

October 30, 2008

*East & Southern Africa Katoomba Group  
Scoping of Potential Payment for Ecosystem Service Sites*



**THE EAST & SOUTHERN AFRICA KATOOMBA GROUP**

**PAYMENTS FOR ECOSYSTEM SERVICES (PES) IN EAST AND SOUTHERN AFRICA:  
ASSESSING PROSPECTS & PATHWAYS FORWARD**

**October 30, 2008**

## **ABOUT THE KATOOMBA GROUP AND FOREST TRENDS**

**The Katoomba Group** seeks to address key challenges for developing markets for ecosystem services, from enabling legislation to the establishment of new market institutions, to strategies of pricing and marketing, and performance monitoring. It works to achieve the goal through strategic partnerships for analysis, information-sharing, investment, market services and policy advocacy. The Katoomba Group includes over 180 experts and practitioners from around the world representing a unique range of experience in business finance, policy, research and advocacy.

[www.katoombagroup.org](http://www.katoombagroup.org)

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## **ABOUT THIS REPORT**

The Katoomba Group and IIED have partnered to produce this report along with collaborators in Kenya, Tanzania, Uganda, Malawi, South Africa and Madagascar.

The report was written by Ivan Bond with input from Sissel Waage and Alice Ruhweza. It is based on findings from country-level PES inventories that were conducted by: James Bilgnaut, Christo Marais (South Africa), Nirina A. Randimby (Madagascar), Dosteus Lopa (Tanzania), Samuel Mwangi (Kenya), Sosten Chiotha (Malawi), Byamukama Biryahwaho & Charlotte Kalanzi (Uganda). The report also synthesizes discussions at a Uganda workshop that included both the country PES inventory consultants (listed above) as well as: Dennis Kayambazinthu (Director of Forestry in Malawi), Bill Farmer (Uganda Carbon Bureau) and Sarah Namirembe (Katoomba Group).

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**EXECUTIVE SUMMARY**

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During the first half of 2008, the East and Southern African Katoomba Group (E&SAKG) has been collaborating with colleagues at IIED and organizations throughout the region<sup>1</sup> to assess:

- existing payment for ecosystem service (PES) deals that could be expanded or replicated in other sites within East and Southern African nations, and
- promising potential sites for broadening and deepening either:
  - engagement in environmental markets (most notably international carbon markets), and/or
  - application of the payments for ecosystem services (PES) / payments for watershed services (PWS) in countries across the region.

The purpose of this assessment is to improve understanding of the development and potential for PES initiatives in select countries within the East and Southern Africa region and to explore “proof of concept” related to PES applications within the region. The end goal is to contribute both to conservation and rural economic development, including poverty alleviation objectives.

The methodology included country-focused consultants undertaking four primary steps initially, which included:

- Updating previous Katoomba Group-commissioned PES inventories, conducted in 2005 and 2006, by revisiting all of the projects to provide a record of performance
- Documenting details of new PES deals, or previously undocumented projects
- Identifying promising, potential PES deal sites in the coming years and documenting the rationale for why these sites have potential
- Applying a value chain analysis to between one and three promising potential PES sites, in order to understand the site-specific dynamics associated with a particular possible PES site

Building on this work, a July 2008 synthesis workshop was convened to focus on:

- Conducting a demand analysis, based on a synthesis of the country-level inventories and an exercise to disaggregate the market by product to determine where the greatest opportunities for PES lie from a demand side
- Exploring potential country-specific pathways for proving the PES “concept” in specific countries as well as across the region, based on insights within the country-level inventories and associated analyses

Overall, the findings included:

- **Lack of clarity on trends in terms of total number of PES projects in region.** The inventories were inconclusive on whether there has been a real increase in growth in the numbers of PES projects since the last inventory, due in part to adaptations in methodologies and definitions applied in the two assessments as well as different personnel undertaking the studies.
- **Long gestation period and lack of assurance on projects moving from design to implementation.** There is evidence that some PES projects have not developed beyond the inception phase. The reasons for discontinuation vary, but the lesson is that preliminary work does not promise full, successful implementation.
- **No ‘one size fits all’ approach throughout the region, as the focus of PES projects and approaches varies from country to country.** There is strong evidence that regional differentiation exists across the types of projects that are developing in the different countries. For example, in Uganda there is a strong emphasis on carbon while in South Africa there is strong emphasis on water.

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<sup>1</sup> The individuals and institutions that worked with the Katoomba Group on this effort included are listed in Appendix 1.

- **Few legal and policy changes have been made throughout the region to accommodate PES, however, this has *not* been a major constraint to the development of pilot level projects.** This finding underscores that legal and policy support, while important particularly with regard to public programs, may be a later issue in the stage of development of PES and therefore should not be the focus of significant resources prior to addressing other obstacles.

The future of PES in the region will depend upon growing demand from interested “buyers.” The table below lays out the key ecosystem services, regional attributes in terms of those services, and key issues to address.

**Table 1:  
 Key Ecosystem Services, Attributes, & Issues to Address for Increased Buyer Demand**

KEY ECOSYSTEM SERVICES AND FOCUS OF PES DEALS	UNIQUE ATTRIBUTES RELATED TO ECOSYSTEM SERVICES	ISSUES TO ADDRESS FOR INCREASED BUYER DEMAND
Biodiversity <i>(and related domain of landscape beauty)</i>	<ul style="list-style-type: none"> <li>• Unique mega-herbivores</li> <li>• Wildlife based tourism / eco-tourism history and economic importance</li> <li>• Joint, collaborative or co-management frameworks vibrant</li> </ul>	<ul style="list-style-type: none"> <li>• Domestic stability</li> <li>• State of the international economy (OECD countries)</li> <li>• Price of international travel (related to price of oil)</li> </ul>
Carbon	<ul style="list-style-type: none"> <li>• Not Applicable – as carbon is an internationally fungible commodity</li> <li>• Developed markets and deals exist</li> <li>• Countries benefiting voluntary markets (e.g., Plan Vivo in Uganda and Malawi)</li> <li>• Growing interest in the potential of payments for avoided deforestation (i.e., Norwegian Government has given US\$100 million to Tanzania Government)</li> </ul>	<ul style="list-style-type: none"> <li>• Ongoing need for high levels of assurance around additionality, leakage, and longevity of projects</li> <li>• In addition, with regard to REDD, concerns around baselines exist</li> </ul>
Water	<ul style="list-style-type: none"> <li>• Evidence that suggests that climate change will be a real and substantive issue in water restrictions for many of the countries involved</li> <li>• 1 precedent of an extended public works program that is effectively a buyer of watershed services (i.e., South Africa’s Working for Water Programme)</li> <li>• Outside of South Africa, there is little direct evidence that water is perceived as a ‘critical resource’</li> </ul>	<ul style="list-style-type: none"> <li>• Ongoing need for high levels of assurance and “proof” from payment for watershed services projects</li> </ul>

Finally, one of the cross-cutting issues is that for many PES deals, there is little evidence to support the ecosystem service that is being ‘sold’ as truly providing the services for which buyers are paying. The reasons are linked to both ecological challenges associated with monitoring, as well as the reality that there is very little robust monitoring and evaluation underway with existing PES projects.

For buyer interest and ongoing engagement with PES in the region to build, this issue of assurance that buyers are indeed getting what they are paying for must be addressed. Absent credible “proof”—that carbon is being sequestered, water quality or quantity is improving, and biodiversity conserved—there is a real danger that PES will not grow beyond the pilot stage and serve as an underdeveloped potential for both conservation and additional rural economic development sources of income.

The intention of this document is to lay out the current “state of play” of PES in the East and Southern Africa region and candidly highlight pathways forward. Such an approach, we believe, is key to enabling growth of PES initiatives to its full potential in the region.

## **INTRODUCTION**

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Between January 2008 and June 2008, The East and Southern African Katoomba Group (E&SAKG)<sup>2</sup> embarked on an assessment of:

- (1) existing payment for ecosystem service (PES) deals that could be expanded or replicated in other sites, and
- (2) promising potential sites for broadening and deepening either:
  - (a) engagement in environmental markets (most notably international carbon markets) and/or
  - (b) application of the payments for ecosystem services (PES) in the region.

The purpose of the assessment was to improve the understanding of the development and potential for PES initiatives in select countries within the East and Southern Africa region and to explore “proof of concept” related to PES applications within the region. The end goal is to contribute both to conservation and rural economic development, including poverty alleviation objectives.

This document has been written to describe the process and findings. It begins with a brief background on conservation in the region, which highlights the emergence of markets and payments for ecosystem services. It then describes the methodology used in inventorying both existing and potential future PES sites, prior to laying out the key findings from the 2008 inventories. The document then explores potential next steps, including a brief description of the Katoomba Incubator which could be adapted within the East and Southern Africa region. Finally, the report ends with suggestions on the future direction of the East and Southern Africa Katoomba Group as well as next steps with regard to PES overall.

## **BACKGROUND: CONSERVATION IN EAST & SOUTHERN AFRICA**

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Typically conservation agendas in east and southern Africa have been dominated by the range of spectacular ecosystems and the region’s charismatic species that include; elephant, buffalo, lion, leopard and rhino. For many years the primary approach to conservation and in particular the conservation of biodiversity—often through a focus on wildlife—has been to create protected areas that are managed by state wildlife agencies. The result is that today, within the five mainland countries there are over 400,000 km<sup>2</sup> of land that is designated as protected areas. The proportion of protected area ranges by countries from just 6% in South Africa to about 30% in Tanzania. In Madagascar about 4% of the country or 25,000 km<sup>2</sup> of land is designated as protected.

Protected areas are playing a significant role in the protection and management of areas of ecological importance, outstanding natural beauty and special scientific interest. However, the current rates of land use change and environmental degradation outside of these protected areas indicates that there are some extremely challenging problems.

And thus, while initially conservation was all about creating protected areas and excluding people on the basis that people and animals could not co-exist. Over the last 20 to 30 years there is an increasing realisation that conservation cannot occur in isolation from the needs of people (Cumming, 2004).

