

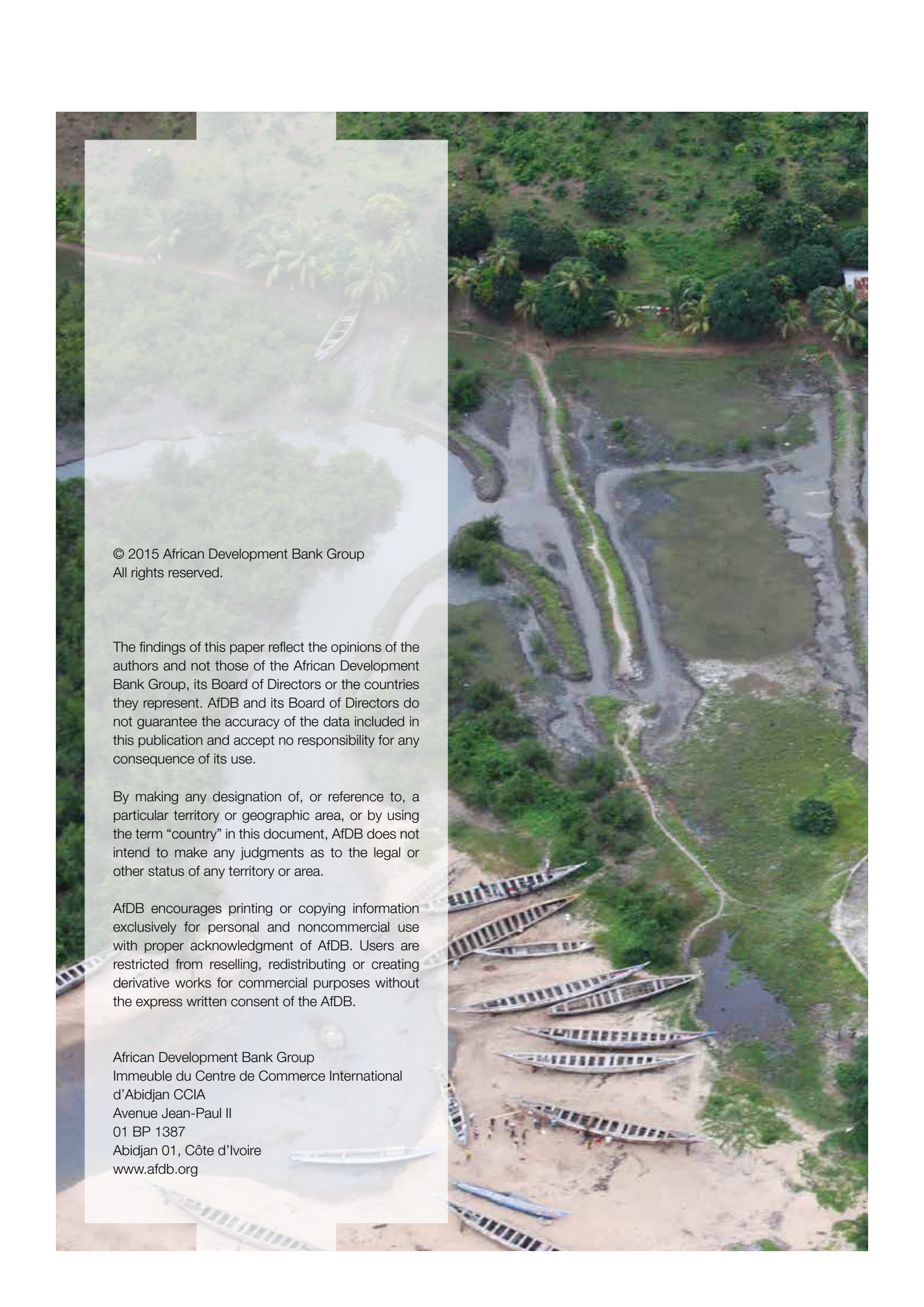
PAYMENT FOR ENVIRONMENTAL SERVICES

# A PROMISING TOOL FOR NATURAL RESOURCES MANAGEMENT IN AFRICA



AFRICAN DEVELOPMENT BANK GROUP





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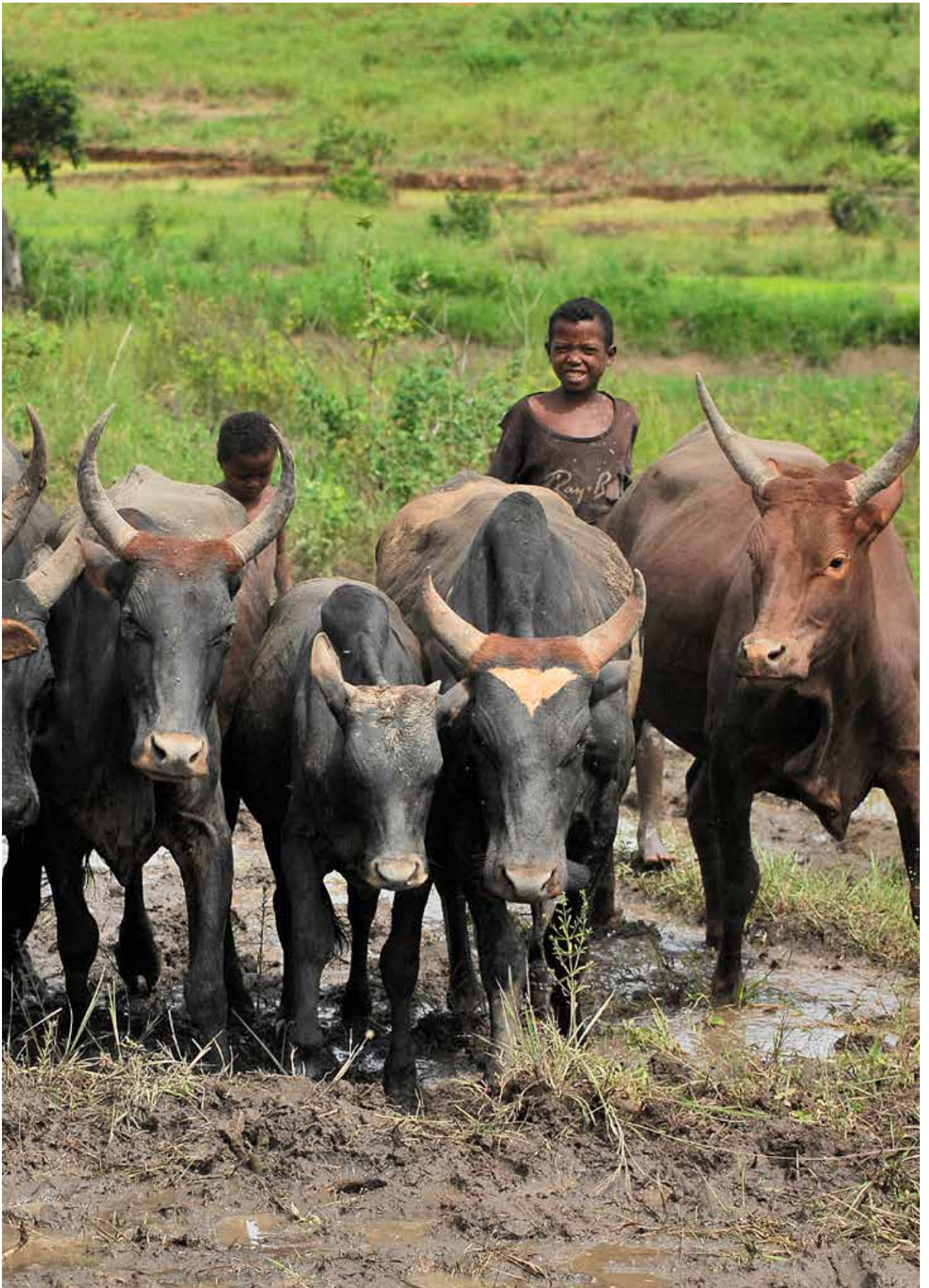
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# ACRONYMS AND ABBREVIATIONS

<b>AfDB</b>	African Development Bank	<b>IWRM</b>	Integrated Water Resources Management
<b>ANRC</b>	African Natural Resources Center	<b>MEA</b>	Millennium Ecosystem Assessment
<b>AWF</b>	African Wildlife Foundation	<b>NBA</b>	Niger Basin Authority
<b>BBOP</b>	Business and Biodiversity Offsets Programme	<b>NEPAD</b>	New Partnership for Africa's Development
<b>CAFE</b>	Consortium of African Funds for the Environment	<b>NGOs</b>	Non-Governmental Organizations
<b>CAMPFIRE</b>	Communal Areas Management Programme for Indigenous Resources	<b>NRM</b>	Natural Resources Management
<b>CARE</b>	Cooperative for Assistance and Relief Everywhere	<b>ONEC</b>	Energy, Environment and Climate Change Department
<b>CARPE</b>	Central African Regional Program for the Environment	<b>ORQR</b>	Quality Assurance and Results Department
<b>CIF</b>	Climate Investment Funds	<b>OSAN</b>	Agriculture and Agro-industry Department
<b>CSR</b>	Corporate Social Responsibility	<b>PRESA</b>	Pro-poor Rewards for Environmental Services in Africa
<b>DRC</b>	Democratic Republic of Congo	<b>REDD+</b>	Reducing Emissions from Deforestation and Forest Degradation
<b>EPWS</b>	Equitable Payments for Watershed Services	<b>SCF</b>	Strategic Climate Funds
<b>ECOTRUST</b>	Environmental Conservation Trust of Uganda	<b>SINAC</b>	National System of Conservation Areas
<b>ES</b>	Environmental Services	<b>SLM</b>	Sustainable Land Management
<b>FEDEC</b>	Foundation for Environment and Development in Cameroon	<b>USD</b>	United States Dollar
<b>FAO</b>	Food and Agriculture Organization	<b>UNDESA</b>	United Nations Department of Economic and Social Affairs
<b>FIP</b>	Forest Investment Program	<b>UNEP</b>	United Nations Environment Program
<b>GDP</b>	Gross Domestic Product	<b>UNESCO</b>	United Nations Educational, Scientific and Cultural Organization
<b>GEF</b>	Global Environment Fund	<b>UNICEF</b>	United Nations Children's Fund
<b>GHG</b>	Greenhouse Gases	<b>TEEB</b>	The Economics of Ecosystems and Biodiversity
<b>GGF</b>	Forest Management Group	<b>VERs</b>	Voluntary Emission Reductions
<b>ICRAF</b>	International Centre for Research in Agroforestry/World Agroforestry Centre	<b>WHO</b>	World Health Organization
<b>IPCC</b>	Intergovernmental Panel on Climate Change	<b>WWF</b>	World Wildlife Fund



