and PES, hydropower services and possible points of collaboration	
20-22/10/2010 Jinja, Uganda	International Conference PES, Jinja, Uganda	Conversations with PRESA, WCS, UNDP, Plan Vivo, ECOTRUST, VIRED, UNEP, WWF&CARE, University representatives	Partners and important contacts for PES in Kagera TAMP	
25/10/2010 Kigali	PES and agroforestry/bamboo/coffee in Rwanda	Dr. A. Mukuralinda (ICRAF national manager Rwanda)	Currently in negotiations with REMA for PES enhancement; SLM projects for agroforestry	
27/10/2010 Kigali	NELSAP – Kagera project and possibilities for PES	Mr. I. Kabenga (regional project manager - NELSAP/Kagera Transboundary Integrated Water Resource Management and Development Project)	Potential for PES seen in projects developed within NELSAP/Kagera, especially in hydropower and water storage management; Mr. Kabenga is also a member of the Rwandan committee on PES development Want to be updated on TAMP development	
27/10/2010 Kigali	CDM and carbon projects – REMA	Mr J. Ntanzinda (project coordinator - REMA)	Currently carbon legislation and strategy developed; a number of registered UNFCCC/CDM projects and some in the making; REMA central national authority for CDM	Overview CDM / carbon projects
27/10/2010 Kigali	Protected Area Biodiversity Conservation Project (PAB) – REMA	Mr. R. Mpayana (Project coordinator PAB, REMA)	PAB financed study of WCS on potential of PES contribution on Nyungwe National Park; PES considered as important concept on the national level for conservation and restoration; biodiversity policy and legislation currently developed (expected end of 2010)	
27/10/2010 Kigali	Climate change mitigation (REMA)	Mr. A. Mutawesi (consultant REMA on second national communication on climate change under UNFCCC)	Currently the second national communication for UNFCCC is prepared with options for climate change mitigation (to be published end 2010); so far focus on CDM and reforestation potential	Second communication on Climate change adaptation and mitigation
27/10/2010 Kigali	Integrated Management for Critical Ecosystems (IMCE – REMA)	Mr. J. Claude Nkeramihigo (Environmental Officer)	IMCE has identified Akagera as 1 of the 4 key areas; projects for ecosystem management in 10 districts	IMCE report

29/10/2010 Kigali		Sustainable Land management and Carbon projects of UNDP	Dr. J. Musemakweri (UNDP Head of Environment & Energy Unite)	UNDP is contracting consultant to work with REMA on CDM capacity building; has a number of SLM demonstration sites on e.g. agroforestry (with ICRAF) and terracing; poverty and environment initiative with UNEP to mainstream environment in other policy areas	
02/11/2010 Western Province, Rwanda		Fieldtrip Karongi	Mr. G. Branca and Ms. M. Tinlot	MINAGRI and land consolidation act; vision 2020, land law, terracing projects in Rwanda → LWH project overlaps in 2 districts with TAMP; WB budget could be useful for PES development.	
04/11/2010 Kigali		Carbon and CDM projects Rwanda	Ms. Courtney Blogett, currently focal point for Rwanda Development Board (RDB), before REMA DNA	Several carbon and CDM projects already in development, most private projects, 2 governmental projects on hydropower and domestic biogas (also in Eastern Province); Eco-Fuel project on boarder of Akagera National Park (HIVOS; NL).	
04/11/2010 Kigali		Akagera National Park and revenue sharing	Mr. K. Humphrey (RDB, Head of Tourism and Conservation Department)	Will send Akagera Management Plan; revenue sharing 5 % partly invested in communities; several participatory natural resource management projects (e.g. with CARE).	Park management plan 2008; revenue sharing programme report 2009
05/11/2010 Northern Province, Rwanda		Fieldtrip Northern Province farmers corporative	Mr. G. Branca and Ms. M. Tinlot		
08/11/2010 Kigali		CDM project RECO/RWASCO	Mr. V. Mugiraneza (DG RECO)	Will send annual report and statistics on water-users, treatment costs; hydropower projects with MININFRA	Figures on electricity use and water infrastructure
10/11/2010 Kigali		PES involvement USAID and introducing Kagera TAMP	Ms.Mpambara (rural development specialist) and J Foltz (Economic growth officer)	USAID in Rwanda is focusing on bilateral agreements; USAID is providing financial support to WCS in PES framework development, focus: Nyungwe	
12/11/2010 Kigali		Rwanda bamboo policy framework	INBAR Policy Workshop C. Hoogendoorn (Director General INBAR)	Potential collaboration between INBAR and TAMP on transboundary level in promoting bamboo for ecosystem service protection	Publication on carbon sequestration potential of bamboo
15/11/2010 Kigali		PES Rwanda, role of WCS	Mr. M. Masozera (Director WCS) and Charles Karangwa (Sustainable Finance Manager)	National working group; report of WCS on PES feasibility; possible collaboration on institutional analysis and workshop 2011	Protocol of national PES working group
18/11/2010		Skype conversation: Trees for Global Benefits project Uganda	Mrs. P.Nantongo (Director ECOTRUST)	Background information on TGB project and PES development of ECOTRUST	Annual report 2009
19/11/2010 Kigali		Workshop agroforestry and carbon potential Rwanda	ICRAF/WCS	Research agenda on agroforestry	
22/11/2010 Kigali		Domestic Biogas project	Mr.G. Hendriksen (consultant Ministry for Infrastructure, (MINFRA) Rwanda)	Domestic biogas project already connected to voluntary market (HIVOS as potential buyer)	Overview of national hydropower projects
23/11/2010 Kigali		IFAD projects in Rwanda	Ms S. Ntukanyagwe	KWAMP project in Kirehe	KWAMP report
24/11/2010 Kigali		International Gorilla Conservation Programme	Ms.M. Grey (Information Management Officer)	IGCP is planning PES/exploring potential of PES in the Northern Province and in southern Uganda	
24/11/2010 Kigali		Vi Agroforestry Project Kagera – Tanzania	Mrs.V. Nakajumo (Field officer SSC-Vi)	Vi project covers 7 zones in Kagera district, yet only 3 zones involved into Plan Vivo Want to be updated on TAMP development	