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<sup>2</sup> The East and Southern African Katoomba Group is part of the global Katoomba Group that was founded during a meeting at Katoomba, New South Wales Australia in 1999. Today, The Katoomba Group is an international network of individuals working to promote, and improve capacity related to, markets and payments for ecosystem services (PES). The Group serves as a forum for the exchange of ideas and strategic information about ecosystem service transactions and markets, as well as site for collaboration between practitioners on PES projects and programs. For more information, please see: [www.katoombagroup.org](http://www.katoombagroup.org)

Therefore, in the 1980s and 1990s, there was growing recognition of the need to consider conservation issues on private land and communally owned land.<sup>3</sup> The result was a need to create and adapt approaches that were tailored to these different forms of land tenure. Most notably, variations on the idea of the ‘community based conservation’ (CBC) (Hulme and Murphree, 2000) emerged. Sustainable development based on CBC has become the dominant approach for communal lands in east and southern Africa and Madagascar.

Community-based conservation is characterised by a common set of core values that apply across the region—even when the precise format, structure and facilitation varies—which include:

- **Conservation that generates economic incentives for people on who live, work and rely upon the land in question.** CBC recognises that current management of land and natural resources is driven by the current structure of incentives and costs. On communal land, there is often and tension between the needs of people (development) and the perceived needs of conservation. Fundamentally, to change the way land is managed requires changing the incentives for all the stakeholders involved farmers, communities and very often the responsible local government.
- **Conservation that explicitly allows for, even focuses on, community management of natural resources.** Within the CBC paradigm there is a strong sense that communities can be and are the appropriate management unit for land and natural resources. However, the approach requires governments to devolve authority over some aspects of land and resource management to communities.

While there is debate over relative “success” of community-based approaches to conservation,<sup>4</sup> the reality is that there are few promising examples of successful sustainable development programmes in the region. Natural resources are under pressure and people rely on these resources for their most fundamental daily human needs. The two will have to be intertwined in some way.

## MARKETS & PAYMENTS FOR ECOSYSTEM SERVICES

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One of the relatively new approaches that are fundamentally about creating incentives that reconcile the reality of natural resource use with conservation is emerging in the form of markets and payments for ecosystem services. Specifically, ecosystem service-related markets are emerging around the world. Formal markets—some regulatory and others voluntary—now exist related to greenhouse gases / carbon, water, and even related to biodiversity.<sup>5</sup> In addition, focused business deals and payments for ecosystem services (PES) are also being forged by companies investing in maintenance or restoration of particular ecological systems on which they rely.

These markets and payments create incentives for investing in the long-term flow of ecosystem services<sup>6</sup> because the services are *positive externalities* (i.e. unintended and uncompensated benefits)

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<sup>3</sup> By way of defining these terms, the first category is private land which is considered to be land to which individuals have legal rights. These rights allow people to buy or sell land on the open market. Private land is generally a relic of these countries’ colonial past where land was expropriated for the purpose of settling expatriate farmers. Across the selected countries, it is only in South Africa and Kenya that there are still significant areas of private land. Second, communal land is generally held in trust by the state for and on behalf of its citizens. Citizens may, subject to local rules and regulations, settle on communal land. Typically tenure arrangements are a complex mix of modern, traditional, common property and private property. There are variations on how communal tenure systems operate both within and between countries.

<sup>4</sup> For example, see: Barrett and Arcese (1995); Ferraro and Simpson (2002); Simpson and Sedjo (1996); Frost and Bond (2008), Balint and Bond (forthcoming)

<sup>5</sup> For more information, please see: <http://www.ecosystemmarketplace.com/>

<sup>6</sup> The Millennium Ecosystem Assessment installs a broad definition of ‘ecosystem services’: the benefits people obtain from ecosystems. These fall into four main categories: provisioning services like food, water, fibre and energy (i.e. goods, products, resources); regulating services like climate and flood regulation; cultural services like aesthetics, spirituality, education and recreation; and supporting services like nutrient cycling and soil



(Markandya *et al.*, 2002). Externalities are not traded in markets and therefore have no observable price to guide their supply and demand. For this reason, central governments or local administrations have historically assumed responsibility for determining how such services should be managed. This generally means that the use of regulations such as protection, restrictions, controlled access and limitations on use (Landell-Mills and Porras, 2002; Tietenburg, 2000; Engel, Pagiola and Wunder 2008).

To correct for market failure, there needs to be a process by which the costs and the benefits of the externalities are internalised so the people who benefit from the services pay for them and those who provide the services get paid (Barbier and Swanson, 1992). Generically, this approach has been termed ‘payments for environmental services’ (PES).

The innovation and the characteristic that differentiates PES from previous paradigms or approaches is that the payments are conditional or contingent on changes in land use by the service provider. A useful, and increasingly widely accepted, five-clause definition is provided by Wunder (2005) who proposed that a payment for environmental services is:

1. a *voluntary transaction* in which
2. a *well-defined environmental service (ES)* (or a land use likely to secure that service)
3. is being purchased by at least one *ES buyer*
4. from at least one *ES provider*
5. if, and only if, the ES provider ensures the supply of the ES (*i.e.* there is *conditionality*)

Each element of the definition is important since together they identify PES as a new approach, not simply an old one with a new label (Wunder, 2005). The *voluntary* nature of the transaction separates PES from the conventional command-and-control approach of many governments. *Clear definition of the ecosystem service* implies that the service can be measured, *i.e.* tonnes of carbon sequestered or the turbidity levels in water. Structuring the arrangement as a relationship between a *buyer* and an ecosystem service *seller* clearly defines the principals and counters the tendency for third parties to appropriate the financial benefits. The *conditionality* criterion (contingency) serves to separate PES from many other incentive-based resource management approaches. In its simplest form, it means that the payment will only be made when the providers of the service implement the agreed changes. It can be refined so that payment is scaled to performance, at least up to some maximum.

Wunder freely acknowledges that this robust definition of payments for ecosystem services severely limits the number of working examples to some experience in developed economies, ‘Costa Rica and a dozen other experiences, mostly in Latin America’ (Wunder, 2005, p2). Importantly, he also acknowledges that the terminology associated with markets and market based interventions can also be a ‘stumbling block’ to new approaches in environmental management (Wunder and Vargas, 2005).

To overcome anti-market sentiments in many Asian and South American countries, PES initiatives are using an alternative vocabulary such as ‘compensations’ or ‘rewards’ for ecosystem services. While the language is different the underlying principles are not – users of ecosystem services are paying / rewarding or compensating service providers.

All of these PES deals stem from three distinct domains, which are outlined in the table below.<sup>7</sup>

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formation (MA, 2005). Meanwhile the literature on payments for ‘*environmental services*’ has tended to focus on the latter three categories and exclude ‘provisioned’ goods and resources. From this point onwards in this report, however, the terms ‘ecosystem services’ and ‘environmental services’ are used interchangeably.

<sup>7</sup> While many consider eco-labelling of products—which involves third party certification of products that were produced in ways consistent with biodiversity conservation according to a model management regime—another form of PES, it is not the focus of the PES-related agreements in this primer. Therefore, it is not included in the list of PES types.

**Table 2:  
Types of Markets and Payments for Ecosystem Services**

Public payment schemes for private land owners to maintain or enhance ecosystem services	These type of PES agreements are country-specific, where government have established focused programs (such as in Mexico and Costa Rica). While specifics vary by program focus and country, they commonly involve direct payments from a government agency, or another public institution, to landowners and/or managers.
Formal markets with open trading between buyers and sellers, either under a regulatory cap or floor or voluntarily on the level of ecosystem services to be provided	Regulatory ecosystem service markets are established through legislation that in turn creates demand for a particular ecosystem service by setting a ‘cap’ on the damage to an ecosystem service. The users of the service, or people who are responsible for diminishing that service, respond either by complying directly or by trading with others who are able to meet the regulation at lower cost. Buyers are usually private sector companies or other institutions. Sellers are also companies and others who are going beyond regulatory requirements.
Self-organized private deals in which individual beneficiaries of ecosystem services contract directly with providers of those services	<p>Voluntary markets also exist, as in the case of carbon emission trading in the United States. For example, companies or organizations seeking to reduce their carbon footprints are motivated to engage in the voluntary market to enhance their brands, to anticipate emerging regulation, in response to stakeholder and/or shareholder pressure, or other motivations. Voluntary exchanges are also a category of private payments.</p> <p>These private PES deals are commonly direct buyer / seller transactions with little government involvement. Buyers may be private companies or conservationists who pay landowners to improve their management practices and, thus, the quality of the services on which the buyer depends or wants to maintain.</p>

As an illustration of these different types of PES, a few examples are offered in Appendix 2. It is noteworthy that each of these markets and payments operates in distinct ways, depending on the service provided, political context, and social environment.

There is no doubt that current conservation and development issues are highly complex problems with multiple drivers. Solutions often require substantial investment in innovation process with a multi-disciplinary approach. Payments for ecosystem services are a very recent and largely untried addition to the tool-box. A large-scale study of emerging PES initiatives stressed cautious optimism over their potential (Landell-Mills and Porras, 2002). More recently another review and analysis notes:

“Payments for ecosystem services is not a silver bullet that can be used to address any environmental problem, but a tool tailored to address a specific set of problems: those in which ecosystems are mismanaged because many of their benefits are externalities from the perspective of ecosystem buyer.” (Engel, Pagiola and Wunder, 2008)

The implication of this statement is that environmentalists and development practitioners need to fully understand the problems that they are trying to address and should not use payments for ecosystem services in situations where there are not major external cost savings or benefits from the ecosystem.

With these important caveats in mind, the Katoomba Group commissioned a series of country-level inventories of payments for ecosystem services (PES) in 2005 and 2006 with the objective of understanding how PES concepts were being applied in East and Southern Africa.<sup>8</sup> The 2008 work built on the previous approach / methodology, as well as insights from this past work, as described below.