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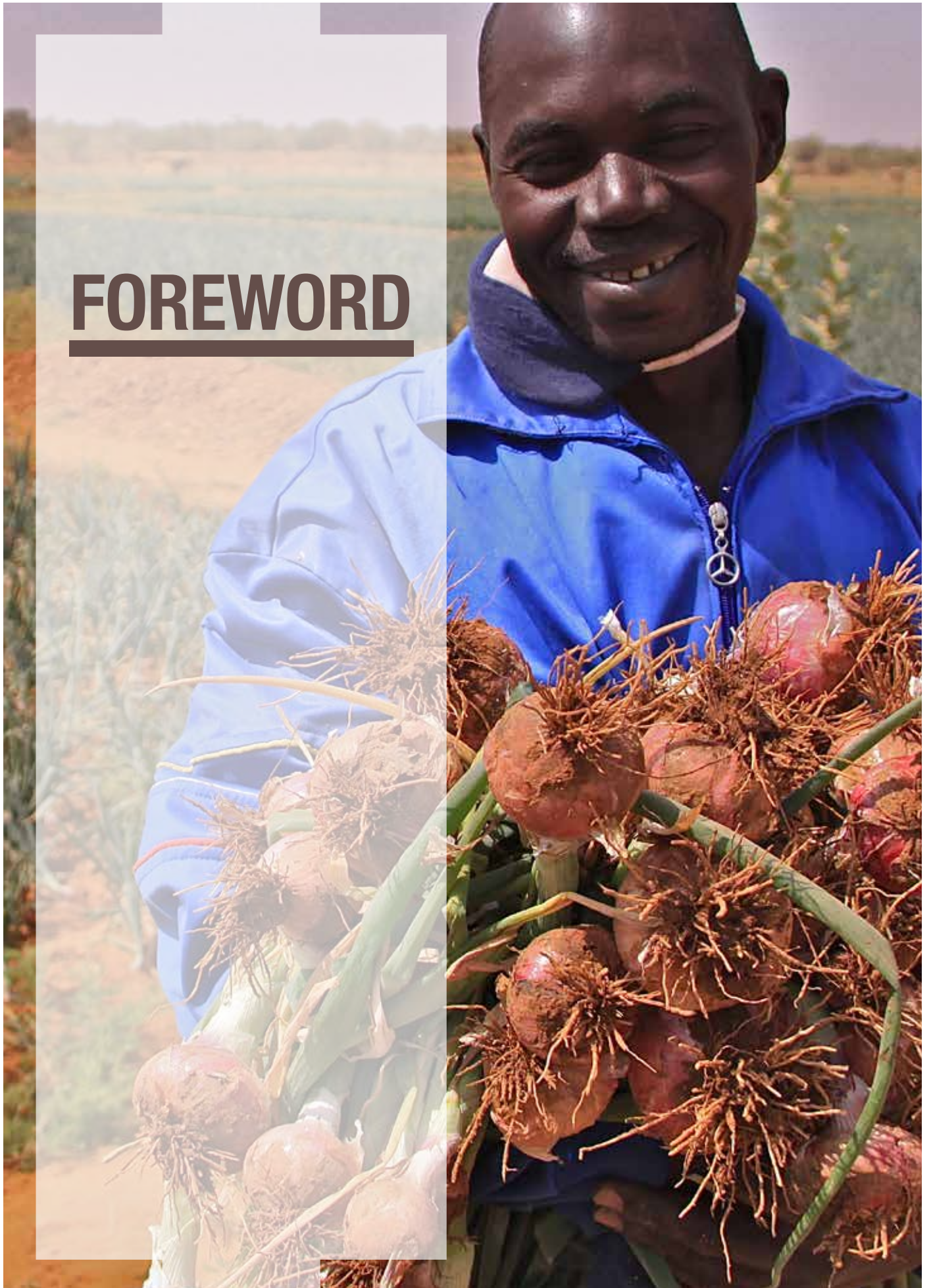
This publication is a product of the AfDB’s Energy, Environment and Climate Change Department (ONEC), in collaboration with the Agriculture and Agro-industry Department (OSAN) and the Quality Assurance and Results Department (ORQR), in the context of their work with the Forest Investment Program of the Climate Investment Funds.

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# **FOREWORD**



Africa is a continent rich in natural renewable resources. More than elsewhere in the world, its sustainable development will depend on its capacity to efficiently and sustainably manage its natural resources—in particular, water, land and forests—for the benefit of all. The replenishment, maintenance and improvement of these resources are dependent on their proper management. Sustainability cannot be taken for granted and investments in ecosystem restoration are much needed.

Recognizing this, the Bank's strategy for 2013–2022 has made the transition to green growth one of its two main objectives, along with inclusive growth. In addition, the Bank has committed to ensuring the social and environmental sustainability of the projects it supports through its recently adopted Integrated Safeguards System, one of the cornerstones of its strategy. In particular, Operational Safeguard 3, "Biodiversity, renewable resources and ecosystem services", paves the way for the development of a Payment for Environmental Services (PES) mechanism to sustain the Bank's project performance in the long term and offset unavoidable impacts of the Bank's investments on biodiversity.

However, the sustainable and equitable management of natural resources is a huge challenge in Africa. PES is a promising solution, proven successful in other geographies. It has the potential to improve natural resources management (NRM) efficiency, ensure conservation benefits for the rural poor and establish new sustainable finance for conservation. In light of this capacity to contribute to green and inclusive growth, the Bank has already promoted the use of PES as an implementation mechanism for some of its projects, in particular for carbon sequestration in the context of the Forest Investment Program and the Congo Basin Forest Fund.

We are still far from tapping the full potential of this new tool. We are particularly interested in its capacity to strengthen the sustainability of AfDB projects in the field of NRM and to provide much needed additional sustainable financing for conservation. PES is still a new concept in Africa however, and its development will require the establishment of enabling conditions and capacity building. It is therefore crucial to gather and share the lessons learned and build an agenda for PES development in Africa. This work is a first step in that direction.



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# **EXECUTIVE SUMMARY**

Africa is resource rich and natural resources play a key role in its development. They form the basis of economic activities and livelihoods, especially among the poorest. In fact, the majority of the population is engaged in their use and exploitation, which represents an estimated 30 percent of the continent's Gross Domestic Product (GDP). However, recent economic growth has not translated into an increase of real wealth due to the costs of natural resource depletion. The sustainable management of natural resources is thus a key concern for the continent's sustainable development, as exemplified by the African Development Bank's strategy for 2013-2022. The strategy emphasises a transition to green growth as one of its two main objectives. However, natural resources management (NRM) in Africa has faced some major challenges, including an insufficient mobilization of financial resources by countries and donors.

Payment for Environmental Services<sup>1</sup> (PES) has recently received a great deal of attention as a new, innovative and promising approach to NRM. In this document, PES is defined as a contractual agreement between at least an environmental service (ES) beneficiary and an ES producer (or an intermediary acting as one of them), by which the former transfers resources to the latter, providing the ES producer adopts specific practices on the land or resource he controls or possesses, to enhance the production of a specific ES. This document focuses on the main ES involved in such mechanisms: carbon sequestration and storage, biodiversity conservation and watershed protection.

To harness the potential of PES in Africa, in November 2013, the African Development Bank (AfDB) organized an international workshop under the theme, "Achieving Sustainable Management of Natural Resources in Africa using Payments for Environmental Services (PES)" in Tunis. This two-day event brought together 70 experts from governments, basin organizations, civil society, NGOs and the research community from across Africa, Europe and Latin America. This document builds on the results of that workshop, the AfDB's experience and an extensive review of available literature to assess the potential role of PES in promoting sustainable NRM in Africa and to propose recommendations to harness this potential.

PES is a promising instrument for addressing challenges to sustainable NRM in Africa. It has the potential to help raise new sources of sustainable finance where they are greatly lacking and improve the efficiency of conservation interventions, which has been said to be low in Africa. It can also help secure the flow of ES for the businesses and infrastructure that rely on them—and ultimately provide benefits for rural poor populations, a key concern in Africa.

PES schemes are not very developed in Africa, although many initiatives, especially REDD+<sup>2</sup> pilot projects, are currently driving their growth. Indeed, carbon sequestration PES mechanisms are the most widespread in Africa due to the available international demand for this service in carbon markets and the huge potential offered by avoided deforestation in the Congo basin. The Trees for Global Benefit project in Uganda is an example of a carbon-based PES. It is presented here as a case study.

Biodiversity-oriented PES schemes have also enjoyed some development in Africa, in particular in East Africa, and, to a lesser extent, in Southern and Central Africa. Their development has been supported by two major trends: the development of community-based NRM and ecotourism. This is exemplified in the case study on the land leases program in the Amboseli ecosystem in Kenya. In addition, while there is currently no biodiversity offset<sup>3</sup> fully implemented in Africa, several initiatives are in process driven by new regulations, requirements from financial institutions and companies' corporate social responsibility policies. Though water scarcity is an important concern in Africa, Payment for Watershed Services schemes seem to be the lesser developed type of PES in Africa. This is due in particular to the lack of solvent demand at the local and national levels. This has not impeded the development of the Equitable Payments for Watershed Services in the East Usambara Mountains of Tanzania, however. It is the third case study presented in this report.

To realize this potential, enabling institutional frameworks should be put in place, in particular through clarification of land tenure and support to local communities' organizational capacity. Of paramount importance for PES to be implemented at scale is the setting up of legal, institutional and fiscal mechanisms to generate new public and private funding for conservation, including funding from international climate finance initiatives such as REDD+. Institutional reforms allowing the coordination at the landscape level among different thematic and sectorial public agencies dealing with land uses are also needed for large-scale public PES to develop. From this perspective, PES' development fits into a broader conservation finance and modernization agenda. In the long term, it is reasonable to expect that economic growth would favour the emergence of a stronger solvent demand for ES at the local and national levels. It should also lead to the strengthening of PES-enabling legal and institutional frameworks.

PES schemes must also be designed to work in the African context and mitigate the associated risks. These risks include increased conflict over natural resources, asymmetric contracts resulting in unfair arrangements, elite capture, mismanagement and perverse incentives. Building understanding, awareness,

1 The phrases "environmental services", "ecosystem services" and "ecological services" are often used interchangeably as there is currently no clear consensus on their exact definitions and differences. In general, ecosystem services refers to the benefits derived by human beings from the ecosystems (Millennium Ecosystem Assessment, 2005) while environmental services are services rendered by people to other people for the maintenance or the improvement of a given ecosystem service (Karsenty, 2013). The environmental services notion is generally used in the framework of payment mechanisms (Antona and Bonnin, 2010) and is what is used in this document with respect to Payments for Environmental Services.

2 REDD+ is an international system of incentives, currently under discussion at the United Nations Framework Convention on Climate Change, to reduce emissions of greenhouse gases resulting from deforestation and forest degradation and to enhance forest carbon stocks in developing countries. For its implementation, it is supposed to rely to a great extent on PES to channel international funding to the local level.

3 Biodiversity offsets are investments in conservation activities by which project developers offset their residual impact on biodiversity in order to avoid a net loss and preferably ensure a net gain of biodiversity.