25/11/2010 Kabale, Uganda	Field trip & conversation with TIST project team	Mr.A. Baanyanga (Project Manager TIST Uganda)	TIST has a number of farmer groups in the TAMP area in Uganda and is also planning to start a TIST project in Rwanda	
25/11/2010 Kabale, Uganda	Bwindi Mgahinga Conservation Trust	Ms. C. J. Bwiza (programme manager)	The project of the Bwindi Mgahinga Conservation Trust does not qualify as a PES in the pure definition	
29/11/2010 Kigali	Clinton Foundation carbon project	Mr. I. Uwimana (project manager Clinton-Hunter Foundation)	Forestation project in Eastern (three districts) and Western Province already well advanced yet put on hold as lack of donors (farmers already planted trees, capacity building, application with REMA accepted) only need to be certified (already in contact and in line with Plan Vivo) Want to be updated on TAMP development	
29/11/2010 Kigali	Vi Agroforestry Life project (Rwanda)	Mr. J. Suazo (Project Manager SCC-Vi Eastern Africa RESAPP / Vi-LIFE Programme)	SSC-Vi Agroforestry in Rwanda partnering with LIFE; have well developed structures for monitoring, capacity building etc. in place; looking into carbon project potential yet currently some reservations on feasibility based on policy support for voluntary market; need to identify buyers; looking into bundling possibilities Want to be updated on TAMP development	
30/11/2010 Kigali	SNV domestic biogas project, Rwanda	Mr. D. Owekisa (Renewable Energy Advisor)	SNV also supports biogas projects in Tanzania and Uganda; are interested in possible cooperation on e.g. study on manure application and exploring renewable energy possibilities in Rwanda Want to be updated on TAMP development	Annual report SNV; Validation report of baseline and methodology for domestic biogas project (carbon certification)
30/11/2010 Kigali	UNECA activities	Mrs. D. Bregante (Economic Affairs Officer)	Under project on food security possibilities for cooperation with TAMP (already discussed before) → keep updated! Want to be updated on TAMP development	
02/12/2010 Kigali	RDB	Mr. T. Ngoga (Senior community conservation officer)	Management of Akagera National Park and revenue sharing programme; buffer zone of Akagera managed by RDB; Akagera Management Company responsible for reviewed management plan in 2011	Revenue sharing projects RDB overview
02/12/2010 Kigali	CARE	Mr. G. Daconto (Regional programme coordinator)	CARE Rwanda currently has no PES yet undertook an appraisal on PES in East Africa/ Rwanda on Yanze Watershed management in 2009 (contact Mr. Mark Johns, Kenya) Want to be updated on TAMP development	
03/12/2010	Skype call: Vi Agroforestry PES project Kenya	Mr. B Lager (Regional programme coordinator)	PES carbon project in place with 10,000 registered farmers; payments expected to start 2011/2012	
06/12/2010 Kigali	WCS: PES scheme in Nyungwe & Akagera Park	Mr. M Masozera (Director WCS)	In 2011 ECOTRUST will do an assessment on design of PES; 17-18th December 2010 national workshop on PES in Musanze; WCS interested in partners for transboundary management of Akagera Park and Tanzanian counterpart	
06/12/2010 Kigali	GTZ hydropower project	Mr. J. Nturanyenabo (GTZ Project Engineer)	GTZ supports 4 operational hydropower projects and has other 2 in phase II under development; the projects are based on agreements with private sector partners who have to make a management plan and an impact assessment which might also include community based replanting of water catchments (community members are paid for this → could be developed into a form of PES)	Shell Atlas on potential hydropower sites in Rwanda
07/12/2010 Butare	ReDirect PES project Nyungwe project	Mrs. N. Gross-Camp (Senior Research Associate, University of East Anglia,	ReDirect is an EU financed research project on the potential of PES to combine conservation and development outcomes for 3	Publication on PES scheme in Nyungwe; model contract for farmers