<sup>8</sup> For more information on the 2005 and 2006 inventories, please see:  
<http://www.katoombagroup.org/regions/africa/assessments.php>

**METHODOLOGY**

A comprehensive guide to the key steps in an inventory of PES schemes was produced by the Katoomba Group in 2005 (Waage, Scherr, Inbar and Jenkins<sup>9</sup>). The inventory was used to produce basic information on the development of PES in the region prior to the meetings in Uganda (2005) and South Africa (2006). Summaries of the key information were used for the review of PES initiatives by Ruhweza and Waage (2007<sup>10</sup>).

The inventory used the following definition of payments for ecosystem services:

“Current ecosystem services payments include both monetary and non-monetary transactions (such as deals related to shifting property rights) between an individual (or a group of people) who provides services (“sellers”) and an individual (or a group) who pays for maintenance of these services. The key characteristic of these buyer/seller transactions is that the focus is on maintaining a flow of a specified ecological “service,” such as retaining clean water, biodiversity, and carbon sequestration capabilities. In order to ensure that the ecological service is indeed maintained—as buyers expect for their money—the transactions require regular, independent verification of sellers’ actions and effects on the resources. In sum, the key attributes of ecosystem service payments and markets are that:

- sellers maintain specific ecological structures and functions, and that
- sellers remain accountable to independent verifiers that the “service” being paid for is indeed being delivered.”

The 2008 work—on deepening of these inventories to focus not only on existing sites, but also promising future sites—used this definition to enable an assessment of trends related to PES projects.

In addition to being guided by the PES definition above, the 2008 inventories specified a set of key steps, which differ slightly from the previous inventory,<sup>11</sup> and included:

**Table 3:**  
**Summary of PES Inventory Methodology for Select East and Southern African Countries<sup>12</sup>**

	ACTIVITIES	RATIONALE
Step 0	Complete Matrix 1 – which re-visits all the projects and sites described in the original inventory	<i>Will provide a record of the performance of the projects that were covered in the first inventory either in 2005 or 2006.</i>
Step 1	Complete matrix 2 - Record the details of the new or previously un-	<i>Steps 0 and 1 will provide: - a full current inventory</i>

<sup>9</sup> The 2005 / 2006 inventory protocol can be found at:

<http://www.katoombagroup.org/regions/africa/documents/National%20Inventory%20Framework.doc> and the inventories for Kenya, Tanzania, Uganda, Madagascar, and South Africa can be found at: <http://www.katoombagroup.org/regions/africa/assessments.php>. A synthesis of the findings is posted at:

<http://www.katoombagroup.org/regions/africa/documents/Current%20State%20of%20PES%20Play.pdf>

<sup>10</sup> [http://ecosystemmarketplace.com/pages/article.opinion.php?component\\_id=5108&component\\_version\\_id=7498&language\\_id=12](http://ecosystemmarketplace.com/pages/article.opinion.php?component_id=5108&component_version_id=7498&language_id=12)

<sup>11</sup> No previous inventory has been carried out in Malawi. Therefore, the Malawian Team will omit Step 0.

However, it is essential that Steps 1 – 6 are fully and comprehensively completed. In addition, the team will need to document; the supporting institutions (organisations), the degree of community involvement in the PES initiatives, sources of national and regional technical assistance, sources of funding, standards and guidelines and comment on the awareness of PES.

<sup>12</sup> The countries included in the inventory are: Kenya, Madagascar, Malawi Uganda, South Africa, and Tanzania.

	documented PES projects.	- a notional sense of trend  <i>The legal and policy review will update the institutional context in which these projects are being implemented.</i>
Step 2	Complete matrix 3 – potential projects that might mature in the next few years.	<i>Will give us insight into the pipe-line of potential projects that are being developed.</i>
Step 3	The value chain approach to ecosystem services applied to between one and three cases.	<i>Will help understand the incentives for each stakeholder that forms the value-chain for PES. This is a narrative analysis.</i>
Step 4	A demand analysis	<i>Together with Step #3, will provide an indication of the demand for ecosystem services in the region.</i>
Step 5	Country-specific pathway for proving the PES approach	<i>Each country will have a unique pathway for the development of PES approaches depending on its economy, legal and policy framework and bio-physical attributes.</i>
Step 6	The future role of the regional East and Southern Africa Katoomba Group in developing PES both in-country and in the region	<i>The E&amp;SA Katoomba Group has limited resources but perceives that it has a role to play in the development of PES in the region. This needs to be defined and articulated by the countries in the region.</i>
Step 7	Identifying sites that are appropriate for the incubator treatment	<i>Katoomba is developing a methodology of intensive support to specific sites known as the incubator approach. The country teams will consider this approach, identify and select sites (if appropriate) and broadly identify the kind of support that each site requires.</i>

## KEY FINDINGS

Inventories of payments for ecosystem initiatives and projects were conducted in four countries<sup>13</sup> between 2005 and 2006.<sup>14</sup> Using the same definition as used by the current inventory approach, it was estimated that there 45 projects PES or PES-type projects (Table XX). However, the inventories recorded projects that were both in development and that were being implemented. The 2005/06 survey estimated that payments between buyers and sellers of ecosystem services had been made in nine of the projects.

**Table 4:**  
**Summary of 2005 / 2006 PES Inventory Results**  
**For Kenya, Tanzania, Uganda, and South Africa**

Category	Total number of projects recorded	Number of projects in which payments had been made
Bio-diversity	18	2
Carbon	17	5
Water	10	2
Other	n/r <sup>15</sup>	n/r
<b>Total</b>	<b>45</b>	<b>9</b>

Source: Ruhweza, Alice and Sissel Waage. 2007. "The State of Play: Payments for Ecosystem Services in East and Southern Africa"

<sup>13</sup> Kenya South Africa, Tanzania and Uganda

<sup>14</sup> Ruhweza and Waage (2007) The State of Play: Payments for Ecosystem Services in East and Southern Africa. In: Opinion, Ecosystem Marketplace.

<sup>15</sup> n/r = not recorded

[http://ecosystemmarketplace.com/pages/article.opinion.php?component\\_id=5108&component\\_version\\_id=7498&language\\_id=12](http://ecosystemmarketplace.com/pages/article.opinion.php?component_id=5108&component_version_id=7498&language_id=12)

A summary of the individual country inventories identified four major barriers to the effective development of payments for ecosystem services in the region (Ruhweza and Waage, 2007), including:

- **Information:** There is too little information on payments for ecosystem services and that which does exist is often too generic to be of much use to policy makers.
- **Technical barriers:** There are too few people with the appropriate skills and knowledge to design and implement effective payments for ecosystem services projects and programmes.
- **Policy and regulation:** Generally legal and policy frameworks for environmental and resource management are fragmented, outdated and often lack cohesion. The review does note however that the current legal and policy frameworks has not prevented the pilot projects, but it is quite likely that they will limit any attempts to scale of or replicate PES initiatives.
- **Institutional barriers:** In addition to the limited human skills and fragmented legal and policy frameworks, there are insufficient organisations, such as financial intermediaries, certification bodies, national registries etc. to support the development of payments for ecosystem services in the region.

The summary report concludes that “the inventories highlighted the clear need for, one-stop shopping PES information repositories as well as policy support and technical capacity building. These elements together have the potential to scale up PES and enable prospective buyers and sellers alike to assess when and how these payments are most effective for addressing conservation and livelihoods issues in the East and Southern African region.”

In 2008, the status of payments for ecosystem payment projects and initiatives was re-visited in Kenya, Uganda, Tanzania, South Africa, while Malawi carried out an inventory for the first time (see Appendix One). The results are summarized in the table below:

**Table 5:**  
**Summary of Catalogued PES Initiatives in Kenya, Uganda, Tanzania, South Africa in 2008<sup>16</sup>**  
(numbers of new or newly inventoried projects are indicated in parentheses)

Category	Kenya	South Africa	Tanzania	Uganda
Bio-diversity	9 (3)	0	0	10 (3)
Carbon	3 (2)	4 (1)	11	9 (5)
Water	4 (3)	9 (6)	1 (1)	2 (1)
Other / Bundled	1 (1)	5 (3)	0	?
<b>Total</b>	<b>17 (9)</b>	<b>18 (10)</b>	<b>12 (1)</b>	<b>21 (9)</b>

In comparison, the 2005/2006 inventories catalogued 45 PES and PES type projects split between bio-diversity, carbon, water and other ecosystem services including where services had been bundled. The 2008 survey catalogued a total of 68 PES and PES-like initiatives split between bio-diversity, carbon, water and other. Of these projects 29 were considered to be new projects or previously undocumented projects.

In 2005/2006, the survey of PES initiatives catalogued nine projects in which payments between buyers and sellers of ecosystem services had taken place. As projects and programmes have evolved, it has become increasingly difficult to make clear differences between payment and non-payment and the different types of payments. The current set of inventories has revealed the considerable diversity of projects and the different types of payments that are being made across the four countries, as

<sup>16</sup> No inventories from Madagascar and Malawi

depicted in the table below. The largest PES initiative in the four countries is the Working for Programmes in South Africa. The programmes current budget is nearly US\$60 million per annum the bulk of which is allocated from the Government of South Africa through poverty relief funding (Turpie et al. 2008).