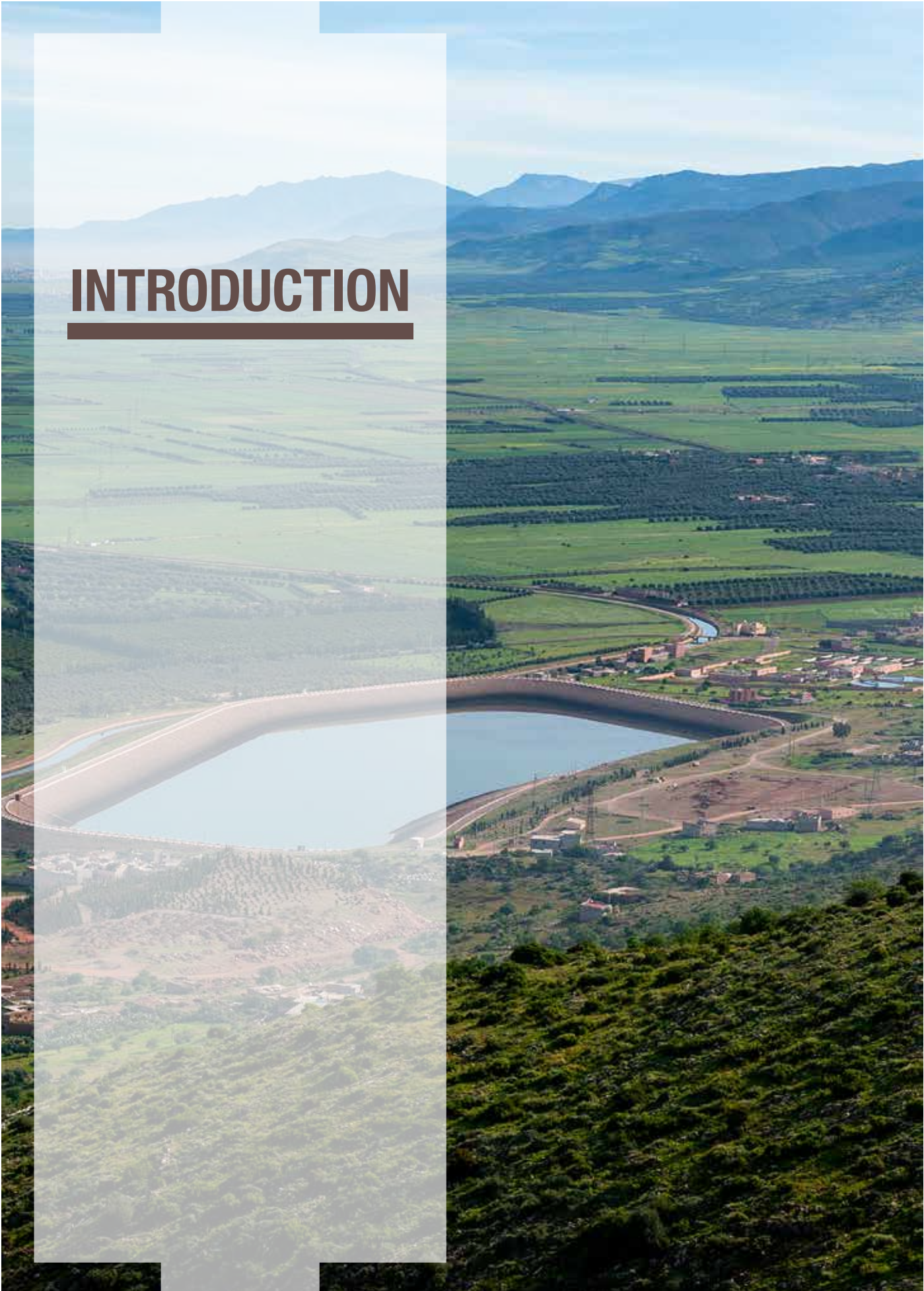
trust and capacity among stakeholders during the development of such mechanisms are all ways of mitigating these risks.

Project developers should also be encouraged to delegate necessary activities for PES (recruitment, training, organization, *etc.*) to local communities. It will both help lower transaction costs, a major barrier for PES development in Africa, as well as strengthen the sustainability of the mechanism overtime. Finally, it seems crucial to frame PES as a tool for development to secure its place within the current sustainable development agenda of the continent. To achieve this, PES schemes should be explicitly designed to bring benefits to the poor—particularly in terms of their operational rules and governance—through a fair and participative process. In addition, payments should not only cover opportunity costs but also the necessary investments to make local livelihood systems compatible in the long term with conservation objectives.





# INTRODUCTION





A majority of people in Africa, especially the poorest, are heavily dependent on renewable natural resources for their livelihoods, chiefly land, water and forests. Harvested natural resources are estimated to provide more than a quarter of African rural household incomes (Secretariat of the CBD, 2014). The strong economic growth Africa has recently enjoyed hinges critically on these resources, requiring their sustainable management. In this context, two main objectives of the African Development Bank's (AfDB) strategy for 2013-2022 emphasise the need to assist regional member countries in achieving inclusive growth and transitioning gradually to green growth. In this context, AfDB has recently adopted an Integrated Safeguards System to ensure the social and environmental sustainability of the projects it supports.<sup>4</sup>

The sustainable management of natural resources has thus become a key concern for the Bank. However, in Africa, it has faced some major challenges starting with an insufficient mobilization of financial resources by countries and donors. It has therefore become imperative to explore alternative and innovative mechanisms. Payment for Environmental Services<sup>5</sup> (PES) has appeared as a promising tool at the international level to foster conservation efficiency, sustainable finance for conservation and poverty reduction. Nevertheless, the concept is still new in Africa and PES mechanisms are not yet thoroughly developed, though many initiatives have emerged recently on the continent.

To harness PES' potential in Africa, in November 2013 AfDB organized an international workshop titled "Achieving Sustainable Management of Natural Resources in Africa using Payments for Environmental Services (PES)" in Tunis. The two-day event brought 70 experts from government, basin organizations, civil society, NGOs and the research community from across the continent, Europe and Latin America. The workshop's objectives included achieving a better understanding of PES, its strengths and weaknesses; its conditions of application; and its potential in Africa. Participants also discussed best practices for PES' implementation and the identification of key actions required to facilitate its development in Africa.

This document builds on the results of this workshop, the AfDB's experience in the field and an extensive review of relevant literature. This paper serves to assess the potential role of PES in promoting the sustainable management of natural resources in Africa and to build a robust approach to harnessing this potential. It focuses on three types of ES: carbon sequestration and storage, biodiversity conservation and watershed protection. After reviewing the situation of NRM in Africa, the PES concept is presented. This is followed by a presentation of its potential benefits and the variety of forms it can take, as well as its current and expected development. The current use of PES in Africa is then analysed (including case studies) along with its potential to develop on the continent.

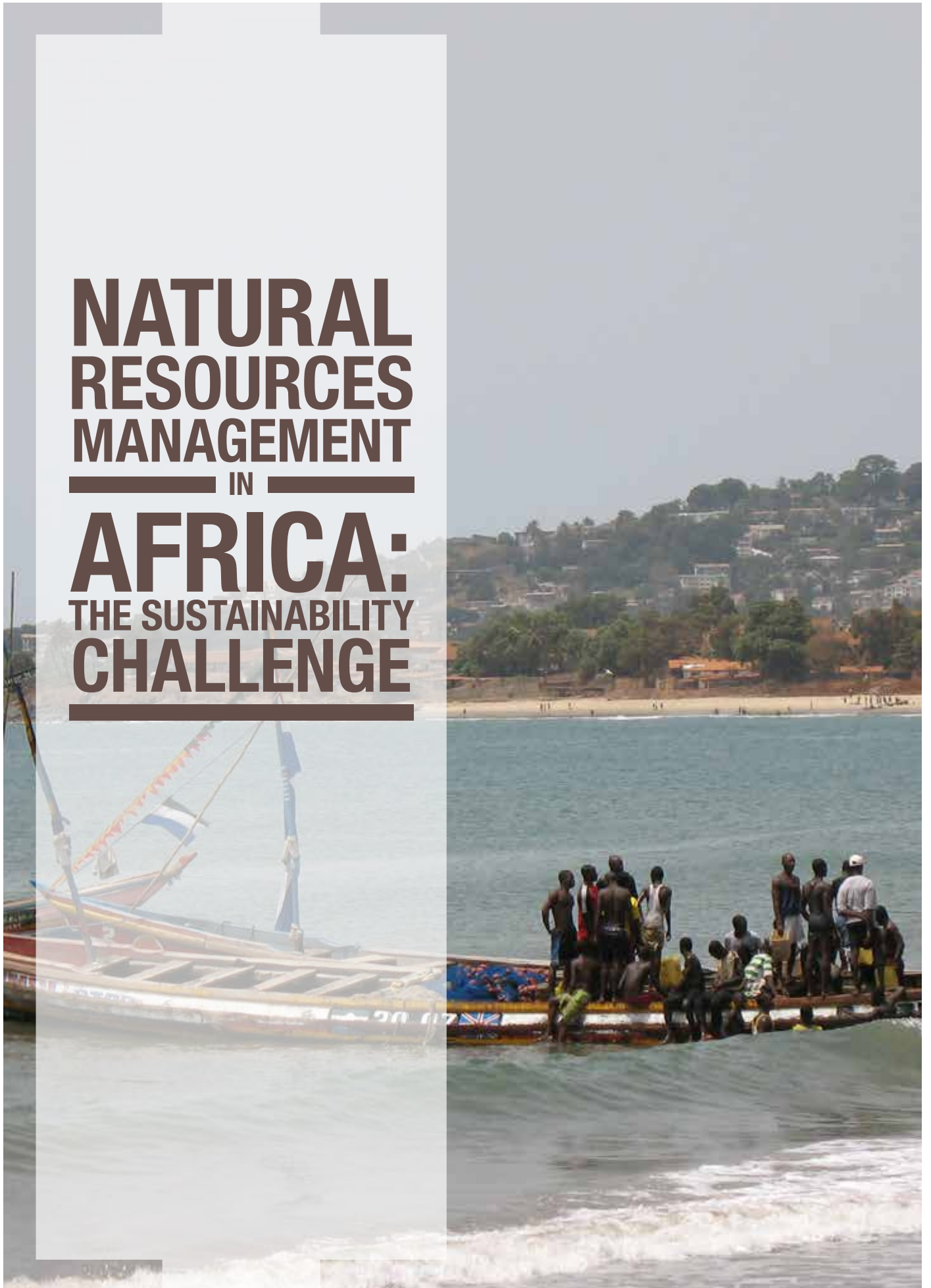
Finally, a number of recommendations are presented that could drive the development of PES in Africa, including the promotion of enabling institutional frameworks, best practices and examples of its inclusion in AfDB operations.

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4 Of particular interest from an environmental point of view is the operational safeguard 3 "Biodiversity, renewable resources and ecosystem services".