		International Development DEA)	years in 3 districts; ReDirect works with a number of interns form the National University (contacts obtained)	
08/12/2010	Phone interview: EPWS Tanzania	Mr. D. Lopa (Programme Manager EPWS Programme)	More background information on the EPWS project in the Uluguru Mountains	Project paper
08/12/2010 Kigali	Organic products – Rwanda Bureau of Standards	Mr P. Ntiyamira (Deputy Director General**)**	Organic standard policy until 2010 with Ministry of Agriculture; frameworks for organic certification exist – EAC organic standards and GlobalGAP (product specific)	
09/12/2010 Kigali	SIDA (Sw) Rwanda	Mr. J. Ntalindwa (Programme Officer Environmental and Natural Resources)	SIDA has an environmental programme and will support REMA and encourage them to enhance PES; → every development of PES needs to be done with REMA! → TAMP should also establish contact and inform National Land Centre Want to be updated on TAMP development	Environment and Climate Change Analysis for Rwanda, Report 2008
09/12/2010 Kigali	Climate and Development Knowledge Network (CDKN) - **Rwandan Climate Change** and Low Carbon Development Project	Ms. Jill Dyszynski (Research Assistant, Adaptation) &Mr. Mathew Warnest (Research Assistant Land use, water and agriculture)	As part of the 9 month (until June, 2011) project on climate change adaptation and mitigation strategy give an insight on existing initiatives and possibilities of PES; Interested in further cooperation; will include TAMP into inventory; Consider inviting TAMP team into the national stakeholder board for strategy development.	Baseline on carbon stocks Inventory of success stories for climate change adaptation/mitigation projects on the ground (June 2011) and the potential of PES for climate change adaptation Stockholm Environment Institute study with REMA: Economics of Climate Change
10/12/2010	NAFA	Mr. B. Dismas (Director of Forestry Field Programme Unit)	Carbon policy of NAFA is expected to be finalized in January 2011; NAFA promotes agroforestry and bamboo; is favourable and interested in PES	Annual report Forestry Law
15/12/2010	MINAGRI	Mr. I. Musabj (LWH Project Manager)	LWH will be expanded to Kayonza in near future; sites are selected; Bugesera still no site selected; LWH funds from WB; USAID, CIDA Canada; GAPSP; JICA	Study Kayonza; study Karongi

Table II: Organizations communicated to via Email

Organization	Contact Person	Objective
PRESA	Sara Namirembe – (PRESA project manager) sara.namirembe@gmail.com	PRESA plans for future PES development and possible cooperation with TAMP
CIRAD-ICRAF	Pinard, Fabrice – (CAFNET project manager) F.PINARD@CGIAR.ORG Vihemaki, Heini (ICRAF) – (Associate Expert Site Leader, Landscape Mosaics Project) H.Vihemaki@cgiar.org Dr. Kenneth Masuki (Research Officer - Smallholder System Innovations Programme, Uganda) - k.masuki@cgiar.org	Agroforestry Café project in East Africa Usambara Mountains project Interested in possible cooperation also on PES
Katoomba Group	Sissel Waage – (Director international Katoomba Group) (sisselwaage@hotmail.com	Work of Katoomba in East Africa
Vi Agroforestry	Henrik Brundin - (Director Vi) Henrik.Brundin@viskogen.se Bo Lager – (project manager Kenya) bo.lager@viafp.org	Work of Vi on PES and carbon projects
Uganda Carbon Bureau	Bill Farmer – (Director) billfarmer@ugandacarbon.org	Carbon Projects Uganda; carbon finance company and partner of PRESA.
Plan Vivo	Alexa Morrison – (Governance and policy manager) alexa@planvivofoundation.org Elaine Muir (Programmes Manager) - elaine@planvivofoundation.org	Contacts Plan Vivo Partners East Africa and bamboo project plans; Trees for global benefit (Uganda) &Emiti Nibwo Bulora (Tanzania); Standard for carbon projects
ERA - Ecosystem Restoration Associates	Kornelia Zukowska – (Project Manager Africa) kornelia.zukowska@eraecosystems.com	REDD project in Burundi, Kibira National Park and carbon project Rwanda, former Gishwati forest reserve
Akagera Management Company	Sarah Hall- (Tourism Development and Marketing Manager) Bryan Havemann – (Park Manager) bryan.havemann@gmail.com	Akagera management plan; Community based projects in the surrounding of the park; cooperation with Tanzania
African Wildlife Fund	Maryke Gray – (Information Management Officer)marykegray@gmail.com	Plans for PES in Rwanda/Uganda
Clean Air Action	Charlie Williams – (Project Manager) CharlieWilliams@CleanAirAction.com	TIST project Uganda
Small Group and Tree Planting (TIST)	Joseph Rexon – (Director) josephrexon@tist.org	
Makerere University	Dr. Johnny Mugisha - (Head of Dept., Agricultural Economics & Agribusiness) jomugisha@agric.mak.ac.ug	Possible research cooperation (selecting new intern)
National University Rwanda	Dr. Rukazambuga - (Dean Faculty of Agriculture) dnrukazambuga@gmail.com	Scope interest and activities on PES research
World Bank	Steve Danyo - (Natural Resources Management Specialist World Bank Africa Region) sdanyo@worldbank.org	TerrAfrica and PES projects World Bank
Ecotrust	Kairu Gerald – (project manager Trees for Global Benefits Uganda) ecp_gerald@hotmail.com Pauline Nantongo – (Director) pnantongo@yahoo.com	Trees for Global Benefits Project
CARE Tanzania	LopaDosteus - (Programme Manager EPWS Programme, CARE International in Tanzania) doslopa@gmail.com	EPWS Programme Tanzania
WWF Kenya	Ms. N. Njenga – (Project Assistant) NNjenga@malewa.wwfearpo.org	Naivasha Landscape PES with CARE
Green Resources	Sebastian Mng'ong'o - (Morogoro Branch Manager) **sebbyraphael@yahoo.com**	Uchindile-Mapanda reforestation project Tanzania
GTZ	Merchan Andres Mario - (project manager) mario.merchan@gtz.de	GTZ hydropower project Rwanda; GTZ funds domestic biogas project with SNV; GTZ not engaged currently in ecosystem service projects per se; structural changes as DED and GTZ will be joined
World Bank	Mrs. L. Ronchi (Senior Economist	LHW project Rwanda