**Table 6:**  
**Indicative Scale of Payments within PES Agreements**

Country	Category	Project Name	Comments
<b>Kenya</b>			
	Biodiversity	Kitengela Wildlife Lease Programme	US\$8 per acre per annum is paid to members who volunteer to set aside land. Aim is to cover 60,000 acres of land
		Shampole Eco-tourism development Project	Payments are made to the Shampole Trust on behalf of its members on a monthly basis. Aim is to set up an exclusive conservation area of 10,000 ha.
		Kinangop Grassland Project; Amboseli project; Ngwezi Group Ranch and the Lewa Wildlife Conservancy	Examples of projects in which there are agreements between communal land managers and private enterprises for conservation and land management. However the details of these arrangements were not available at the time of the inventory
<b>South Africa</b>			
	Carbon		
		Thicket restoration.	Payments to Gamtoos Irrigation Board who pay contractors. Currently Government funded (Rand 7 million)
		ARISE	Payments to Gamtoos Irrigation Board who pay contractors. Currently Government funded (Rand 10 million over three years)
	Water		
		Working for Water	Rand 450 million invested annually by the Government of South Africa to clear and maintain areas free of alien invasive species <sup>17</sup> .
		Blue Ridge Mine	Payments for clearing alien invasive species imminent
		Shiva Mine	Payments for clearing alien invasive species imminent
		Cape Town City Council	Payments for clearing alien invasive species imminent
		Trans Caledon Tunnel Authority	Payments for clearing alien invasive species imminent
<b>Tanzania</b>			
	Carbon		
		Afforestation of Grassland Areas	Project developed by Green Resources Ltd with the aim of planting 20,000 ha of trees that will be used to sequester carbon and credits will be sold to the international carbon market.
	Water		
		Equitable Payments for Watershed Services	Second phase of joint programme funded by DGIS and DANIDA and implemented by CARE and WWF. Project has developed an MOU between DAWASCO, Coca Cola to pay for watershed

<sup>17</sup> Turpie et al (2008)

Country	Category	Project Name	Comments
			services
<b>Uganda</b>			
	Carbon	Trees for Global Benefits Programme	US\$300,000 paid to 200 farmers as of December 2007. Further 200 farmers applying for membership
		UWA / FACE	US\$430,000 received from FACE Foundation an estimated 8,800 ha of land replanted on Mt Elgon
		Mgahinga – Bwindi Impenetrable Forest Conservation Trust	Total value of trust fund now US\$6.8 million. Interest on the Fund is used for conservation and development activities.
<b>Malawi</b>			
	Carbon		
		Sustainable Charcoal Project in Neno District	Advanced planning stage with Plan Vivo. It is expected that 700,000 seedlings will be planted and that the farmers will earn US\$6 – 8 tCO <sub>2</sub> e.

### LIMITATIONS OF DATA & INTERPRETATION

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By using the same definition of payments for ecosystem services and adopting a similar methodology to the previous set of inventories, our aim was to determine the status of payments for ecosystem services in the East and Southern African region. However, some key challenges emerged which hinder coming to strong conclusions around this data, including:

(1) **Methodological challenges:** The individual Katoomba Group members carrying out the inventories and the process of aggregation faced a number of methodological challenges, most notably related to the definition of PES. That is, the definition of what constitutes a payment for ecosystem service initiative remains a challenging issue of both the quantitative and the qualitative components of a regional inventory. For example, in South Africa the team *excluded* industrial Clean Development Mechanism (CDM) projects while these were *included* by the Tanzanian and Ugandan inventory teams. Similarly the Tanzanian inventory highlighted the difficulty of dealing with national government programmes such as joint forest management (JFM) and community based natural resource management (CBNRM) programmes that the government is facilitating across the country. While esoteric at one level the fundamental difficulty of deciding whether a project fits the definition makes it very difficult to assess whether there have been any real changes in the number, type and scope of PES projects between 2005 and 2008.

(2) **Data Gaps:** In addition to the complex challenge posed by the various definitions of payments for ecosystem services, our work was also complicated by the paucity of data that existed for most of the initiatives reviewed (see also Porras et al. 2008). In many cases the quantitative data that is required for a robust inventory was either out of date or not being collected at all. As a result our comparisons have tended to be on the basis of the number of initiatives or programmes rather than quantitative indicators such as the area and/or value.

(3) **PES project discontinuation:** Projects using PES approaches are by definition addressing highly complex and the inter-related problems of environment and development. The 2008 Inventories from South Africa and Tanzania show that in both countries site level projects have been discontinued. The examples from South Africa are largely watershed projects while in Tanzania the government withdrew its support for the ‘international Small Group Tree Planting Programme’. There is an assumption that this occurred because the project did not meet the CDM requirements set up under the Kyoto Protocol (Lopa, 2008).

**Table 7:**  
**Inventory of discontinued PES Projects 2005 / 2006 and 2008**

Country	Category	Project Name	Comments
<b>Kenya</b>			
	Bio-diversity	Protected Areas Project	This is a multi-national project involving poor communities in several countries. Status as a PES Project unclear.
	Bio-diversity / Carbon	Kwale Forestry Project	There was no deal at scale. One farmer took up commercial forestry practices.
<b>South Africa</b>			
	Bio-diversity	Potato Project	No externalities and therefore not a PES project
		Bio-diversity conservation in the Karoo	No externalities and therefore not a PES project
		Kruger National Park and adjacent communities	Project never progressed beyond planning
	Water	Ga-Selati River	Project terminated because there was no demand
		Sabie River – Sandton Bird Club Site	Project terminated because there was no demand and very little sense of the potential benefits
		Sabie River – Game Farmers	Project terminated because there was no demand and very little sense of the potential benefits
	Carbon	Integrated veld and fire management under the Working for Fire Programme	In-correctly defined as a PES Project
<b>Tanzania</b>			
	Carbon	Eleven carbon projects were identified in the 2008 inventory, of these ten are CDM projects with little direct landuse impacts.	
		The International Small Group Tree Planting Programme	Programme was stopped by the Government of Tanzania because it did not meet the CDM requirements

(4) **Regional differentiation of PES projects:** The total area of the mainland African countries selected for the inventory is 2.9 million square kilometres, stretching from approximately 4<sup>0</sup> North of the Equator to 29<sup>0</sup> South of the Equator. Madagascar (area 582,000 Km<sup>2</sup>) due to its separation from main land Africa is characterised by an entirely different set of ecosystems. There is some evidence that there is a gradient of PES initiatives from the moist tropical forests of Uganda and Kenya where carbon sequestration appears and rightly so to be the priority to semi-arid South Africa where water and watershed management are seen as critical issues. Importantly however, while water quantity may not be a crucial issue in countries such as Uganda and the highlands of Kenya there is a sense that the deterioration of water quality is an ever growing issue (Kampala, 2008).

(5) **Government as a buyer of ecosystem services:** Global evidence suggests that there are two primary categories of buyers of ecosystem services. Governments can be legitimate buyers of ES on behalf of the citizens they represent<sup>18</sup>. The second category is generally considered to be ‘user-financed’ arrangements where the buyer is also the direct user of the ecosystem services (Engel, Pagiola and Wunder 2008). The second category i.e. the ‘user-financed’ arrangements tend to be

<sup>18</sup> Engel et al (2008) also include government and international aid agencies as well as international conservation organisations.



much closer to the five point definition of payments for ecosystem services and it is argued much more likely to be an efficient and durable relationship (see Wunder 2005).

(6) **Changes in legal and policy frame-works:** The summary of the 2005/06 inventories noted the environment and policy frameworks are often ‘fragmented, outdated and often lack cohesion’ although this was not considered to be a major challenge to the development of pilot initiatives, but could constrain efforts to scale-up and replicate successful pilot projects.

The recent inventories show that there has been little change in the overall legal and policy frameworks in which payments for ecosystem projects are being implemented. In South Africa the establishment of a ‘Pricing Strategy for Water Use Charges’ under the National Water Act (1998) has provided a trading platform especially around the clearing of alien invasive plants. Crucially the pricing Strategy allows the additional water generated to be allocated to those stakeholders that participated financially in clearing the alien invasive species.

Overall the current synthesis suggests that there have been very few changes in the legal and policy frameworks since the last inventories were conducted in 2005/06. However, if countries in the E&SA Region are to benefit from REDD payments, it may be essential for them to review legislation and develop new frameworks that allow for the devolution of payments for avoided deforestation / landuse change from the international community to land managers.

(7) **The sellers of ecosystem services:** Simple generic PES models typically refer to relationships between buyers of ecosystem services and poor farmers (generally upland farmers – See Wunder 2005). The inventories conducted under this survey show that PES mechanisms and PES like mechanisms are being developed on all three major tenure systems in the region, namely: private land, state land and communal land. Subjectively, it does appear that PES schemes are more likely to be developed on communal land rather than private or state land. In one case, i.e. the government funded Working for Water programme in South Africa, clears alien invasive species from land irrespective of its tenurial status.

A major consideration to date has been whether PES payments that are being made are explicitly pro-poor i.e. that they differentiate and deliberately select for poorer households or land managers. Although this was not an explicit task of the inventory there is no information to suggest that the facilitators are deliberately selecting for poorer beneficiaries.

(8) **The ecosystem services that are being traded:** The inventory categorised payments for ecosystem services into three main categories - carbon, water and bio-diversity - following the previous inventory and the earlier work of Landell-Mills and Porras (2002). Because of the methodological challenges and the paucity of data it is not possible to accurately estimate the relative value of the different markets or indeed the changes in the value of the market since the last inventory.

Of the three categories, it appears that payments for bio-diversity are causing the most conceptual problems. Several of the inventories included collaborative management activities (such as joint forest management and community based conservation under the category of payments) commercialisation of protected area management agencies and lease arrangements between private companies and communities as payments for bio-diversity (see below #11). Because of Africa’s unique fauna there is a high demand for quality wildlife habitats particularly in accessible sites in stable countries by tourism entrepreneurs.

As noted above there appears to be a trend suggesting that challenges associated with water management are more an issue towards the more arid, southern end of the region while in the moist tropical ecosystems carbon sequestration and REDD are the focus of attention. Due to increasing public awareness of the potential results of climate change, the ‘commodity’ with the greatest potential in the short-term appears to be carbon, especially in terms of payments for reduced emissions from degradation and deforestation (REDD).

(9) **Scientific basis, monitoring and evaluation of PES initiatives:** A characteristic of the working definition of PES is that there is a well defined service that is being ‘traded’. In general, there is very little infrastructure, skills and financial resources for bio-physical monitoring outside of South Africa (See Khanya, 2008). The inventory process did not specifically request the status of resource monitoring and the evaluation of PES initiatives. However, it appears that in many examples PES initiatives are being implemented without a thorough understanding of the underlying science and the likely trade-offs between ecosystem services..