5 See footnote 1, regarding the ES notion.

# NATURAL RESOURCES MANAGEMENT IN AFRICA: THE SUSTAINABILITY CHALLENGE



**Africa is resource rich and natural resources play a key role in its development.**

Indeed, most of the continent's population rely on them for their livelihoods—farmers, forest dwellers, fishermen, herders—and in the last decade, an estimated 30 percent of the continent's Gross Domestic Product (GDP) was linked to the use or exploitation of natural resources (AfDB et al., 2011; McKinsey Global Institute, 2010). The continent has enjoyed strong economic growth in recent years—some 5% annually since 2000 (AfDB, 2013a). This has been significantly driven by the exploitation of natural resources in the context of a commodity boom. An increasing number of African countries are also benefitting from non-renewable natural resource revenues.

**While this recent growth has allowed an urban middle-class to develop, it has not translated into an increase of real wealth.**

Indeed, poverty has declined modestly<sup>6</sup> and social indicators such as infant mortality, life expectancy, school enrolment, and prevalence of undernourishment have significantly improved (AfDB, 20113a). This has supported the rise of the middle class, from 27% of the African population in 2000 to 34% in 2010 (AfDB, 2011).<sup>7</sup> However, the adjusted net savings<sup>8</sup> of sub-Saharan Africa have declined in parallel and even become negative since the mid-2000s. This suggests a process of impoverishment in real terms due, in particular, to the cost of natural resources depletion (World Bank, 2013). Similarly, the continent's ecological footprint is increasing rapidly and is expected to exceed the biocapacity available within its borders by 2015 (AfDB and WWF, 2012).<sup>9</sup>

**The sustainable management of natural resources is thus a key concern for the continent's sustainable development.**

Renewable resources are those that are regenerated on a human time scale and hence renewed periodically. Renewable natural resources of land, forests, biodiversity and water generally constitute the basis for PES and will thus be the main focus of attention.

## STATE OF NATURAL RESOURCES IN AFRICA

**Land is an abundant and critical resource in Africa but it is globally (not locally) underexploited, poorly managed and widely degraded.** Though not the only or main cause<sup>10</sup>, this has

contributed to the malnutrition of some 22.9% of Africans (FAO, 2012). Land is perhaps the most essential resource in Africa and the basis of survival for the majority of the population through its use for agriculture, a sector that employs 60% to 70% of the population and represents 30% to 40% of the wealth produced on the continent (Juel, 2013).

While approximately 66% of Africa is classified as desert or drylands (Liniger et al., 2011), arable land represents some 29% of the African territory (NEPAD, 2002).<sup>11</sup> This considerable potential is currently underexploited: Africa has the lowest agricultural yield in the world and, according to some controversial estimates, uses less than 30% of its farmable land for agriculture.<sup>12</sup>

In addition, according to Liniger et al. (2011), 67% of Africa's land is already affected by land degradation, with 4% to 7% of land severely degraded in sub-Saharan Africa, the highest proportion of any region in the world. Soil degradation in Africa is attributable to overgrazing (50%), poor agricultural management practices (24%), vegetation removal (14%) and overexploitation (13%). This degradation is being exacerbated by climate change. The cumulative loss of productivity from land degradation is estimated to be 25% of cropland and 6.6% of pastureland. Land degradation also has negative effects on freshwater, forest and biodiversity.

**Scarcity of water resources is a growing concern in Africa.**

Despite having annual average precipitation close to the world average, high evaporation losses and high variability of rains among regions and the lack of necessary investments have led to significant water scarcity. According to AfDB and WWF (2012), "nearly 400 million people living in Africa's 36 largest river basins experience water scarcity for at least one month each year." Only a few African countries—mainly in East, Southwest and North Africa—are currently physically water scarce, *i.e.* countries that are using all of their water reserves. Most countries experience economic water scarcity, which means that they have abundant or at least sufficient water resources but lack the resources and means to develop them. Indeed, only 60% of the population of sub-Saharan Africa had access to safe water in 2010. What's worse, progress is slow: this proportion has only increased by 11% over the last 20 years (WHO and UNICEF, 2010). Furthermore, only 4% of total cultivated land in Africa is under irrigation (Vince, 2010).

6 About 0.77 percentage points per annum during the last decade (average for all 24 countries for which data was available) (AfDB, 2013a).

7 Using an absolute definition of per capita daily consumption of \$2-\$20 in 2005 PPP US dollars to characterize the middle class in Africa.

8 According to the World Bank, adjusted net savings measures the true rate of savings in an economy after taking into account investment in human capital, depletion of natural resources and damage caused by pollution.

9 According to AfDB and World Wildlife Fund (WWF) (2012), the ecological footprint measures the amount of biologically productive land and water area required to produce all of the resources an individual, population, or activity consumes and sequesters the carbon dioxide they generate, given prevailing technology and resource management practices. This area can be compared with biological capacity or biocapacity, the amount of productive area that is available to generate these resources and to absorb waste.

10 Other causes include political conflicts, insecurity, lack of infrastructure and agricultural services (storage, credit, commercialization, etc.) and extreme climatic events.

11 Though it is estimated that 83% have serious soil fertility or other limitations and will need costly improvements and amendments to achieve high and sustained productivity (NEPAD, 2002).

12 According to the McKinsey Global Institute (2010), 600 million hectares of farmable land (20% of Africa's territory) are not currently under cultivation, representing 60% of the potential additional available cropland in the world. However, this number may be overestimated and much of this land is savannah land, used extensively rather than intensively for grazing and fuel-wood collection. Cultivating it could require addressing land tenure and social as well as technical and infrastructure constraints. Increasing productivity on existing cultivated land while restoring landscapes more broadly may also present a viable alternative in many circumstances.

It is expected that climate change will increase physical water scarcity in Africa by 2025, with half of African people living in an area of water scarcity or water stress (Juel, 2013). Anthropogenic factors that contribute to inadequate water availability include degradation of water catchment areas, extraction of groundwater at rates that surpass natural replenishment and inefficient use of water for productive purposes (UNEP, 2013). Furthermore, pollution of surface and ground water resources due to the mismanagement of domestic, industrial and agricultural chemicals and wastes is putting higher stress on water resources.

**The continent's rapid deforestation is threatening the flow of key environmental goods and services at the local, national and global levels.** Forests cover 675 million hectares accounting for 23% of Africa's land area. Humid forests are particularly important in Central Africa, the Congo Basin being the second largest forest in the world. At the same time, dry forests are important in the Sahel, Southeast and North Africa and represent 42% of tropical forest area in the continent.

Forests provide crucial environmental goods such as wood, bushmeat and wild fruits, and services such as carbon sequestration<sup>13</sup>, biodiversity conservation, soil conservation and watershed protection. More than half of the continent's population rely directly or indirectly on forests for their livelihoods (Somorin, 2010). However, over recent decades, Africa has been the continent experiencing the highest rate of deforestation, 0.49% per year. This represents some 3.4 million hectares lost annually (FAO, 2010). Small-scale agriculture and fuelwood collections are the main drivers of deforestation and forest degradation. Figure 1 presents annual rates and scales of deforestation in different regions of Africa.

**Africa's rich biological diversity is disappearing quickly, jeopardizing important development opportunities in the future.** The continent accounts for almost one third of global biodiversity (UNEP, 2008) and, according to Conservation International, eight of the world's 34 biodiversity hotspots are in Africa. Biodiversity provides diverse goods and services such as food and medicinal plants on which up to 80% of African populations depend for primary healthcare (WHO, 2003). Biodiversity also supports ecotourism, which is particularly significant in eastern and southern Africa.

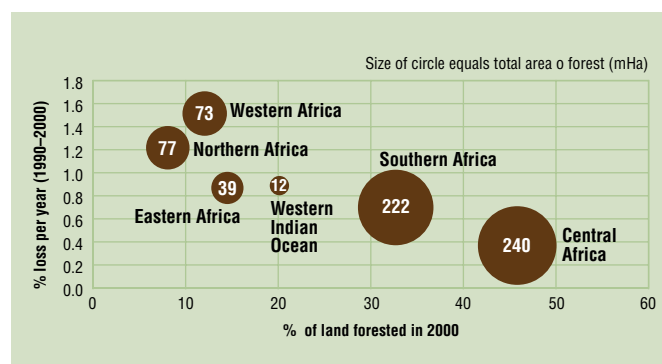
Africa's genetic diversity offers opportunities for crop improvements, in particular for developing varieties that are resistant to drought, pests and diseases that are projected to increase with climate change. Additionally, there is the potential to develop pharmaceutical products. However, fragmentation and destruction of habitats, invasive alien species, overharvesting and illegal international trade are all causing a major and rapid extinction of biodiversity across the continent.

**Renewable natural resources in Africa are depleting rapidly due to poor management, poverty and rapid demographic growth<sup>14</sup> as well as limited institutional, human and financial capacities, in particular weak law enforcement. Climate change is exacerbating this trend.** Africa is warming faster than the global average and is the most vulnerable continent to the negative impacts of climate change since it has less adaptive capacity. In Africa, climate change represents a major threat to food security because of droughts, floods and periods of extreme heat on sustainable land management, agricultural yields and water availability. Climate change can also have a major impact on the continent's biodiversity and forests, both of which will face serious difficulties in adapting to these new conditions.

Conversely, **rapid urbanization may alleviate pressures on ecosystems, though it is also associated with other environmental challenges.** During the last two decades Africa has experienced the highest urban growth in the developing world: 3.5% annually. Furthermore, this rate of growth is expected to hold into 2050.<sup>15</sup> By alleviating demographic pressures in rural areas, this trend may ease ecosystem conservation. Nevertheless, it also poses important environmental challenges in terms of pollution and waste management, not to mention the need to accompany this trend with adequate infrastructures.

This situation has called for increased attention to the sustainable management of natural resources in Africa.

**FIGURE 1. ANNUAL RATES AND SCALE OF DEFORESTATION IN AFRICA**



Source: AfDB (2013a), based on UNEP (2002)

13 Sixty billion tons of CO<sub>2</sub> is sequestered in Africa's forests according to Unmusig and Cramer, 2008.

14 Demographic growth has increased 2.5% a year in the last decade according to UNDESA (2008).

15 AfDB. "Urbanization in Africa." <http://www.afdb.org/en/blogs/afdb-championing-inclusive-growth-across-africa/post/urbanization-in-africa-10143/> (accessed 6 Feb. 2015).

## SUSTAINABLE MANAGEMENT OF NATURAL RESOURCES IN AFRICA: APPROACHES AND CHALLENGES

Despite wide recognition of its potential benefits, sustainable land management (SLM) has not yet been widely implemented across the continent. Liniger et al. (2011) define SLM as “the adoption of land use systems that, through appropriate management practices, enable land users to maximize the economic and social benefits from the land while maintaining or enhancing the ecological support functions of the land resources.” It includes management of soil, water, vegetation and animal resources. SLM is increasingly recognized in African countries’ development plans but, with the exception of some countries,<sup>16</sup> this has not yet been translated into effective and significant policies or programs (TerrAfrica, 2009).