	African Agriculture and Rural Development (AFTAR)) lronchi@worldbank.org Paola Agostini(Environmental Economist) -pagostini@worldbank.org Steven Danyo (Natural Resources Management Specialist World Bank Africa Region) - sdanyo@worldbank.org	TerrAfrica documents and update
INBAR	Mrs.Hoogendoorn – (DG) choogendoorn@inbar.int	Carbon study INBAR, contact person sustainability project
Vi-Agroforestry	Mr. D. Masologo – (project manager, Kagera Project Tanzania) damas.masologo@viafp.org Bosse Lager – (Programme Director, SCC-Vi Agroforestry Kenya) bosse.lager@telia.com	Vi PES projects
Section "Rural Economy, Food Security, Decentralisation and Environment". EUROPEAN UNION Delegation in Rwanda	Diego ZURDO (head of section) Diego.ZURDO@ec.europa.eu	Recently has been agreed with the Rwanda Government and development partners that the development partners would be focused on determinate areas of expertise. Environment is not one of the areas on which the EU is active in Rwanda. The active development partners in environmental issues are Sweden, FAO and UNDP.
DFID (UK)	Lindsey Wallace (Team Leader, Economic Growth DFID Rwanda/Burundi) - l-wallace@dfid.gov.uk (+25 07883 05587)	DFID is partnering with the Rwandese government in the Climate and Development Knowledge Network (CDKN); Most of their support to Rwanda is through the government so DFID does not as such have any specific projects looking at ecosystem services.
HIVOS (NL)	Harrie Oppenoorth (Senior Advisor Energy and Climate Change) hoppenoorth@hivos.nl	HIVOS certification of national domestic biogas project Rwanda is in progress. Hivos has an option to the emission reductions of the first 2000 digesters built, yet no contract is signed as to now.
National Land Centre Rwanda	Didier Giscard (Deputy Director General) Didier.giscard@yahoo.fr (+25 0788301811)	Information on tenure right distribution in Rwanda.

Table III: Further contact details of actors mentioned

UNDP	John Musemakweri (UNDP Rwanda) - john.musemakweri@undp.org Assan Ng'ombe (Programme Specialist – Environment UNDP Regional Service Centre for Eastern & Southern Africa) - Assan.ngombe@undp.org Moses Masiga (consultant for inventory ENR Africa Associates Ltd.) - apollomoses@enrafricacenter.org	PES inventory and active in PES
WWF	Neil Burgess (Africa Conservation Specialist Consultant) - neil.burgess@wwfus.org Nancy Njenga – (Project Assistant) NNjenga@malewa.wwfearpo.org	PES Tanzania & Uganda; Uluguru Mountain Naivasha Landscape PES
CARE	Dosteus Lopa (Tanzania Project Manager EPWS) – Thabit Masoud (Director WWF Tanzania) - thabit.masoud@co.care.org Giuseppe Daconto (Rwanda) – giusepped.rw@co.care.org Mark Ellis-Jones (consultant for scoping study) - markellisjones@gmail.com	PES Uluguru Mountains Scoping study on PES in East Africa
Katoomba Group	Sissel Waage (Director international Katoomba Group) - sisselwaage@hotmail.com Frank Hicks (incubator PES) - fhicks@foresttrend.org	Inventories and research on PES in the region
PRESA	Sara Namirembe (Project Coordinator)- snamirembe@forest-trends.org	Inventories; PES projects and research
International Centre for Research in Agroforestry (ICRAF) CGIAR	Delia C. Catacutan (Resource Management Research Officer) - d.c.catacutan@cgiar.org Dr. Aichi Kitalyi (ICRAF-Tanzania Country Coordinator) – a.kitalyi@cgiar.org Dr. Kenneth Masuki (Research Officer - Smallholder System Innovations Programme, Uganda) - k.masuki@cgiar.org	PRESA/RUPES