A second and more challenging issue is that relative absence of robust monitoring and in the future, evaluation of PES initiatives in the region. The absence of robust M&E has plagued other conservation and development paradigms such as community conservation (Ferraro and Pattanayak, 2006). The result is that performance is often subjective and reports are anecdotal meaning that scarce financial resources are often mis-allocated (opp. cit). The methodological and data challenges faced as we compiled these inventories from across the region highlight the paucity of data that exists in many projects.

(10) **The role of protected areas:** The creation of state protected areas has been the dominant conservation paradigm in east and southern Africa for over a century. These protected areas were created largely along the North American exclusion and preservation model often in response to rampant exploitation of wildlife populations by incoming farmers (settlers) and commercial hunters (Child, 2004). In the four main-land southern and eastern Africa countries included in the sample, there is over 425,000 km<sup>2</sup> of land that is designated as protected which is the equivalent of nearly 15% of the total areas of the countries.

Today, however, both globally and across the region, Governments and the agencies that manage protected areas are being forced to adapt previously stringent protectionist and often very isolationist management strategies (opp. Cit). Consequently protected area managers are increasingly exploring collaborative management models that seek to alleviate tension across boundaries and ensure that protected areas contribute or are integrated into the wider economic development of the regions in which they exist.

The protected area network of east and southern Africa was largely developed by colonial governments and was in general well funded. Since Independence, post-colonial governments have generally considered conservation less important with the result that the agencies managing protected areas have had to manage more complex situations with fewer resources. It has been argued that the ‘low levels of funding’ is the single greatest threat to conservation across Africa (de la Harpe, 2004). In some countries, donor agencies have supported some aspects of protected area management including transition processes in which these agencies try to commercialise<sup>19</sup>. Some of the more prominent (and successful) examples of commercialisation are in Madagascar, South Africa and Tanzania (opp. cit).

The processes of integration and commercialisation of protected areas have important implications for the review of payments for ecosystem services. For example, both the Tanzania and Ugandan inventories highlight the scale and the benefits from programmes that seek to promote **integration** through the development of either joint or collaborative management frameworks (See Table 8). Similarly several of the inventories referred to activities that are not payments for environmental services but the **commercialisation** of protected area management agencies – albeit very market driven.

**Table 8:**  
**Examples of Integrated or Collaborative Activities in Tanzania and Uganda**

<sup>19</sup> Commercialisation ranges from the collection of market fees for activities to the full transformation of government departments to independent ‘authorities’ (de la Harpe et al, 2004).

Country	Category	Project Name
<b>Tanzania</b>		
	Joint Forest Management	As of June 2006 it is estimated that 1.6 million hectares of forest were being managed under 'joint forestry management agreements'. This involves an estimated 720 villages.
	Wildlife Management Areas	As of June 2008 it is estimated that there are 16 Wildlife Management Areas (in addition to the State Protected Areas) covering 23,000Km <sup>2</sup> .
<b>Uganda</b>		
	Ugandan Wildlife Authority (UWA)	The UWA shares 20% of all revenue with communities neighbouring protected areas. AS of July 2005 approximately US\$48,000 had been disbursed with a further US\$52,000 to be disbursed.
	Community Forestry Management Agreements with the National Forestry Authority (NFA)	The NFA has entered into six collaborative forest management arrangements that include joint patrols, boundary maintenance, tree planting and the harvest of NTFPs.

### **LOOKING FORWARD: DEMAND FOR ECOSYSTEM SERVICES**

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Developing payments for ecosystem services must always begin by considering the potential market for the service (Pagiola, Landell-Mills and Bishop, 2002). Without demand there can be no market. The value of forest services depends not only on their nature and magnitude, but also on the uses to which they are put, as well as the number and preferences of the people using these services.

While PES is attractive because it will allow private sector and markets to allocate their resources to ensure maximum efficiency and 'value for money,' this approach also assumes that there are buyers for ecosystem services and that they are 'able to pay.' However, through pilot project work in Tanzania CARE, IIED, and WWF have shown that it is very difficult to construct a compelling business case for PWS. This is because enterprises that need reliable supplies of good quality water, for example bottling companies, brewing companies and hotels cannot afford to wait for an ecosystem driven solution. Consequently, many have already invested infrastructure (bore-holes, tankers, purification plants) to reduce the business risk associated with a key input to their production process (CARE/WWF EPWP, 2006).. The East and Southern Africa Katoomba Group survey of potential buyers of watershed services in Uganda also found that companies had invested quite heavily in purification plants and water reservoirs.

<http://www.katoombagroup.org/~katoomba/regions/africa/businessEcosystems.php>

**Table 9:**  
**Challenges and Potential Areas of Work**

	<b>Situation &amp; Challenges</b>	<b>Highest Potential Areas of Work</b>
Biodiversity	<ul style="list-style-type: none"> <li>- The basis of huge tourism industry</li> <li>- Most affected by political risk (eg. Kenya; Zimbabwe etc)</li> </ul>	Biodiversity offsets, driven by businesses; biodiversity will be a major co-benefit of REDD
Water	<ul style="list-style-type: none"> <li>- Generally site specific – not an internationally traded product will be developed on an ad-hoc basis for each site</li> </ul>	Clear demand for water and payments for watershed services in the more arid south. Mostly government, but with recent changes in legislation, private sector are more willing to participate.
Carbon	<ul style="list-style-type: none"> <li>- An internationally fungible product</li> <li>- Sequestration from northern polluters, Stern Report 8x cheaper in the south than the north (mitigation)</li> </ul>	<ul style="list-style-type: none"> <li>- REDD, voluntary carbon markets etc.</li> <li>- Most promising buyers outside of Africa</li> </ul>

**Table 10:**  
**Subjective Assessment of Ecosystem Services Demand**

		<b>Bio-diversity</b>	<b>Carbon</b>	<b>Water</b>
<b>International</b>				
	Governments	Will support projects and programmes through grants but not payments for bio-diversity services (PBS)	Since December 2007, increasing commitments by OECD Governments to avoided deforestation payments	Will support pilot projects through grants but not PWS
	Private sector	Strong demand for leases and sometimes land that has high levels of biodiversity, but not PBS	Payments made through the voluntary carbon market. Growth is exponential, but not being invested in E&SA Region	No demand
	Other		Strong interest from the World Bank Bio-Carbon Fund, etc	No demand
<b>National</b>				
	Governments		No demand	Outside of South Africa there is very low demand for PWS in the E&SA Region. Priority is generally given to water infrastructure.
	Private sector	<p>Strong demand for leases and sometimes land that has high levels of bio-diversity, but not PBS.</p> <p>There is some evidence that biodiversity offsets might be an emerging area of interest</p>	<p>No demand.</p> <p>In Uganda, the UCB is beginning to discuss carbon neutrality with local enterprise</p>	Outside of South Africa there is very low demand for PWS in the E&SA Region. Priority is generally given to water infrastructure.

**Table 11:**  
**Core problems as identified by country representatives**

Country	Core problem constraining the development of payments for ecosystem services	Indicative effects of the core problem
Kenya	Limited information on PES	The risks are not understood or not known Inability to develop good models Limited access to markets Transaction costs are high because of poor technical support There is an unwillingness to invest capital to 'pilot' PES by local institutions
Malawi	Incomplete understanding of PES	Policy & regulatory framework still not in place Continued degradation of resource base Continued emissions
Madagascar	Limited understanding of the PES, PES means Carbon and CDM	Less involvement of the GVT (except carbon) Other stakeholders don't know about PES (Private sectors, other GVT Ministries) PES is still on the conceptual level not on the communities
South Africa	The water users of Eastern and Southern Africa do not contribute equitably to the restorations and maintenance of watersheds in order to optimize water quality and quantity from these watersheds.	Watershed services are not being considered well enough when water situation analyses are being done.  The true value/costs of intact/degraded watersheds are not properly accounted for in the development of financial models of existing and new augmentation schemes
Tanzania	Lack of adequate knowledge about PES concept and how it could be applied	Degradation of NR base continues Extinction of rare species Limited buyers will enter into the mechanism Adjacent communities will continue become poorer and poorer Loss of revenues by government due to depletion of NR base
Uganda	Limited/lack of packaging of ecosystem service ready for sale to the market	Limited access - loss of opportunities to Ecosystem Service markets Loss of revenue Ecosystem services are not appropriately valued Alternative use preferred Uncompetitive carbon credits Low prices

**IDENTIFICATION OF BEST BETS FOR THE APPLICATION OF THE INCUBATOR APPROACH**

Despite the growth of global aggregate markets such as the voluntary carbon markets, there are still real barriers to poor rural farmers entering these markets. As pointed out in the justification to the Katoomba Ecosystem Services Incubator

([www.katoombagroup.org/regions/tropicalAmerica/initiative\\_incubator.php](http://www.katoombagroup.org/regions/tropicalAmerica/initiative_incubator.php)) these barriers can be:

- Scarce technical capacity to design projects
- Limited local capacity to engage & negotiate in global market (needs legal, technical, and business/marketing advice, etc.)
- The high transaction costs of working with scattered farmers, diseconomies of scale and the limited PES project finance (grants or soft loans)
- Poor access to information and limited understanding

To address these barriers, Forest Trends have developed the ‘Incubator Approach’ in which the Incubator plays the role of an honest broker and provides technical and financial (soft grants) support to help farmers and communities access PES markets. The goals of the Katoomba Incubator are to:

- increase benefits of PES markets for communities and biodiversity
- demonstrate that community and biodiversity focused PES projects are viable investment options
- catalyze expansion and innovation in ecosystem markets; e.g., methodology development – REDD; ‘double certification’ (integrating carbon with certified agriculture/forestry; using carbon finance to promote water & biodiversity (explore bundled PES?); promote aggregation of small-scale producers/projects
- leverage new investment flows to communities, and
- strengthen regional capacity to develop PES projects via shared understanding, development of tools and methods, etc.