Promoted by the African Union, the Great Green Wall of the Sahara and the Sahel Initiative<sup>17</sup> that emerged in 2002 has been slow in materializing at scale on the ground. This is despite some achievements in developing programs and harmonizing approaches across countries. Among the main challenges SLM has faced in adoption are (TerrAfrica, 2009):

- Important demographic pressures and the consequent need for land;
- Insufficient technical, institutional and financial capacities;
- Lack of proper incentives at the local level together with policies and policy instruments including economic, regulatory and social marketing instruments that are implementable to scale;
- Lack of secured tenure rights that are usually required for farmers to undertake long-term investments on their land.

To date, water policies in Africa have been more focused on expanding infrastructure (in particular networks of safe water supplies) rather than managing water resources. Governance frameworks and law enforcement are still too weak and financial means too scarce to adequately prevent pollution and ensure sustainable watershed management and the efficient and equitable use of resources.

Integrated water resources management (IWRM) has been widely promoted—including by AfDB, which adopted an IWRM policy in 2000—and embraced in principle in Africa as an overarching framework for enhanced water resources management. IWRM promotes the coordinated development and management of water, land and related resources in order to maximize economic and social welfare equitably without compromising the sustainability of vital ecosystems. However, IWRM implementation in Africa has remained poor. Nearly all major African rivers and lakes are shared across national borders. This led to the creation of international basin authorities for 8 of the 9 largest basins on

the continent (Juel, 2013). Nevertheless, these authorities often lack the capacity to fulfil their mission of facilitating a shared, sustainable and efficient management of water resources among countries (FAO, 2005; WWC/CONAGUA, 2006).

Until recently, strategies for the sustainable management of forest resources in Africa have relied on three main instruments—protected areas, sustainable timber exploitation and, to a lesser extent, community-based forest management. The forest area designated primarily for biodiversity conservation has increased by about 5 million hectares since 1990. The increase has been even higher for forests in protected areas, which has reached 13.4% of total forest areas (FAO, 2010). Over the last ten years, the sustainability of timber exploitation has increased, in particular due to significant growth in areas with a forest management plan. Finally, the process of decentralizing forest resources management to local communities is under way in many African countries. It still, however, accounts for a very small proportion of forest areas.

These strategies, which have often been combined since the late 1990s into integrated conservation and development projects, have only marginally reduced the rate of deforestation. Indeed, while effectively recognizing the need for conservation success to benefit local people, the integrated conservation and development approach has relied on naïve theories of change, in particular the assumption of automatic synergies between conservation and local development. In addition, these strategies have not paid enough attention to the drivers of deforestation and forest degradation that are outside the forest sector. Neither have they been able to materialize in monetary terms the value of standing forests. These challenges have started to be addressed through the recent engagement of African countries in REDD+,<sup>18</sup> which emphasizes agricultural intensification and strengthening the sustainability of the wood fuel value chain as key strategies.

Biodiversity conservation—as with forest conservation on which it largely depends—has relied mainly on protected areas and community-based NRM. In sub-Saharan Africa, while community-based NRM has developed but remained small, there has been a steady increase in the number of protected areas that now represent some 11.7% of land and 5.8% of territorial waters. On the whole, they have suffered from one of the world’s lowest levels of investment and human resources (FAO, 2009) resulting in low management effectiveness and have not been able to significantly reduce biodiversity extinction. They are often threatened by extractive activities, even in the case of UNESCO world heritage sites.

16 For example, in Niger (farmer-led natural regeneration of trees and bushes), Namibia (conservation agriculture) or Kenya (witnessed through the agricultural soil carbon project).

17 Proposed initially as a forest belt to be planted across Africa to stop desertification, it has now evolved into a multi-sectoral development programming framework. See <http://www.grandemurailleverte.org/>

18 REDD+ is an international system of incentives, under the framework of the United Nations Framework Convention on Climate Change, to Reduce Emissions of greenhouse gases resulting from deforestation and forest degradation in developing countries and incentive forest conservation, sustainable forest management and enhancement of forest carbon stocks.

**One common challenge has been the lack of financial means allocated to the sustainable management of natural resources.** African governments have allocated a very minor share of public budget to the natural resources sector, letting donors bear a major part of the costs. There is clearly no match between the available financing in Africa, including development assistance in its various forms, and the need to effectively and sustainably manage renewable natural resources.

According to the Secretariat of CBD (2014), all African countries are spending much less than 1% of their GDP on conservation<sup>19</sup>, and the majority less than 0.1%. The six countries<sup>20</sup> that spend the most in absolute term have a high level of benefit from nature-based tourism. Budgets of existing protected areas in Africa should double to cover the required management costs and be multiplied by ten to include fair compensation for local communities' opportunity costs, according to James et al. (2001). Likewise, based on Grieg Gran (2008), cutting deforestation by half in Africa may require an estimated US\$ 1.9 billion per year<sup>21</sup>. This figure is likely highly underestimated as it takes only into account the opportunity costs associated with avoiding deforestation and hardly addresses the transaction costs involved, while it disregards the implementation costs of policies, measures and programmes that would be necessary to foster changes on the field and ensure compliance (Karsenty, 2014). This number differs largely in scale from the initial funding available in the framework of REDD+ for Africa. This is suggested, for example, by the US\$ 177.6 million pledged as of early 2015 to the Congo Basin Forest Fund, one of the main instruments in the region. Similarly, in the water sector, remedial measures (e.g. water treatment, dam de-silting) to treat the effects of watershed degradation are preferred to preventive measures, such as sustainable land management and pollution control, though they are often more expensive and imperfect.

**The intertwined challenges of climate change, land degradation, deforestation and biodiversity loss are major concerns for sustainable development in Africa and call for innovative solutions and increased financial resources.**

**FIGURE 2.** ECOSYSTEM SERVICES IN AFRICA

## Ecosystem Services

Ecosystem services is the term used to describe the goods and services provided by ecosystems. The Millennium Ecosystem Assessment (MEA) describes four categories of ecosystem services:

- **Provisioning services:**

Products directly obtained from ecosystems such as food, medicine, timber, fibre, fuel wood and freshwater.



- **Regulating services:**

Benefits obtained from the regulation of natural processes such as water filtration, waste decomposition, climate regulation and crop pollination.



- **Supporting services:**

Basic ecological functions and processes that are necessary for the production of all other ecosystem services such as nutrient cycling, photosynthesis and soil formation.



- **Cultural services:**

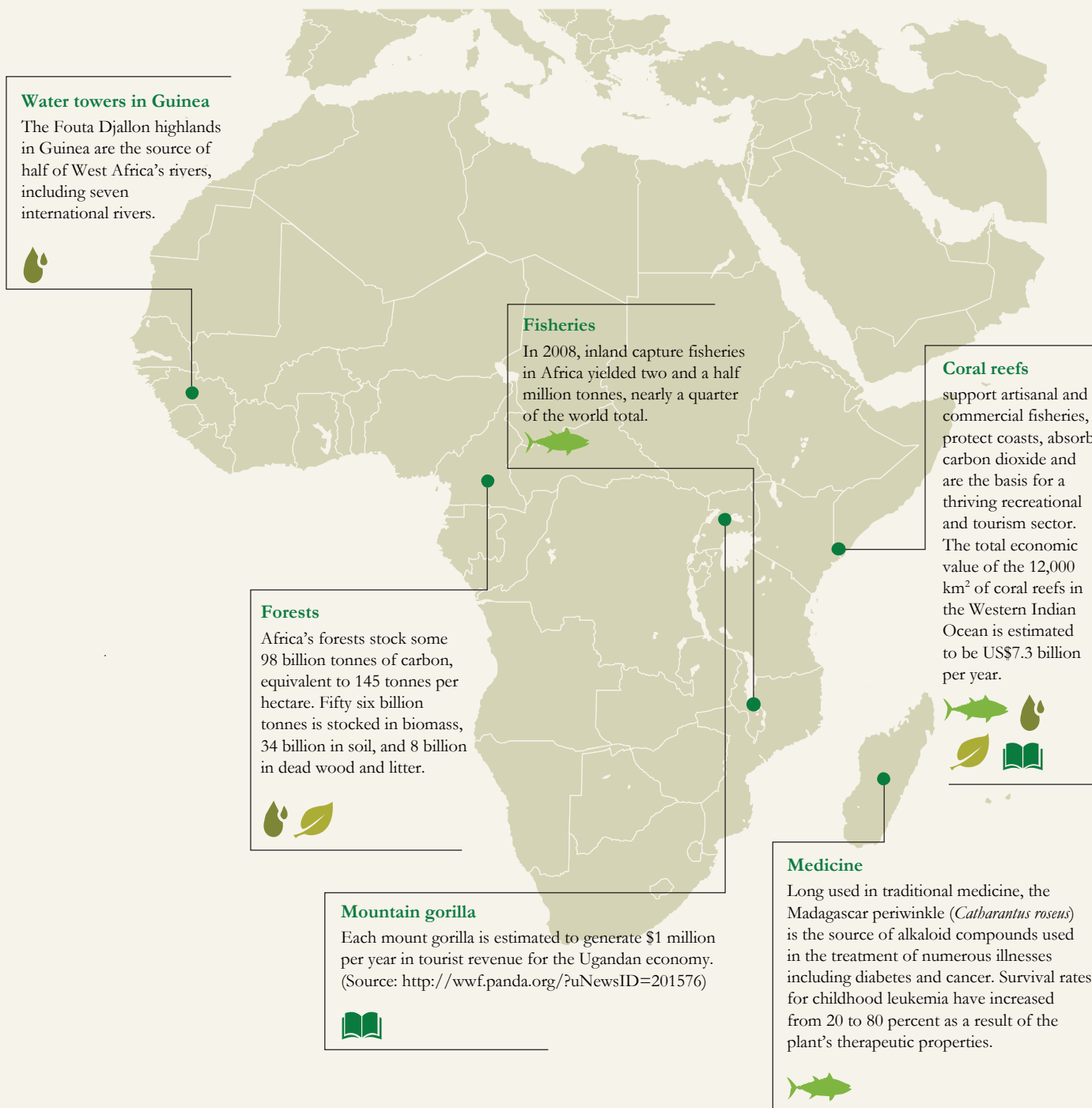
Non-material benefits such as recreational, educational, aesthetic and spiritual benefits.



19 "The expenditure was defined as "country-level conservation funding flows from multiple sources including government, donors, trust funds, and self-funding via user payments", but the nature of the expenditure was not described and is assumed to be fairly narrow, involving direct biodiversity protection measures such as protected areas and restoration" (Secretariat of CBD, 2014).

20 South Africa, Kenya, Namibia Tanzania, Uganda and Madagascar.

21 Based on Grieg-Gran (2008) estimates of opportunity and administrative costs for DRC, Cameroon and Ghana applied to 1.7 million hectares (half of the annual deforested area in Africa according to FAO, 2010).





**PES:**  
**A**  
**PROMISING**  
**TOOL**  
**FOR NRM**  
**IN**  
**AFRICA**



## THE PES CONCEPT

**“Ecosystem services” are defined as the benefits derived by human beings from ecosystems.** They provide valuable services to local, regional and international communities (Millennium Ecosystem Assessment, 2005) and include: 1) provision services, such as food or wood, 2) regulation services, including climate regulation, 3) cultural services, such as recreation or spiritual enjoyment, and 4) supporting services, such as soil formation or nutrient cycles.