		Dr. Athanase Mukuralinda (ICRAF Rwanda Country Coordinator) – mukuratha@yahoo.com Dr. Fabrice Pinard (CAFNET) - f.pinard@cgiar.org	Albertine Rift Uganda; Uluguru Mountains Tanzania
SSC-Vi Agroforestry		Henrik Brundin (Director Sweden) - Henrik.Brundin@viskogen.se Damas Masologo (Porject Manager Tanzania) - damas.masologo@viafp.org Jorge Suazo Toro (Programme Director Rwanda) - jorge.suazo@viafp.org Bosse Lager (Programme Director SCC-Vi Agroforestry, Kenya) - bo.lager@viafp.org	Carbon projects in Tanzania and Kenya
ECOTRUST		Pauline Nantongo Kalunda (Executive Director) - pnantongo@yahoo.com Polycarb Mwima (Programme Officer – monitoring and evaluation) – pmwima@ecotrust.or.ug Gerald Kairu (Project Manager Trees for Global benefit contact) - ecp_gerald@hotmail.com	PES project in Uganda: Trees for Global Benefit; technical consultant to e.g. WCS in Rwanda and other PES in e.g. Tanzania
Wildlife Conservation Society	Rwanda	Michel Masozera (Director - PES)- mmasozera@wcs.org Charles Karangwa (Sustainable Finance Manager) - ckarangwa@wcs.org	Developing PES site in Nyungwe area in Rwanda; initiated national working group on PES
International Gorilla Conservation Programme		Maryke Gray (Information Management Officer) - marykegray@gmail.com	Potentially plan PES project in North of Rwanda
African Wildlife Fund		Kathleen Fitzgerald (Director of Land Conservation) - kfitzgerald@awfke.org	Have PES-like conservation projects; plan future carbon projects
SIDA (Sw)	Rwanda	Janvier Ntalindwa (Programme Officer Environmental and Natural Resources) – janvier.ntalindwa@sida.se	SIDA supports REMA and is interested in promotion of PES
GTZ (D)	Rwanda	Justin Nturanyenabo (GTZ hydropower project – Project Engineer) – justin.nturanyenabo@gtz.de	Hydropower project with community based watershed protection aspect
SNV (NL)	Rwanda	Dominique Owekisa (Renewable Energy project) - dowekisa@snvworld.org Veneranda Nzayiturinka (Farmer corporative project) - VENERANDANZAYITURINK@snvworld.org	Domestic Biogas Project with carbon certification
DFID	Rwanda	Lindsay Wallace (Team Leader, Economic Growth)- L-Wallace@dfid.gov.uk	Supports Climate and Development Knowledge Network (CDKN); active on land tenure sector
USAID	Rwanda	Aimée Mpambara (Rural Development Specialist) - ampambara@usaid.gov Joseph Foltz (Economic Growth Officer) - jofoltz@usaid.gov	Support WCS in the PES development in Nyungwe
Ugandan Carbon Bureau		Billy Farmer (Director) - billfarmer@ugandacarbon.org	Expertise on carbon projects and REDD+ in Uganda (and other countries of East Africa)
ERA - Ecosystem Restoration Associates		Kornelia Zukowska (Project Manager – Africa) - kornelia.zukowska@eraecosystems.com	Planned carbon project in Rwanda (reforestation of Gishwati forest reserve) and DCR and REDD project planned in Burundi (Kibira National Park)
ReDirect International	University of East Anglia - International Development UES	Nicole Gross-Camp (Senior Research Associate, International Development UES) - n.gross-camp@uea.ac.uk	PES research project in Rwanda
Fairtrade Labelling Organisation (FLO)	Rwanda	Pascasie Nyirandege (Focal point) - p.nyirandege@fairtrade.net	
Akagera Management Company (AMC)		Bryan Havemann (Park Manager)- bryan.havemann@gmail.com Sarah Hall (Tourism Development and Marketing Manager) - shall5532@hotmail.com	Manages Akagera Park; belongs to African Park Network which is also promoting PES
Bamboo Society Rwanda		Nkusi Johnson (Coordinator) - rwandabamboos@yahoo.com	
Rwandese Association of Ecologists (ARECO)		Dancilla Mukakamari (National Coordinator) - mukakamari@yahoo.fr	bamboo project in Northern Province; supports community based resource management in Kirehe
Climate and Development	Oxford University - Smith	Jill Dyszynski (Research Assistant, Adaptation) - jillian.dyszynski@gmail.com	Include PES into National Strategy proposal