A trial of the incubator approach has begun in South America. Under the current model a private consulting company (Eco-Decision) has been appointed as the ‘Incubator Manager’. In Honduras, Mexico, Ecuador and Brazil, the Incubator provides technical and negotiation service to five selected projects, as shown below. Support is demand driven and framed by the current needs of the selected projects. It is estimated that each project will receive between US\$50K and US\$75K worth of financial support in order to allow it to ‘bring the saleable ecosystem services to market’. Currently support is funded by grant revenue but the medium to long-term business plan envisages the Incubator and other possible brokers charging for their services.

**Table 12:  
Summaries of Illustrative Project Supported by  
the Tropical America Katoomba Group Incubator**

<b>Project</b>	<b>Country</b>	<b>Project / programme Summary</b>
Pico Bonito	Honduras	FSC certified community-based SFM – REDD. Very poor farmers on steep hillsides. World Bank BioCarbon Fund is developing AD/REDD methodology – this to be field tested in this project. Aiming for CCB Certification. Partners: EcoLogic, BioCarbon Fund, community
Gran Reserva Chachi	Ecuador	Community-based conservation areas have been funded by ‘conservation incentive’ agreements with CI. Aim to replace with REDD project. Partners: CI & communities
Sierra Gorda	Mexico	Poor upland communities in Biosphere Reserve restoring and reforesting degraded areas + larger native-species plantations. Aim to get CCB Certification. Partners are local NGOs
Surui Indigenous	Brazil	Surui live in 248,000 ha territory in Western Brazil; under threat from timber interests. REDD plus restoration of 1,500 ha degraded pasture via

Project	Country	Project / programme Summary
Group		reforestation with native species. Aim is to use carbon finance to ensure land rights and conserve biodiversity. Involves a carbon offset deal with French company. Partners: FUNAI, Surui organisation
Monte Pascoal	Brazil	Establishing a 1,000 ha reforestation project in ecological corridor of Atlantic Forest. Carbon offset deal with French coffee multinational, CCB certification. Partners: TNC, Rainforest Alliance, communities

In East and Southern Africa, the inventory approach was used to identify up to three of the 'best bet' PES projects in each country (Table 13). On this basis, ten projects in four countries were suggested as being appropriate for consideration under an East and Southern African Incubator Approach. Of the ten projects identified, six were watershed services with the balance proposing carbon sequestration.

The diversity of the projects selected highlights some of the dilemmas facing the E&SA KG in the development of PES in the region. The foremost challenge is to consider where payments for ecosystem services is the right tool to be using. Secondly, it is critical to understand whether the demand for the services will provide sufficient incentives for farmers to change or modify their farming systems. A necessary, but not sufficient condition, for changing land use is that the landowner perceives that the future stream of net benefits from the new land uses exceed the likely net benefits from the current land uses (See Engel et al, 2008).

**Table 13:**  
**Preliminary identification of projects that could be considered for support under the Incubator Approach**

Country	Project	Ecosystem Service
Kenya	1. Mount Kenya and the Tana River Basin. Green Water Credits	Water
Malawi	1. Department of Forestry 'seedling programme'	Carbon
	2. Agro-forestry projects in Central Region	Carbon
	3. Mount Mulanje Conservation Trust (MMCT)	Water
South Africa	1. WWF and South African Breweries Water Neutral project	Water
	2. Blue Ridge Mining Company	Water
	3. Maloti-Drakensburg	Water
Tanzania	1. Equitable Payments for Watershed Services in Ruvu River Catchment	Water
	2. Sokoine University/Kitulungalo Forest Reserve	Carbon – REDD
Uganda		
	1. Small Holder Afforestation on Private Land or Community Land	Carbon
	2. Avoided Deforestation Credits from Central Forest Reserves – Mabira, Kibale Budongo et al and Community owned forests (Ongo, etc) [Uganda has just been accepted to the FCPF]	REDD

Country	Project	Ecosystem Service
	3. Agriculture PES - Carbon credits from Agriculture/agroforestry/sustainable land management etc	Soil Carbon

The KG Incubator approach being tested in South America will have to be adapted and trialled in the East and Southern African Region. Forest Trends should understand that PES are novel to the E&SA region; there has been more exposure in Latin America. Consequently, a recent PES review characterised South America as the region in which PES are being implemented, Asia where they are currently being experimented with and Africa as the region with fewest projects and the lowest rates of application (Porrás, et al. 2008).

To be effective in the east and Southern Africa Region, the application of the Incubator approach will need to be adaptive. This also implies that the organisation/s charged with carrying out incubator activities will be able to periodically assess its performance, reflect on its success in order to build on success and not to repeat errors.

The Latin America Incubator has indicative allocations of between US\$50,000 and US\$75,000 per project to overcome binding problems and assist in leveraging further funding. If the E&SA KG Incubator is going to be implemented in a similar manner and with similar resource allocations, the selection of projects or project sites will have to be done extremely carefully. Experience, particularly from the CBNRM Community in southern Africa suggests that the best results are achieved where implementing agencies make a long-term commitment to the communities and farmers. These commitments generally exceed the typical 'project framework' of between three and five years (see Kiss, 1999). Reflecting on fifteen years of community conservation work in the East and Southern African Region, Hulme and Murphree (2004) note:

'A conservation that can protect Africa' unique species and habitats; that can reduce the costs it imposes on, and increases the benefits it provides to, rural people; and that can make conservation less socially illegitimate than it presently is for the citizens of African countries is many decades away'

The Incubator Approach will create an opportunity for the E&SA KG to transition from a purely learning forum into a more pro-active approach in which it provides support directly to projects. This approach needs to be tempered by the understanding that rural communities in the region face a hierarchy of challenges and that there are very few quick fixes – the point highlighted by Hulme and Murphree above. The language and the ideas (such as private sector partnerships) associated with payments for ecosystems as well as the considerable financial opportunities that exist (especially through climate change) should not detract from the central lesson of two decades of work that genuine progress is built slowly, incrementally and in many cases requires substantial investment in process and people.

**Table 14:**  
**Utility of the Incubator Concept / Approach to Selected Countries in E&S Africa**

Country	Summary Reactions to Incubator Concept in East and Southern Africa
Kenya	<ul style="list-style-type: none"> <li>- There is very little understanding of the carbon markets in Kenya.</li> <li>- There is an urgent need for information resources, workshops and even models for carbon</li> </ul>
Madagascar	<ul style="list-style-type: none"> <li>- Madagascar is already receiving support for the development of carbon projects.</li> <li>- However there is very little expertise on how it would be possible to develop projects involving watershed services</li> </ul>
Malawi	<ul style="list-style-type: none"> <li>- Malawi has very few skills and is currently 'fumbling in the dark'</li> <li>- The incubator approach could be a way forward</li> </ul>
South Africa	<ul style="list-style-type: none"> <li>- The incubator approach could be used to give communities direct access to water</li> </ul>



Country	Summary Reactions to Incubator Concept in East and Southern Africa
	markets by facilitating links between businesses, water utilities and communities
Tanzania	- Tanzania needs the support of an incubator approach but the precise areas of support need to be explored so they are relevant to Tanzania which is not nearly as developed as Latin America
Uganda	- Help is needed at every stage to bring projects to market

### POTENTIAL PATHWAYS FORWARD

The Katoomba Group is an international working group dedicated to advancing markets and payments for ecosystem services ([www.katoombagroup.org](http://www.katoombagroup.org)). The group is named after the Australian city in which the group first met in 1999. The Katoomba Group has held twelve major conferences and numerous international workshops around the world. In 2005, The Katoomba Group launched The Ecosystem Marketplace ([www.ecosystemmarketplace.com](http://www.ecosystemmarketplace.com)) which was the world's first global market information service on ecosystem services.

Overall, the Katoomba Group:

- Identifies gaps in PES theory and/or practice and will tackle key obstacles not being addressed by other players
- Shares intelligence about new developments related to markets and PES
- Addresses significant challenges related to payments for ecosystem services, such as mobilization of private sector buyers and enabling progress on policy frameworks

The formation of the East and Southern African Katoomba Group (E&SA KG) was agreed upon in a meeting in Switzerland in 2003. The E&AS KG become operational in June 2006 when a full-time co-ordinator,<sup>20</sup> based in Kampala Uganda was appointed. The activities of the E&SA KG Network include:

- Facilitating small national level workshops in Kenya, Tanzania, Uganda, Malawi and Madagascar
- The organisation of a major Katoomba Group Meetings in Uganda (2005) and South Africa (2006)
- The production and distribution of a monthly e-newsletter
- The development and maintenance of a website ([www.katoombagroup.org/regions/africa/](http://www.katoombagroup.org/regions/africa/)).

The East and Southern African Katoomba Group's vision is scaled over a period of twenty five years such that:

- In five years countries in the region will have in place increasing private sector engagement with PES, enabling policy environments, supporting institutions, and the technical capacity to enable significant development of PES.
- Within 10 to 15 years, PES will be delivering biophysical and socioeconomic benefits to poor communities living in productive landscapes.
- In 25 years, PES will be contributing significantly to realizing conservation and development outcomes.