**The lack of economic incentive to maintain the production of these services reduces incentives for landowners to protect the environment.** It is increasingly considered a key factor in environmental degradation, though problems of law enforcement and collective action are also crucial. Indeed, while some environmental goods such as wood are assigned monetary values and traded on markets, the value of most ES is traditionally not recognized. Two-thirds of ecosystem services have been degraded over the last 50 years (MEA, 2005).

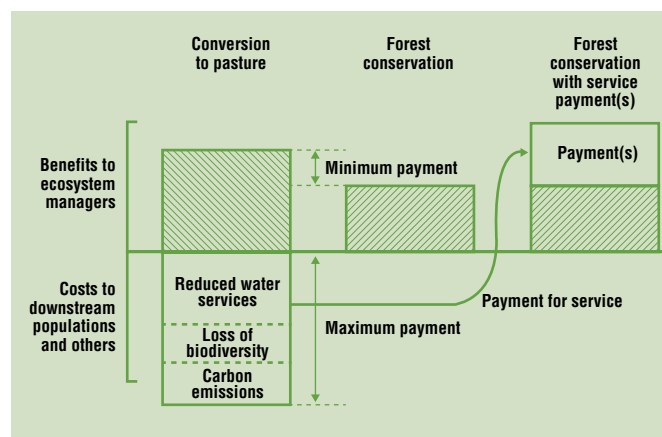
**PES works to address these market failures through the internalization of the benefits provided by ecosystems.** In such systems, the beneficiaries of environmental services—mainly carbon sequestration and storage, biodiversity conservation and watershed protection—pay ecosystem managers in exchange for adopting some practices necessary to provide these services (e.g. maintaining forest cover). Wunder (2005) defines PES as “a voluntary transaction in which a well-defined ES (or land-use likely to secure this service) is being ‘bought’ by at least one ES buyer from at least one ES provider if, and only if, the ES provider secures ES provision during a specified period of time (conditionality)”. However, Wunder (2005) recognizes that most of these so-called PES schemes do not fit within this narrow definition. Muradian et al. (2010) propose a larger definition and defines PES as a “transfer of resources between social actors, which aims to create incentives to align individual and/or collective land use decisions with the social interest in the management of natural resources”.

**For the purpose of this document, the following definition of PES has been adopted: “A contractual agreement between at least an ES beneficiary and an ES producer (or an intermediary acting as one of them), by which the former transfers resources to the latter, providing the ES producer adopts specific practices on the land or resource he controls or possesses, in order to enhance the production of specific ES”.** While we don’t consider certification schemes and park entry fees as PES as they do not involve a contractual agreement, according to this definition, certain offset mechanisms—whether voluntary or in the framework of cap-and-trade mechanisms—can take the form of PES<sup>22</sup>. The recognition of intermediaries allows

one to include as PES a lot of schemes in which ES beneficiaries and ES producers are not directly in touch (for example, instances in which a grant to an NGO, an earmarked tax or a budgetary allocation finances a PES scheme).

**Fundamentally, PES relies on the beneficiary-pays principle<sup>23</sup> for its financing, on the one hand, and on direct contractual positive incentives for conservation, on the other hand** (Legrand, 2013). How does this work in practice? Let’s take the example of forest being converted to pastures for cattle ranching. While forests provide an important range of ES to society, forest owners receive no compensation for most of them. As a result, it may be more profitable for owners to convert their forest into pastures; however, this may not be best from a social point of view. Thus, ES beneficiaries may decide to pay for these services in order to make forest conservation a more profitable option for forest owners (see Figure 3).

**FIGURE 3.** THE LOGIC OF PAYMENT FOR ENVIRONMENTAL SERVICES



Source: Engel et al., 2008, adopted from Pagiola and Platais, 2007

**PES complements rather than substitutes existing tools for environmental conservation (Ferraro, 2011),** including regulatory (law, norm, etc.), economic (tax, subsidy, etc.) and informational instruments (education, certification, etc.). For example, PES may be established by law (in case of public schemes), funded by taxes and used to reward certified sustainable forest management practices for which environmental education needs to be implemented on the ground. It can also serve as an implementation mechanism for integrated conservation and development projects, bringing more attention to the conditionality of support to local communities and to results measurements.

<sup>22</sup> In particular when the offset is carried out in a land not controlled by the company paying for the offset. In that sense, the systems of habitat banking (biodiversity) and wetland and stream mitigation banking under the Endangered Species Act and the Clean Water Act in the US cannot be considered as being implemented through PES. Indeed, in order to guarantee the permanence of the biodiversity offsets, there is a perpetual easement (when it is not simply a purchase of the land) set on the

conserved/restored land and the respect of such perpetual easement is ensured by the public authority. There is, therefore, a full transfer of property rights which is not the case with PES (Karsenty, 2014).

<sup>23</sup> The beneficiaries may be represented by public authorities and may not all pay.

## A VARIETY OF PES SCHEMES

PES schemes come in a variety of forms, from public schemes where government funds the program, to self-organized private deals, to a mix of both, as in the case of trading schemes. These “cap-and-trade” systems rely, on the one hand, on the government to fix a cap (aggregate maximum amount) for pollution, ecosystem conversion, or natural resources extraction, as well as allocate allowances (for pollution, conversion or extraction) that divide the allowable overall total among users. On the other hand, the systems rely on the market to exchange these allowances or generate new allowances through the purchase of ES for which actors would pay in order to offset their pollution, conversion or excess extraction. Three PES typologies are presented below.

The most common typology arises from the distinction between the ES provided. Usually four main environmental services have been the focus of such mechanisms: carbon sequestration and storage, biodiversity conservation, water (quality and quantity) protection and landscape beauty (Landell-Mills and Porras, 2002), the latter sometimes being associated with biodiversity.

Wunder’s (2005) typology distinguishes PES programs by 3 criteria:

- **Whether they are based on areas or products:** A PES can focus on the management of a specific land area or rely on the sale of products certified as environmentally friendly. In the latter case, the green premium paid by consumers can be considered a PES according to Wunder (2005) but not to our definition.
- **Whether its funding comes from a public or private source.** Engel et al. (2008) speak of “government-funded” or “user-financed” schemes, the latter being closer to Wunder’s (2005) narrow definition of PES.
- **Whether they restrict land use for conservation or sustainable management, or build assets,** such as with reforestation. Social impact, in particular in terms of employment, may vary depending upon whether a scheme pays for not exerting its property use rights on the resource or actively improving the environment.

The typology from Laurans et al. (2011), on the other hand, is based on the modalities for financing the PES scheme. It looks first at whether or not contributors do it voluntarily and then at whether or not they are a homogenous group sharing a common interest in ES generation. This approach results in the definition of 4 types of PES:

- **Archetypal “contractual” PES** whereby ES beneficiaries voluntarily pay ES producers for generating the ES, such as the agreements between a safari company or water company on the one hand and communities on the other hand (see case studies in 3.2).
- **PES funded voluntarily by grants,** for example to NGOs, which will implement PES schemes under conservation contract form (see 3.1).

- **PES funded by a fee or tax imposed on consumers of that particular ES,** for example by a water company, as done in the Heredia municipality in Costa Rica (Villalobos et Solano, 2007).
- **PES funded by government** (either through a tax not specific to the ES sought or through the national budget), such as the national PES scheme in Costa Rica (Pagiola, 2008; Legrand, 2013).

As will be presented in the next chapter, PES schemes in Africa cover a range of mechanisms and ES, to the notable exception of cap-and-trade mechanisms. These mechanisms require strong legal and institutional frameworks that are currently lacking in most African countries.

## A PROMISING TOOL FOR AFRICA

In recent decades, PES has received a great deal of attention as a promising approach to NRM (FAO, 2007; TEEB, 2010; Wunder, 2005). The use of contractual arrangements and the beneficiaries-pay concept have proved appealing at the global level in fostering conservation efficiency, poverty reduction and sustainable finance for conservation. These opportunities associated with PES also seem valid in the African context.

PES seems to have the potential to increase conservation efficiency in Africa. Critics of Integrated Conservation and Development Projects have proposed direct payments for conservation as a more cost-effective approach. Following the rise of the sustainable development paradigm, local population participation in conservation activities has been recognized as important. Authoritarian “command-and-control” approaches that traditionally supported the creation of protected areas have been criticized from ethical and efficiency standpoints.

Integrated Conservation and Development Projects have thus become the dominant approach over the last two decades in Africa. They aim to reconcile conservation and development, in particular through economic activities based on sustainable NRM. However, these tools have been highly criticized at the global level (Ferraro and Kiss, 2002; Ferraro and Simpson, 2002) and in Africa (Karsenty, 2011; Wells et al., 1992). Critics point to their relative inefficiency and incapacity to limit land-use changes deriving from their indirect character and the underlying assumptions of conservation and development as naturally converging goals. In parallel, regulatory policies have often appeared to be disconnected from local contexts and difficult to apply (Laurans et al., 2011). This is particularly true in developing countries such as Costa Rica in the mid-1990s when the national PES program was elaborated (Legrand, 2013). Economic incentives have thus appeared as a pragmatic alternative. This is especially valid in Africa where the enforcement of environmental laws is very problematic. However, it will be important to ensure that PES do not undermine intrinsic motivation to conserve and law compliance—the “crowding-out” effect—by spreading utilitarian attitude (based on individual cost-benefit calculation) and making people reluctant to comply with regulations in the absence of any financial compensation.

**PES could help reduce poverty while addressing conservation challenges in Africa**, according to its proponents. Opinions differ regarding PES' potential impact on poverty reduction. That said, while the former "command-and control" approach to conservation deprived people from their property use rights, PES starts by recognising these property rights. Thus, it appears more respectful of local communities' interests and more able to provide them with economic benefits (Pagiola et al., 2005; Grieg-Gran et al., 2005). The social impact of environmental conservation on local populations has progressively become a key concern in Africa, making PES an attractive tool. As we will see in the following chapter, PES could indeed provide finance to implement community-based NRM in Africa, bringing economic benefits to local populations while strengthening their rights.

**PES is also a promising tool for mobilizing new sources of sustainable funding for conservation in Africa.** It could not only attract international resources but also help countries mobilize domestic financial support to biodiversity conservation in accordance with their commitments under the Convention for Biological Diversity. The financial gap for conservation activities is huge in Africa; PES' capacity to attract new and more sustainable sources of funding is attractive. In this context, the potential of PES to tap into ES beneficiaries' funding capacity has appeared promising. This is especially true as it relates to the private sector, which is taking an increasing share of conservation finance at the global level (Wunder, 2006) and whose potential seems still largely untapped in Africa. In that sense, businesses that rely on a regular flow of environmental services, such as hydroelectric plants or water infrastructure, may provide new sources of finance through PES to secure these services. This could fund sustainable NRM in African trans-boundary basins, as highlighted by the Niger Basin Authority during the AfDB PES workshop (Enoumba, 2013).