Knowledge Network (CDKN)	School of Enterprise: **Rwandan Climate Change** and Low Carbon Development Project	Mathew Warnest(Research Assistant, Land use, water and agriculture) - mathew.warnest@gmail.com	
REMA	Rwanda Environmental Management Authority	Godfrey Patrick Muligo (Director Administration and Finance & IMCE) - muligo.godfrey@gmail.com Alexis Mulisa (Environmental Fiscal Reform) - amulisa@gmail.com Fred Sabiti (Environmental Fiscal Reform) - fredsabirwa@yahoo.com Jean Ntazinda (project coordinator CDM REMA) - ntazinda@gmail.com Alphonse Mutawasi (Consultant on second communication on climate change plan) - mutaalpho@hotmail.com Jean Claude Nkeramihigo (Environmental Officer Integrated Management of Critical Ecosystems IMCE) - nkerajc1@yahoo.fr	REMA is the central authority to promote and enhance PES in Rwanda through e.g. the environmental fund FONERWA
Rwanda Development Board - RDB	Management of protected areas	TelesphoresNgoga (Senior Community Conservation Officer) - tngoga@gmail.com	RDB manages all national parks and protected areas; revenue sharing programme
NAFA- National Forestry Authority		Frank Rutabingwa (Director General) – rutabingwafrank@yahoo.com Bakundukize Dismas (Director of Forestry Field Programmes Unit)- bakudismas@yahoo.com	Carbon policy due in 2011
MININFRA - Ministry of Infrastructure, Rwanda		Gerard Hendricksen (consultant) - gerard.hendriksen@gmail.com	Domestic Biogas project and hydropower; MININFRA CDM projects
Rwanda Bureau of Standards		Patrice Ntiyamira (Deputy DG) – npmira@yahoo.com - + 250 78 830 36 04	Organic certification policy
RECO RWASCO Rwanda **Clinton Hunter Development Initiative**		Viator Mugiraneza - (focal point CDM project) viator_mug@yahoo.fr Innocent Uwimana (Project Manager) - iuwimana@clintonfoundation.org	CDM project; water and energy grid Potential carbon project in Eastern Province under Plan Vivo

Appendix 2: Possible partner research institutes in the Kagera TAMP Countries

Tanzania

- **Agricultural Research Institute (ARI)**
- **Selian Agricultural Research Institute (SARI)**
- **Sokoine University of Agriculture**
  - Prof. P. Munishi of SUA (Partner of CARE/WWF)
    Email: pmunishi2001@yahoo.com
  - Justus Nsenga (Soil and water conservation analyst) (Partner of CARE/WWF)
    Email: jnsenga@yahoo.com
- **University of Dar es Salaam**
  - Dr. Godius Kahyarara (Economics) (Partner of CARE/WWF)
    Email: gkahyarara@yahoo.co.uk
    Heri Kayeye (GIS) Partner of CARE/WWF)
    Email: hkayeye@yahoo.com
    (**Tumaini University**
  - Sist Joseph (Lawyer) (Partner of CARE/WWF)
    Email: sisjose@yahoo.co.uk

Uganda

- **National Agricultural Research Organization (NARO)**
- **Institute of Applied & Appropriate Technology (IAAT)**
- **Makerere University**
  - **Johnny Mugisha**
    Senior Lecturer
    Makerere University
    Dept of Agricultural Economics &Agribusiness
    Faculty of Agriculture
    P.O.Box 7062
    Kampala, Uganda
    Tel: +256 041 531152/ 077 523907
    Fax: +256 041
    Email: jomugisha@agric.mak.ac.ug
- **Islamic University of Uganda**

Rwanda

- **Rwanda Rural Rehabilitation Initiative (RWARRI)**
- **National University of Rwanda (NUR)**
  - **Daniel Ntirushwa Rukazambuga**
    Dean Faculty of Agriculture
    P.O.Box 56
    Butare, Rwanda
    Tel: + 250 530823/084 70945
    Fax: :+ 250 530228
    Email: dnrukazambuga@gmail.com
  - **Donat Nsabimana**
    Head of the biology department
    Tel; + 25 0 788741619
    Email: dnsabimana@nur.ac.rw

- **Institut des Science Agronomique du Rwanda (ISAR)**
  - Mr. **Jean Nduwamungu**
    Director, LAFRC/ ISAR. / Director of CGIS
    ISAR – Rwanda. BP 617. **Butare**, Rwanda.
    Tel :+250 08 48 47 77 / Fax: +250 530 208.
    E-mail: jeanduwa@yahoo.com
  - **Jean Damasciene Ndayambaje**

Head Agroforestry Program ISAR
Tel.: + 25 0788 487721
Email: ndjeadamas@yahoo.fr

- **Higher Institute of Agriculture and Animal Husbandry**
  - **Patrice Hakizimana**
    Vice Rector for Academic Affairs and Research
    Musanze
    Northern Province Rwanda
    Tel: +25 0 (0) 788 300474
    phakiza@yahoo.co.uk; vrac@isae.ac.rw

- **Institute of Scientific and Technological Research (IRST)**
  - **Jean Baptiste Nduwayezu**
    Director General IRST & President-Board of Directors of both Rwanda Environment Management Authority (REMA), National Forest Authority (NAFA)
    jbuwayezu@yahoo.co.uk