The immediate objectives of the E&SA KG are given as:

- Inform the region's private sector about PES opportunities
- Support national governments in developing policies that enable "pro-poor" PES
- Strengthen capacity of PES practitioners and other key stakeholders through site-structured learning

**Table 15:**  
**SWOT Analysis of the E&SA KG**

<sup>20</sup> The co-ordinator is Alice Ruhweza (insert address)

Strengths	Weaknesses
International linkages Enhanced regional collaboration Pool of intellectual capacity Informal and flexible group Goodwill of country representatives High level of participation from member countries (strong secretariat) Catalytic role in development of PES projects An information source for PES	Limited resources Lack of formally invited country point person with clear touch. No formal way, it was just through individual collaboration. No formal letter to countries Dependency on single funding source. Need for diversification Lack of integration of PES debate into NRM Lack of practical focus in debates. Themes sometimes are theoretical, not practical enough to establish any work on ground Lack of institutional capacity Lack of capability to locally enhance resource mobilization
Opportunities	Threats
Mandate to take advantage of REDD Defined membership- have membership rules, dues, cooperate rates, regular meetings Defined structure, need for national identity to catalyze active membership Incubator coming on board Policy briefs Government support	Membership base not clear Unclear structure Too many non-Africans Remaining in a convening phase talk shop Lack of resources If something happens to Alice what about Katoomba? It should develop structures and it is also a potential for government support and recognition

Source: Kampala Workshop, July 2008

Despite its short history the SWOT analysis (Table 15) showed that the E&ASA KG is playing an important role within the region by making links between local and international researchers, providing a reliable source of information on PES and associated issues, and enhancing regional cooperation. However the SWOT analysis also highlighted several important issues which the members and Forest Trends need to address. These are:

**Limited value as a learning group:** Currently, the E&SA KG is an important forum for PES experts to get together to exchange information and ideas. However, its lack of resources and here-to-date inability to progress beyond a forum or ‘talking-shop’ are considered to be a real weaknesses by some of its members. Critically, irregular meetings do not allow the members to develop momentum around some of the key issues that are limiting the development of payments for ecosystem services. However the rapidly developing REDD agenda does provide the E&SA KG with a massive opportunity in the near future to be a nexus of information exchange, learning and a disseminator of best-practice.

**Governance of the E&SA Group:** To be effective and capitalise on opportunities such as REDD and REDD-like payments, the E&SA KG is going to need to demonstrate its value and address many of the governance issues that are currently opaque and unresolved. Examples of issues that need to be addressed are: the relationship with Forest Trends and the dependency on a single source of income, the relationships between the organisations involved in the E&SA KG, and separation of the executive and decision-making functions of the Group.

**The thematic focus:** Although the E&SA Katoomba Group has only been in operation for less than two years, there are some important strategic decisions that need to be taken about its future direction, most notably including the ecosystem services / area of focus. That is, the inventory and review of payments for ecosystem services has shown PES are at a very early

stage of development. The three ‘markets’ or spheres in which the E&SA Katoomba Group operates are very different and each with specific characteristics, specifically including:

- **Bio-diversity:** E&SA (including Madagascar) is characterised by its unique flora and fauna, especially the charismatic wildlife. This is the main attraction for tourists to the region an industry that is estimated to be worth US\$16.9 billion<sup>21</sup> per annum. There is considerable demand for tourist leases and opportunities where wildlife exists in sufficient quantities irrespective of the tenurial status of the land. However, the importance of bio-diversity the central role of the large protected areas and the confusion over the precise role and definition of payments for ecosystem services suggests that this is an area that the E&SA KG should leave largely for the established organisations with the requisite experience and skills.
- **Carbon** is the most fungible of the three ‘products’ in that it is irrelevant whether a tonne of carbon removed from the atmosphere in the east African region or S.E. Asia. There is growing global concern over climate change and consequently a growing market both in the voluntary sector and within the near future in reduced emissions from deforestation and degradation (REDD). The inventories show that there is growing awareness and interest in carbon payments in the selected counties which is highest in the tropical countries like Uganda and Kenya. Being an international product as well as being fungible, means that in many cases the expertise developed can be transferred between countries. This is often not the case for water and bio-diversity services that tend to be more location or atleast country specific.
- **Water:** The inventories show that the development of payments for watershed (ecosystem) services is very limited outside of South Africa. In South Africa the concept has been developed and led by the Government through the highly successful Working for Water Programme (WfW). After ten years and the introduction of an appropriate trading platform the private sector is beginning to develop initiatives where water is becoming a limiting factor. The precarious nature of government finances outside of South Africa suggest that this model is unlikely to be replicated in the near future. Both the private sector and government tend to be more interested in investing in water infrastructure. Landuse and its impact on both ground and surface water is a scientifically challenging topic. There are very few generic rules that can be applied that to ensure the delivery of a ‘specific and defined service’

The key recommendations are summarized in the table below.

**Table 16:  
 Recommendations for East & Southern Africa Katoomba Group  
 Pathways Forward**

	<b>Recommendation</b>	<b>Context</b>
<b>Recommendation 1</b>	The E&SA KG should focus on carbon and should look at building on existing community organisation and architecture where it exists.	<b>Existing community conservation:</b> Over the last 20 years there has been a substantive investment in community level architecture in east Africa, Southern Africa and Mdagascar. Much of this investment has taken place under the umbrella of ‘community based conservation’. Under the incubator approach, the E&SA KG should focus on providing technical support of avoided deforestation and carbon sequestration to farmers and communities. The E&SA KG should specifically target this support to those areas where there are existing community organisations ( infra-structure), effective institutions (rules) and most importantly the human skills to manage the processes, the environmental change required and the benefits. .

<sup>21</sup> Calculate from [http://www.wttc.org/eng/Tourism\\_Research/Tourism\\_Satellite\\_Accounting/](http://www.wttc.org/eng/Tourism_Research/Tourism_Satellite_Accounting/)

<b>Recommendation 2</b>	The E&SA KG should enter into strategic partnerships with existing networks in order to achieve policy leverage and impact.	<b>Partnerships:</b> There are numerous environment and development networks in the region. The E&SA KG needs to explore opportunities and synergy with some of the existing groups and networks. Strategic partnerships with existing networks will provide greater policy and possibly implementation opportunities both at a regional and a national level. IUCN's Southern African Sustainable Use Group (SASUG) is a good example of a like minded membership and network organisation with which the E&SA KG could explore opportunities.
<b>Recommendation 3</b>	The governance of the E&SA KG, including its relationship with FT, must be transparent and accountable.	<b>Governance:</b> The E&SA Katoomba Group is currently a loose affiliation of experts drawn from the region and internationally. If the E&SA KG is to grow and influence and challenge policy, it will be necessary to develop a much clearer governance structure both at the international, regional and national levels. Criteria for membership, the expectations of members and the benefits that they will gain by belonging to the Group will need to become explicit.
<b>Recommendation 4</b>	The E&SA KG needs to consider a range of models and mechanisms by which it can improve the understanding of the potential and limitations of payments for ecosystem services in the region.	<p><b>Role of E&amp;SA KG in promoting more effective learning:</b> The original rationale for the E&amp;SA KG was based round the dissemination and exchange of information. The inventories and the associated problem analyses show that opportunities and constraints for payments for ecosystems services are poorly understood<sup>22</sup>. This applies to most stakeholder groups but particularly to governments officials in the region.</p> <p>Forest Trends and the current stakeholders in the E&amp;SA KG need to collectively consider the how to genuinely improve its role as a 'learning group' and to avoid becoming labelled a 'talking – shop' – a tag or an image that will be easier to avoid than to deliberately get rid of. Not withstanding financial constraints, the E&amp;SA KG needs to be thinking about strengthening:</p> <ul style="list-style-type: none"> <li>• Meetings and events that are held at national and regional level by giving these stronger focus on thematic or technical issues and ensuring that they are held on a regular (even if it is not frequent) basis.</li> <li>• Ensure that best practice from within the region is shared more effectively with stakeholders dealing with environment and development problems.</li> <li>• Facilitate the process of developing a set of understanding and skills in the region about the opportunities and limitations of payments for ecosystem services.</li> </ul>

<sup>22</sup> A report commissioned by DFID/ NERC and ESPA for arid and semi-arid Africa noted that there is very little understanding of ecosystem services in the region (Khanya - ADCCI)

## CONCLUSIONS

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The E&SA KG conducted inventories of payments for ecosystem services in five selected countries in East and Southern Africa. The central objective was to establish the current status of PES and the document the major changes that had taken place since the last set of inventories in 2006. A workshop was held in Kampala, Uganda to compare the results of the inventories and to consider the future options for the E&SA KG.

The wide interpretation of the PES definition as well as the paucity of data limited our capacity to fulfil the core objectives. Nominally, there appears to be an increase in the number of PES projects and initiatives that are being implemented in the five mainland countries of East and Southern Africa. The inventory also showed however that a number of projects and initiatives had been discontinued – although the reasons are not clear.

The inventory process has also shown that there are a large number of projects and programmes in the region that incorporate economic and financial incentives. Many of these are government programmes that are promoting collaborative land and resource management. To a large extent, principles of devolved resource management, provide the philosophical basis for many of these initiatives.

Within the selected countries the largest and possibly most successful PES programme is the South African Government's Working for Water (WfW). The programme is funded by the South African government largely because it provides valuable employment in rural areas where other formal employment opportunities are very limited. Although conservation benefits, particularly improved streamflow are important, the programme has political support because it addresses poverty. As a model, it is highly unlikely that it will be easily replicated by other governments in the region whose fiscal capacity is much more limited and there are serious basic needs such as health and education.

The paucity of data from PES initiatives has prevented any substantive analysis in the growth in the market of generally recognised PES commodities; bio-diversity, carbon and watershed services. The information collected suggests that water is becoming a limiting factor to development in the more arid southern countries and for this reason land-water relationships tend to be the priority. In the more moist northern tropical zones, there appear to be more opportunities for carbon sequestration than they are further south. The exponential growth of the voluntary carbon market and the emergence of the REDD Agenda at COP # 13 in Bali in 2007 suggest that from a market perspective, the greatest opportunities exist within the sphere of carbon sequestration and payments for avoided deforestation.

The development of PES as a mainstream conservation (and development tool) still faces a number of major challenges. These include many of the constraints that were identified in 2006/7 such as:

- There is limited information on PES, its opportunities and limitations,
- There are limited skills in the region, particularly in-terms of ecosystem services and the potential opportunities offered by PES led solutions.
- The potential role of governments to lead by example such as has happened in South Africa is limited by skills and financial resources.
- Scale of challenges – multiple challenges, PES is a specific tool that will address problems where there are substantial externalities

Globally the Katoomba Group has been active for over ten years, while the E&SA KG has been operating for just over two years. Within the resources that have been available the E&SA KG has been extremely active in networking, providing information via its newsletter and the convening meetings (South Africa in 2006 and Tanzania in 2008). The broad conclusions of the inventories and the participatory SWOT analysis conducted by the participants at the workshop, suggest that the E&SA KG needs to focus its efforts, be more pro-active and ensure that it is more relevant to its members. Four key recommendations are that:

- The E&SA KG should focus on carbon and should look at building on existing community organisation and architecture where it exists.
- The E&SA KG should enter into strategic partnerships with existing networks in order to achieve policy leverage and impact.
- The governance of the E&SA KG, including its relationship with FT, must be transparent and accountable.
- The E&SA KG needs to consider a range of models and mechanisms by which it can improve the understanding of the potential and limitations of payments for ecosystem services in the region.