**Businesses dependent on agricultural or other land-based supply chains may also use PES to enhance the sustainability of their supply chains** in order to mitigate the risks associated with a decreasing flow of ecosystem services and gain competitive advantages. In this model referred to as "insetting", a cocoa or coffee company for instance, may incentivize small producers to plant trees on their agricultural lands in order to mitigate the risk of lower production (in case of water scarcity for example), develop ecosystem-friendly products and eventually get carbon credits as well.

Businesses may also rely on biodiversity offsets (see Box 1) to compensate for residual negative impacts on biodiversity. Some countries, such as Mozambique, already consider it an important option to finance their network of protected areas (Honwana, 2014). Moreover, PES' *quid-pro-quo* approach and supposed capacity to improve conservation efficiency while reducing poverty may prove appealing, especially to donors and the private sector (Wunder, 2006). PES will also play a key role in Africa to channel REDD+ resources. Indeed, carbon markets may be more sustainable and could help secure the sustainability of project impacts, a key concern for donors, such as AfDB. In fact, under the

Pilot Program for Climate Resilience<sup>24</sup> of the Climate Investment Funds (CIF), AfDB is in the process of financing a forest plantation project with carbon sequestration certification in Mozambique,<sup>25</sup> as an effective approach to building climate resilience. Finally, an innovative idea that emerged from the AfDB workshop is to use PES mechanisms to channel climate change adaptation funds, which are greatly needed in Africa. Indeed, while these funds have difficulty finding good projects, ecosystem-based adaptation strategies (such as forest conservation) are considered a key option. In addition, PES can also fund investments in "climate-smart agriculture" aimed at supporting not only forest conservation but also increased resilience of local productive systems.

24 See Climate Investment Funds: "Pilot Program for Climate Resilience", [https://www.climateinvestmentfunds.org/cif/Pilot\\_Program\\_for\\_Climate\\_Resilience](https://www.climateinvestmentfunds.org/cif/Pilot_Program_for_Climate_Resilience) (accessed 6 feb 2015).

25 The Lurio Green Ressources Project. See : [https://www.climateinvestmentfunds.org/cif/sites/climateinvestmentfunds.org/files/PPCR%20Set%20Aside%20-%20Lurio%20Project%20Mozambique\\_public\\_version.pdf](https://www.climateinvestmentfunds.org/cif/sites/climateinvestmentfunds.org/files/PPCR%20Set%20Aside%20-%20Lurio%20Project%20Mozambique_public_version.pdf)



**CURRENT  
STATE OF PES  
IN  
AFRICA**

## PES' CURRENT DEVELOPMENT AND EXPECTED TRENDS AT THE GLOBAL LEVEL

At the beginning of the 2000s, Landell-Mills and Porras (2002) identified 287 PES mechanisms (referred to as “markets for environmental services”) worldwide for the sole forest ES: 27% were focusing on carbon services, 25% on biodiversity conservation, 21% on watershed protection and 10% on bundled services. Most of these schemes (24%) were in Latin America and the Caribbean or in developed countries; 17% were in North America and 14% in Europe. PES' popularity has grown ever since, and it has quickly become an indispensable tool in the field of environmental conservation.

Milder et al. (2010) estimate that **at the global level more than US\$ 25 billion are paid each year for environmental services.** That is without accounting for the nearly US\$ 50 billion market for eco-certified forest and agricultural products. The majority of this money is channelled through agricultural subsidy schemes claiming to reward farmers' environmental services in the US and the European Union, for example. Apart from that, there are a handful of large PES schemes funded in general by public money, mainly in Latin America,<sup>26</sup> China and South Africa. In Costa Rica, Mexico and Ecuador, public PES schemes channel annually between US\$ 7 million (in Ecuador) to US\$ 20 million (in Mexico) to participants ranging in number from some 5,000 beneficiaries in the case of Costa Rica to more than 100,000 participants in the case of Ecuador.<sup>27</sup>

China is an exception regarding the scale of its PES programs, which channel US\$ 5.5 billion for watershed protection alone to an estimated 50 million low-income households (Milder et al., 2010). Another important source of PES development stems from regulation establishing cap-and-trade systems, not only at the international level for carbon sequestration, but also at the national level for biodiversity conservation or watershed protection banking (biodiversity). Apart from that, the bulk of PES schemes are small-scale transactions.

**The number of PES schemes is expected to keep growing at a strong pace. Indeed, the REDD+ initiative is supposed to rely extensively (but not only) on PES for its implementation on the ground** (Angelsen et al, 2009). PES could also represent a cheaper, proxy-based alternative to REDD+ with fewer methodological requirements (Karsenty, 2013). Payment for watershed or biodiversity conservation schemes is also enjoying significant development. This expansion should continue in the future, in particular thanks to public funding in middle-income countries (Milder et al., 2010) as PES' capacity to mobilize important funding sources seems doubtful (Wunder, 2007; Ferraro, 2011).

## LIMITED DEVELOPMENT IN AFRICA

**PES schemes have not yet developed much in Africa, although many initiatives are currently working on it, especially as pilot REDD+ projects.** Of the 287 PES cases Landell-Mills and Porras identified in 2002, only 7% of them were in Africa. There is no specific study identifying PES projects in Africa, except one from Bond et al. focusing on East and Southern Africa, which identified 68 PES initiatives in 2008. However, most of them may have not yet reached the implementation stage when payments are carried out: of the 45 PES schemes identified in the same region in 2005/06, only 9 had reached the point of implementation (Ruhweza and Waage, 2007). Moreover, it seems that many PES initiatives may not go beyond the inception phase (Bond et al., 2008). It is possible that donors' top-down push for the development of PES schemes in Africa may explain part of this trend, PES proving not to be the right tool in many situations.

**Existing PES schemes in Africa cover a wide range of mechanisms.** They seem to have developed in line with the diversity of environmental services: of the 68 PES initiatives identified by Bond et al. (2008) in East and Southern Africa, 27 focused on carbon services, 19 on biodiversity services and 16 on water services. However, depending on the specific ES sought, we can broadly identify a particular geographical focus, development trends and institutional arrangement. While a significant proportion of PES schemas are based on forest conservation or restoration, they have also developed in non-forest areas, such as grasslands, for example in the Amboseli ecosystem in Kenya (see case study # 2 below).

**In general, carbon PES are the most widespread in Africa, due to the available international demand for this service in carbon markets.** Carbon PES are developing more in the Congo Basin, a moist tropical, and thus, carbon-rich forest, following the operationalization of the REDD+ mechanism. Prior to this recent trend, payment schemes for forest carbon sequestration had also developed in East Africa, especially in Uganda (Bond et al., 2008). Both programs are usually implemented by NGOs or private companies trying to provide financial incentives to communities or individuals while drawing finance from carbon markets.

However, as part of the national REDD+ processes, some African countries, such as the Democratic Republic of Congo (DRC), are contemplating the use of a national PES scheme to channel REDD+ funds. Examples of carbon PES projects include Trees for Global Benefit of the Ecotrust NGO in Uganda (see case study #1 below). That project incentivizes tree planting by small farmers for certified carbon sequestration and timber. Tree planting can also be used to fight deforestation associated with unsustainable fuel wood collection as the Eco-Makala project did in the North Kivu province of DRC.<sup>28</sup> Finally, conservation contracts seem to be the dominant approach for REDD+ projects. In these

26 In Peru, Columbia, Costa Rica, Mexico, Ecuador and Brazil, for example.

27 Due in particular to collective contracts for indigenous communities.

28 WWF Global. “Eco-Makala: Plantation of Fuel Wood around Virunga National Park for the Population of Goma.” [http://wwf.panda.org/who\\_we\\_are/wwf\\_offices/belgium/projects/index.cfm?uProjectID=CD0015](http://wwf.panda.org/who_we_are/wwf_offices/belgium/projects/index.cfm?uProjectID=CD0015) (accessed 6 Feb. 2015).

contracts, support to communities for NRM and conservation-oriented activities (agricultural intensification through access to inputs, NRM devolution, etc.) are conditioned on compliance with land use plans (as in the USAID-funded CARPE program in the Congo Basin<sup>29</sup>) or forest management options (as in Conservation International projects in Madagascar (Randrinarison, 2010)<sup>30</sup>). These contractual arrangements for forest conservation may address a broad range of environmental services, in particular carbon and biodiversity services.

**Biodiversity-oriented PES schemes have also enjoyed some developments in Africa, in particular in East Africa and, to a lesser extent, in Southern (Bond et al., 2008) and Central Africa (Tchiofo, 2008).** Eco-labelling mechanisms (for products such as timber<sup>31</sup> or cocoa),<sup>32</sup> national park entry fees<sup>33</sup> and conservation concessions<sup>34</sup> schemes are not being considered as PES according to our definition. The development of payment schemes for biodiversity services has been supported by two major trends: the development of community-based NRM and ecotourism.

The need to involve and incentivize communities in conservation has been increasingly recognized. This has led, in some cases, to the devolution of NRM rights and responsibilities to local communities and governments. This has sometimes happened in partnership with the public administration and been accompanied by fiscal benefits that can be conceived as PES. Communities have managed these areas for diverse purposes, including timber production and conservation for ecotourism.

Zimbabwe's Communal Areas Management Programme for Indigenous Resources (CAMPFIRE), which started in 1989, has provided an important source of learning and inspiration in the region. Acting on behalf of communities on communal land, it has granted rural district areas the right to charge safari operators to access wildlife. Part of these payments is then channelled to the communities in accordance with an agreed formula. Between 1989 and 2001, the program generated over US\$ 20 million of transfers to participating communities (Frost and Bond, 2008). Similar schemes have developed in the region, for example in Tanzania, Uganda and Namibia (AfDB and WWF, 2012; Bond et al., 2008; Laurans et al., 2011).

In some cases, community-based conservation has taken the form of protected areas managed by local communities such as the Tayna Nature Reserve in DRC (Tchiofo, 2008). Private deals between communities and tourism operators have also

developed in countries such as Kenya and Uganda (Bond et al., 2008). They can also be complemented by contributions from national parks, as in the case of the land leases promoted by the African Wildlife Foundation (AWF) in the Amboseli ecosystem in Kenya (see case study #2 below). Indeed, some national parks have established direct compensation schemes for surrounding communities for reporting poachers (Garamba National Park in DRC, Dzanga and Ndoki National Parks in Central African Republic), compensating damage caused by wildlife (Monte Alen National Park in Equatorial Guinea), halting turtle fishing (Campo Ma'an National Park in Cameroon) and avoiding wildfire for natural forest regeneration as in the Luki reserve in DRC (Tchiofo, 2008; Ministère de l'Environnement de la RDC, 2009).

While there is currently no biodiversity offset<sup>35</sup> fully implemented in Africa, several initiatives are underway (see Box 1). Their development is driven by new regulations, requirements from financial institutions as part of their safeguards systems (such as AfDB's new Operational Safeguard 3 on biodiversity, renewable resources and ecosystem services)<sup>36</sup> and companies' corporate social responsibility policies.