Burundi

- **l'Université Lumière de Bujumbura in Burundi**
  - Institut de Recherche Agricolique et Zoologique (IRAZ)
  - Institut des sciences Agronomiques du Burundi (ISABU)

Appendix 3: Central governmental institutions for PES development

Country	Ministry/Authority	Department/Role	Contact
Uganda	Ministry of Water and Environment – Kampala	Meteorological Department (MWLE): Designated National Authority (DNA) for CDM &National Climate Change Steering Committee (NCCSC) National Forest Authority – Kampala	Hon. Maria Mutagamba -minister@mwle.com Phone: +256 41 504 374 Secretary Philip M. Gwagenccs@infocom.co.ug, pgwage@hotmail.com Phone: +256 41 251 798 Mr. Hudson Andrua (Executive Director) - hudsona@nfa.org.ug Phone: +256 414 230365/6
	Uganda Wildlife Authority – Kampala	Involved in community based natural resource management and biodiversity and wildlife conservation projects with PES aspect	Edgar Buhanga (Senior Environmental Impact Asses) - edgar.buhanga@uwa.or.ug uwa@uwa.or.ug Phone: +256 414 355000
	National Environmental Management Authority (NEMA) – Kampala	Involved in forestry projects with PES aspects	Dr. Aryamanya Mugisha (executive director) - haryamanya@nemaug.org Phone: +25 772477556
	Uganda Investment Authority (UIA) – Kampala	Focal point for promoting investment and contractual agreements	Prof. Maggie Kigozi (Executive Director) - mkigozi@ugandainvest.com Phone: +256 414 301110
Tanzania	Ministry of Water and Livestock Development – Dar es Salaam	Director Water Resources Division	Mr. Julius Mihayo (Assistant Director) - maji-dwr@intafrca.com Phone: + 255 22 2451465
	Ministry of Natural Resources and Tourism - Dar es Salaam	Director of Forestry and Beekeeping Division (MNRT-FBD)	Mr. Christognus A. Haule (Senior Forest Officer) - hauleca@yahoo.com
	Ministry of Environment - Dar es Salaam	Director of Environment	Mr. Richard S. Muyungi (Assistant Director) -tanzania37@hotmail.com Phone: +255 222 11 3983
	Vice President's Office, Division of Environment (VPO – DoE) - Dar es Salaam	DNA for CDM initiatives	Mr. Kanizio F.K. Manyika (interim chairperson REDD & CDM)-freddy_manyika@yahoo.comsotchair@africaonline.or.tz

	Tanzania Investment Center – Dar es Salaam	Focal point for promoting investment and contractual agreements	Emmanuel Ole Naiko (Executive Director) - naiko@tic.co.tz, information@tic.co.tz Phone:+255 22 2116328 32
Rwanda	Rwanda Environmental Management Authority (REMA) – Kigali	Designated National Authority for CDM (DNA); developed Environmental Fiscal Reform and national fund for environmental management FONERWA	Rose Mukankomeje (Director General) - rwandadna@gmail.com Alex Mulisa (Environmental Fiscal Reform) - amulisa@gmail.com Jean Ntazinda (national coordinator CDM) - ntazinda@gmail.com Phone: +250 252580101
	Rwanda Development Board (RDB) - Kigali	Focal point for promoting investment and contractual agreements; member of national working group on PES	Télesphore Ngoga (Senior Community Conservation Officer) - tngoga@gmail.com Phone: +250 788 874321
	National Forest Authority (NAFA) - Kigali	Currently developing carbon policy; reforestation projects	Frank Rutabingwa (Director General**) –** rutabingwa@hotmail.com Phone: +250788306826

Burundi [78]	Ministère de l'Eau, de l'Environnement, de l'Aménagement du Territoire et de l'Urbanisme (Ministry of the Environment and Water) - Bujumbura		Hon. Déogratias Nduwimana - nduwi_deo@yahoo.fr
		Directeur Générale des Forêts et de l'Environnement	Antoinette Macumi - macsasa72@yahoo.fr Phone: +257 25 42 56 Dp-enviro@cbinf.com
		Coordinates National Communication on Climate Change	Alexis Nimubona (Senior advisor water and climate sector) nimbalex@yahoo.fr
		Geographical Institute of Burundi (IGEBU) - Focal Point UNFCCC Institution - Gitega	

[78] Burundi has not had any PES experience or development, nor does it hold a DNA for CDM. The authorities listed here are authorities that have in the past been involved in UNFCCC developments as well as those that are thematically connected to possible PES schemes. Similar in Rwanda there are no PES in place today, however, a national working group has been formed to enhance and develop the legal and political framework. Case studies for PES possibilities are currently already developed with e.g. REMA.

Appendix4: Questionnaire for PES project managers

Background data on PES projects

Existing documentations that can be provided

- Annual report ( )
- Base line study ( )
- Impact assessment ( )
- Feasibility study ( )

Where is the Project located?

- Name of village and/or province/sector/zone
  - Average size of landholdings
- How much area is involved in agreed deal (hectares)?