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**APPENDIX 1:  
ORGANISATIONS & INDIVIDUALS ENGAGED IN  
THE 2008 EAST & SOUTHERN AFRICA PES INVENTORY**

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<b>Country</b>	<b>Lead person/s</b>	<b>e-mail address</b>	<b>Organisation</b>
<b>Kenya</b>	Samuel Mwangi	smmwangi@gmail.com	National Museums of Kenya
<b>Tanzania</b>	Dosteus Lopa	Dlopa@care.or.tz	CARE Tanzania
<b>Uganda</b>	Alice Ruhweza	aruhweza@forest-trends.org	East and Southern Africa Katoomba Group
	Byamukama Biryahwaho	<a href="mailto:bbyamukama21@yahoo.com">bbyamukama21@yahoo.com</a>	Nature Harness Initiatives
<b>South Africa</b>	James Bignaut	<a href="mailto:james@jabenzi.co.za">james@jabenzi.co.za</a>	University of Pretoria
	Christo Marais	Chris@dwaf.gov.za	Department of Water Affairs and Forestry
<b>Madagascar</b>	Nirina A. Randimby	benitany@gmail.com	Green Energy Madagascar
<b>Malawi</b>	Sosten Chiotha	<a href="mailto:schiotha@chanco.unima.mw">schiotha@chanco.unima.mw</a>	Leadership for Environment and Development (LEAD)
	Dennis Kayambazinthu	D_kayamba@hotmail.com	Department of Forestry
<b>Others</b>			
	Bill Farmer	Farmers66@yahoo.com	Uganda Carbon Bureau
	Sarah Namirembe	Sara.namirembe@gmail.com	East and Southern Africa Katoomba Group Incubator
	Ivan Bond	Ivan.bond@iied.org	International Institute for Environment and Development, U.K.
	Michael Richards	m.richards@frr.co.uk	Forest Trends, Consultant

**APPENDIX 2:  
EXAMPLES OF PAYMENTS FOR ECOSYSTEM SERVICES**

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**EXAMPLES OF SELF-ORGANIZED DEALS**

*France:*

After benzene was found in Perrier Vittel's bottled water in 1990 the company (now owned by Nestle) discovered it would be cheaper to invest in conserving the farmland surrounding their aquifers than to build a filtration plant. Accordingly, they purchased 600 acres of sensitive habitat and signed long-term conservation contracts with local farmers. Farmers in the Rhine-Meuse watershed in northeastern France received compensation to adopt less intensive pasture-based dairy farming, improve animal waste management, and reforest sensitive infiltration zones.

*Chile:*

Private individuals in Chile have invested in Private Protected Areas primarily for conservation purposes and high-biodiversity vacation spots. Payments have been voluntary and driven by a desire to complement government conservation of critical habitat.

**EXAMPLE OF PUBLIC PAYMENTS**

The Public Redistribution Mechanism in Paraná, Brazil offers an example of a public payment. The State allocated funds to municipalities to protect forested watersheds and rehabilitate degraded areas. Also in Parana, and Minas Gerais, 5% of the revenues received from the Circulation of Goods and Services (ICMS), an indirect tax charged on the consumption of all goods and services, is distributed either to municipalities with conservation units or protected areas, or to municipalities that supply water to neighboring municipalities. The State allocates more revenues for those municipalities with the greatest amount of area under environmental protection.

**EXAMPLE OF REGULATION-DRIVEN OPEN TRADING**

The best known example of open trading is the international carbon market, established by the Kyoto Protocol, which allows industrialized countries to trade carbon credits in order to meet their commitments at the lowest possible cost. Forestry activities which sequester carbon by promoting forest establishment and growth are one mechanism for reducing emissions.

## Types of Payments for Biodiversity Protection

<p><b>Purchase of High-Value Habitat</b></p> <ul style="list-style-type: none"> <li>▪ Private land acquisition (purchase by private buyers or NGOs explicitly for biodiversity conservation)</li> <li>▪ Public land acquisition (purchase by government agency explicitly for biodiversity conservation)</li> </ul>
<p><b>Payment for Access to Species or Habitat</b></p> <ul style="list-style-type: none"> <li>▪ Bioprospecting rights (rights to collect, test, and use genetic material from a designated area)</li> <li>▪ Research permits (rights to collect specimens and take measurements in a designated area)</li> <li>▪ Hunting, fishing or gathering permits for wild species</li> <li>▪ Ecotourism use (rights to enter the area, observe wildlife, camp, or hike)</li> </ul>
<p><b>Payment for Biodiversity-Conserving Management Practices</b></p> <ul style="list-style-type: none"> <li>▪ Conservation easements (owner is paid to use and manage defined piece of land only for conservation purposes; restrictions are usually in perpetuity and transferable upon sale of the land)</li> <li>▪ Conservation land lease (owner is paid to use and manage a defined piece of land for conservation purposes, for a defined period of time)</li> <li>▪ Conservation concession (public forest agency is paid to maintain a defined area under conservation uses only; comparable to a forest logging concession)</li> <li>▪ Community concession in public protected areas (individuals or communities are allocated use rights to a defined area of forest or grassland in return for commitment to protect the area from practices that harm biodiversity)</li> <li>▪ Management contracts for habitat or species conservation on private farms, forests, grazing lands (contract that details biodiversity management activities, and payments linked to the achievement of specified objectives)</li> </ul>
<p><b>Tradable Rights under Cap &amp; Trade Regulations</b></p> <ul style="list-style-type: none"> <li>▪ Tradable wetland mitigation credits (credits from wetland conservation or restoration that can be used to offset obligations of developers to maintain a minimum area of natural wetlands in a defined region)</li> <li>▪ Tradable development rights (rights allocated to develop only a limited total area of natural habitat within a defined region)</li> <li>▪ Tradable biodiversity credits (credits representing areas of biodiversity protection or enhancement, which can be purchased by developers to ensure they meet a minimum standard of biodiversity protection)</li> </ul>
<p><b>Support Biodiversity-Conserving Businesses</b></p> <ul style="list-style-type: none"> <li>▪ Business shares in enterprises that manage for biodiversity conservation</li> <li>▪ Biodiversity-friendly products (eco-labeling)</li> </ul>

Excerpted from: Scherr, Sara, Andy White, and Arvind Khare with contributions from Mira Inbar and Augusta Molar. 2004. "For Services Rendered: The Current Status and Future Potential of Markets for the Ecosystem Services Provided by Tropical Forests." Yokohama, Japan: International Tropical Timber Organization (pp. 30-31).

### Examples of Water Market Payments

Name of Case Study	Water-related ecological service provided	Supplier	Buyer	Instruments	Intended impacts on forests	Payment
<b>Self-Organized Private Deals</b>						
France: Perrier Vittel's Payments for Water Quality	Quality drinking water	Upstream dairy farmers and forest landholders	A bottler of natural mineral water	Payments by bottler to upstream landowners for improved agricultural practices and for reforestation of sensitive infiltration zones	Reforestation but little impact because program focuses on agriculture	Vittel pays each farm about US\$230 per hectare per year for seven years. The company spent an average of US\$155,000 per farm or a total of US\$3.8 million.
Costa Rica: FONAFIFO and Hydroelectric Utilities Payments for Watershed Services	Regularity of water flow for hydroelectricity generation	Private upstream owners of forest land	Private hydroelectric utilities, Government of Costa Rica and local NGO	Payments made by utility company via a local NGO to landowners; payments supplemented by government funds	Increased forest cover on private land; expansion of forests through protection and regeneration	Landowners who protect their forests receive \$US 45/ha/yr, those who sustainably manage their forests receive \$US 70/ha/yr, and those who reforest their land receive \$US 116/ha/yr.
Colombia: Associations of Irrigators' Payments (Cauca River)	Improvements of base flows and reduction of sedimentation in irrigation canals	Upstream forest landowners	Associations of irrigators; government agencies	Voluntary payments by associations to government agencies to private upstream landowners; purchase by agency of lands	Reforestation, erosion control, springs and waterways protection, and development of watershed communities	Association members voluntarily pay a water use fee of \$US 1.5- 2/litre on top of an already existing water access fee of \$US 0.5/litre. The total investment was over US\$ 1.5 billion between 1995-2000.
<b>Trading Schemes</b>						
United States: Nutrient Trading	Improved water quality	Point source polluters discharging below allowable level; non-point source polluters reducing their pollution	Polluting sources with discharge above allowable level	Trading of marketable nutrient reduction credits among industrial and agricultural polluting sources	Limited impact on forests- mainly the establishment of trees in riparian areas	Incentive payments of \$5 to \$10 per acre
Australia: Irrigators Financing of Upstream Reforestation	Reduction of water salinity	State Forests of New South Wales (NSW)	An association of irrigation farmers	Water transpiration credits earned by State Forests for reforestation and sold to irrigators	Large-scale reforestation, including planting of desalination plants, trees and other deep rooted perennial vegetation	Irrigators pay \$US 40/ha per year for 10 years to the government agency: State Forests of NSW. Revenues are used by State Forestry to reforest on private and public lands. Private landowners receive an allowance, but rights remain within the State Forestry.

Excerpted from: Scherr, Sara, Andy White, and Arvind Khare with contributions from Mira Inbar and Augusta Molar. 2004. "For Services Rendered: The Current Status and Future Potential of Markets for the Ecosystem Services Provided by Tropical Forests." Yokohama, Japan: International Tropical Timber Organization (pp. 30-31).