How was the scheme initiated?

- By whom (active actors)
- Facilitator (past & current)
- In case of carbon projects: third party certifier
- Objective of the scheme

Date deal agreed & duration

- Date contract or agreement signed.

Who is the Buyer?

- Name(s) of both key contact people and government agencies, companies, etc.

Who is the Seller?

- Both name(s) of people and/or community organizations

Is the deal:

- A governmental payment? ( )
- A private deal? ( )
- Open trading? ( )

Financial aspects

- Up-front costs/investments made
  - Major donors/financial sources
- Cost distribution (who bears which costs)
- Opportunity costs of farmers

Structure of agreement

- Number of payments / frequency
  How often are participants paid/number of installments? Once a year, in an irregular pattern,…?
- Group payments or individual farmers?
- Amount
  Is there a fixed rate that participants receive?
- How do Payments flow from the Buyer to the seller?
  Which structures are used for the transfer of the money? Local banks, direct payment through field staff, etc.?
- How are potential participants informed about the project?
- How are participants selected?
- Monitoring / conditionality

How is the monitoring organized? Peer reviews, external consultants, field staff…? Is the deal performance based?

- Capacity building efforts up front
  - Ongoing trainings in the project
- Information sharing structures
- Dispute settlement in case of non-compliance

Impact of the PES

- ES service in focus
  - Carbon sequestration
  - Biodiversity
  - Watershed management
  - Bundling
- Type, volume, flow, measurement
  Any base line assessment?/actual increase measured?
  - In case of carbon methodology used to measure carbon sequestration
- What conservation management practices required?
  (promoted land-use)
  Is it mainly:
  - Use-modification ( )
  - Use-restricting ( )

- Other Co-benefits observed/ socio-economic impact (please specify)
  - Indicators used

  E.g.
  - Livelihood expansion ( )
  - Impact on land tenure ( )
  - Institutional strengthening on community level ( )
  - Capacity building ( )

Key institutions involved into the scheme

- All institutions involved (including intermediaries) and briefly explain roles
  - Donors
  - Governmental agencies
  - NGOs
  - Community institutions
- Level of administration

Legal frameworks/policies supporting the PES scheme

- Important policies applied in developing the scheme
- Existing legislation supportive to PES/used in the scheme
- Priority areas of government
- Land tenure and ES user rights at the initiation of the project
  - Recognition of customary tenure rights?

Current Status/ plans for expansion
In operation, in planning phase, etc., and whether payments made.

Special circumstances of the project
(e.g. PES as part of a larger natural resource management project)

Appendix 5: Rwanda water treatment plants and power supply in 2009

Source: **RECO & RWASCO, 2009**

WATER TREATMENT PLANT	WATER SUPPLIED (m^3)
Kimisagara	8.290.702
Karenge	4.090.268
Gihira	1.922.206
Mutobo	2.265.848
Nyabarongo	2.109.776
Gihuma	544.799
Kadahokwa	1.226.308
Cyunyu	454.642
Muhazi	431.651
Nyamabuye	327.591
Rwasaburo	347.540
Gisuma	242.842
Kanyabusage	197.630
Mpanga	297.914
Nyagatare	249.480
TOTAL	22.999.197

	POWER SUPPLY IN 2009		EXPLANATIONS	QUANTITY	RATE /TOTAL SUPPLY
	SOURCE	QUANTITY	ITEM		
A	**Total production (Kwh)**	**248.318.483**	D. TOTAL NATIONAL POWER SUPPLY (A-B+C)	307.789.938	
1	GIHIRA	5.666.000			
2	GISENYI	1.219.631	E. TOTAL NATIONAL HYDRO POWER GENERATION (1+2+3+4)	98.898.331	32%
3	NTARUKA	29.413.000	F.TOTAL IMPORTED HYDROPOWER (12 to 15)	62.386.306	20%
4	MUKUNGWA	62.599.700	**G. TOTAL HYDROPOWER**	**161.284.637**	
5	JABANA I	16.325.766			
6	JABANA II	73.866.951	**H. TOTAL THERMAL POWER GENERATION (5 to 9)**	**145.745.645**	47%
7	GATSATA	0			
8	RENTAL POWER GKDO	42.820.811	**I. SOLAR BASED POWER**	**362.917**	0.01%
9	RENTAL POWER MKGWA	12.732.117			
10	JALI SOLAR	362.917	**J. METHAN GAZ POWER**	**3.311.590**	1%
11	METHANE GAS	3.311.590			
			K.TOTAL POWER SUPPLY INCLUDING EXPORT (G to J)	**310.704.789**	
B	**EXPORT**	**2.914.851**			
	CYANIKA - GISORO	2.622.837			
	GISENYI - GOMA	197.794			
	MURURU II	94.220			
C	**IMPORT**	**62.386.306**			
12	RUZIZI I	14.337.080			
13	RUZIZI II	47.448.000			
14	KABALE (UEB)	475.500			
15	GISENYI - GOMA	125.726			