**Payment for watershed services schemes seem to be the least developed type of PES in Africa (Bond et al., 2008; Porras et al, 2008), in particular due to a lack of solvent demand locally and nationally (Ferraro, 2009).** The Working for Water program in South Africa, where water is particularly scarce, has been traditionally referred to as a pioneer PES case in Africa. Since 1995 this government-financed program has provided working opportunities for unemployed people to clear invasive alien plants. It has had multiple environmental benefits, in particular water conservation. As of the mid-2000s, its annual budget of some US\$ 60 million relied mainly on the national budget but also on a water resource management fee charged to consumers as part of the water tariff (Turpie, 2008). However, it does not fit in our definition of PES as the workers are not implementing practices on the land they control but rather on public land.

Recently, donors have tried to favour the emergence of private deals between communities and companies (especially water companies) for watershed conservation in East Africa. This has been the aim, for example, of the Pro-poor Rewards for Environmental Services in Africa (PRESA) project managed by ICRAF.<sup>37</sup> The project has supported various initiatives such as those led by the World Wildlife Fund (WWF) and the Cooperative for Assistance and Relief Everywhere (CARE) in the Uluguru Mountain of Tanzania,<sup>38</sup> in the Navaisha watershed of Kenya (Ngigi, 2013) or in the Zigi Watershed (see case study #3 below). The project has encountered great difficulty in establishing companies' willingness to pay for watershed conservation.

29 Central Africa Regional Program for the Environment. <http://carpe.umd.edu/>

30 These are not exactly PES since they relate to compensation for the loss of use rights which was not negotiated rather imposed by the protected area (Karsenty, 2014)

31 With certification such as that from the Forest Stewardship Council.

32 While Wunder (2005) considers eco-labelling a PES, we, like many experts, do not.

33 In Rwanda's "parc national des volcans", US\$ 500 are charged to non-nationals for a 1 to 4 hours visit to see gorillas (WWF, 2009).

34 Conservation concessions is a mechanism by which states concede areas to NGOs or private companies for their conservation. Usually, these areas were first earmarked for logging and states asked for financial compensation for the revenues lost through the conversion from logging to conservation.

35 See footnote 3 for a definition.

36 Its specific objective is to "Endeavour to reinstate or restore biodiversity, including, where some impacts are unavoidable, through implementing biodiversity offsets to achieve "not net loss but net gain" of biodiversity." (AfDB Group, 2013)

37 Presa. <http://presa.worldagroforestry.org/>

38 To establish a PWS scheme funded by the Dar es Salaam Water Company and Coca-Cola, the WWF-CARE (Fauna and Flore, 2012).

### BOX 1. BIODIVERSITY OFFSETS IN AFRICA

After doing its best to avoid and reduce its impact on biodiversity as well as address the damage done through restoration, a company may still have an impact on biodiversity. In this case, it may choose voluntarily or have the legal obligation to offset this residual negative impact on biodiversity.

Biodiversity offsets need to be designed to allow for no net loss and preferably a net gain of biodiversity on the ground that can be effectively measured. While sometimes used as a synonym of “offset”, biodiversity “compensation” may be distinguished from offset as not being specifically designed to achieve no net loss (BBOP, 2013). Biodiversity offsets need to rely on the use of strict concepts and methodologies, as well as best practices in their approach to the mitigation hierarchy<sup>39</sup> or to measurements and equivalences.<sup>40</sup> The Business and Biodiversity Offsets Programme (BBOP)<sup>41</sup> has developed an internationally recognized standard for voluntary biodiversity offset programs,<sup>42</sup> based on 10 overarching principles.<sup>43</sup>

In Africa, there are few biodiversity offset projects under development, notably, in Madagascar, South Africa and Ghana. In the forest-rich East region of Madagascar, the Ambatovy nickel and cobalt mining and processing joint venture, a US\$ 7 billion investment, is putting in place a biodiversity offset<sup>44</sup>. After having applied stringent impact avoidance and minimization strategies, its main residual impact on biodiversity occurs at the mine and in some portion of the slurry pipeline. It will be offset through a multifaceted program, involving forest conservation and reforestation investments in 7 different sites, through partnerships with government, NGOs and local communities.

With less stringent requirements than biodiversity offsets, compensation programs for residual impacts on biodiversity have also developed in Africa. The Chad-Cameroon Petroleum Development and Pipeline Project has contributed US\$ 2.9 million to the Foundation for Environment and Development in Cameroon (FEDEC), an independent entity set up to support the management of two protected areas representing 690,000 ha (BBOP, 2009). The project impacted approximately less than 10,000 ha.

Some African countries, such as South Africa<sup>45</sup> and Namibia<sup>46</sup>, are currently developing biodiversity offsets policies as part of their legal frameworks on the management of environmental impacts.

Source: Authors based on BBOP (2009 and 2013); Madsen et al. (2011), Manuel (2014)

39 The mitigation hierarchy contains the following sequential steps: avoidance of a project’s negative impacts; minimization, restoration or rehabilitation of areas damaged by the project; and, as a last resort, offset.

40 They require for example important works to effectively measure what has been lost and what is gained through the biodiversity offset. As part of this endeavor, they need to consider the complexity of biodiversity, in particular with respect to species composition, habitat structure, ecosystem function and people’s use and cultural values associated with biodiversity.

41 The Business and Biodiversity Offsets Programme (BBOP) is a collaboration of more than 75 leading organizations and individuals, including companies, financial institutions, government agencies and civil society organizations, who are members of its Advisory Group. Together, the members are testing and developing best practices on biodiversity offsets and conservation banking worldwide. See: <http://bbop.forest-trends.org/>.

42 Available at: [http://www.forest-trends.org/documents/files/doc\\_3078.pdf](http://www.forest-trends.org/documents/files/doc_3078.pdf)

43 These are: (1) Adherence to the mitigation hierarchy; (2) Limits to what can be offset; (3) Landscape context; (4) No net loss; (5) Additional conservation outcomes; (6) Stakeholder participation; (7) Equity; (8) Long-term outcomes; (9) Transparency; and (10) Science and traditional knowledge.

44 However, it may not be considered a PES according to our definition.

45 Draft policy and guidelines have been developed but not yet adopted. It will make biodiversity offset applicable to public and private sectors and would not allow either in-lieu-of fees or conservation banking and the use of biodiversity credit (projects will have to handle offsets themselves). Several biodiversity offsets have been authorized by the administration but not yet developed and implemented (Manuel, 2014).

46 Namibia has taken some steps to include the concepts of mitigation hierarchy and “no net loss” in a Strategic Environmental Management Plan (SEMP) to address a boom in uranium mining (Madsen et al., 2011)

Figure 4 synthesizes the status of PES development in Africa.

**FIGURE 4.** PES DEVELOPMENT IN AFRICA

ES	LEVEL OF DEVELOPMENT	MAIN GEOGRAPHICAL AREA	MAIN ES BUYERS	MAIN DRIVERS
Carbon	Medium - Low	Central and East Africa	Companies at the international level NGOs and private companies as intermediaries	REDD+ and carbon market development
Biodiversity	Low	East Africa To a lesser extent Southern and Central Africa	Tourism operators Protected areas Companies for biodiversity offset	Development of ecotourism and community-based NRM Regulation, financial institution requirements, CSR policy
Water	Very low	Southern and East Africa	Governments Water utilities or hydropower companies	Water stress Lack of solvent demand being a major constraint

Source: Authors





**CASE STUDY #1: Trees for Global Benefit**COUNTRY: **Uganda**STARTING DATE: **2002**MAIN REFERENCES: **ECOTRUST, undated and 2012; Ecoagricultural Partners and ECOTRUST, 2012; Nantongo, 2014; Peskett et al., 2011**

**CONTEXT.** Since the late 1990s, ECOTRUST has been working with communities in the Albertine Rift promoting sustainable NRM, including tree planting. ECOTRUST noted communities' lack of interest in planting native trees. The main reasons were the dearth of good planting materials as well as the lack of technical and financial support.

**APPROACH.** In 2002, with support from donors and NGOs,<sup>47</sup> Ugandan environmental NGO ECOTRUST started Trees for Global Benefit. The project takes advantage of emerging forest carbon markets to channel funds to small farmers in Uganda. These farmers would plant native and naturalized hardwood or fruit tree species on their private lands and on state-owned lands under collaborative forest management agreements with government. The project aims to: generate long-term verifiable Voluntary Emission Reductions (VERs) sold on the voluntary market; improve rural livelihood through carbon payments, as well as timber and fruit sales; and reduce pressure on national parks and forest reserves, in particular, through sustainable wood supply.

The project spans three districts in Western Uganda's Albertine rift, considered a biodiversity hotspot. It has been developed by ECOTRUST, a Ugandan environmental NGO, in collaboration with an important network of partners. It is based on a cooperative, community-based approach whereby farmers are organized through community-based organizations at the local level, and district farmers' associations at the district level. These organizations help farmers with recruitment, awareness and capacity building, carbon monitoring and verification of contract compliance, while managing tree nurseries. Farmers develop simple land holding management plans, called "plan vivo",<sup>48</sup> including an area for tree planting based on two options developed by the World Agroforestry Centre (ICRAF) – mixed species woodlots or single species woodlots. Plans are then evaluated. Upon meeting criteria related to land ownership, land size (sufficient enough to ensure the permanence of tree plantations) and bank account access, farmers are registered with ECOTRUST to participate in the carbon scheme. While this allows them to access credit and start planting, agreements between ECOTRUST and the farmer are signed once a carbon buyer and the price have been confirmed. The duration of agreements is typically 20 to 25 years.

47 Including CARE, the Edinburgh Centre for Carbon Management (ECCM), USAID, DFID.

48 See Plan Vivo. <http://www.planvivo.org/>

**PAYMENTS.** Individual payments to farmers are made in years 0 (30% of payment), 1 (20%), 3 (20%), 5 (10%), 10 (20%), provided contractual conditions are fulfilled. Those conditions are:

- 50% of trees must be planted to get the first payment; one year later, 100% of them must be planted to get the second payment.
- No less than 85% of trees planted should have survived in year 3.
- Average tree diameter at breast height should not be less than 10 cm by year 5.

Payments are made through individual accounts held in banks or less formal Village Savings and Loans Associations that the project helped capitalised with ancillary livelihood benefits for the community, including non-participant farmers. Ten percent of the payments are made to a community fund managed by ECOTRUST for capacity-building activities, community development projects and support to farmers who face natural disasters or other calamities related to planting.

**FINANCE.** Carbon is sold up-front, directly by communities or through ECOTRUST, which is committed to ensure that the expected verified emission reductions will actually be produced. This makes the management of tree permanence a key issue that has been addressed by capacity building, long-term income opportunities associated with timber sales and a 10% buffer on carbon credit sales (in addition to the community fund mentioned above) to deal with any eventualities that may impede performance. Third party verification by an independent body is carried out to verify the amount of emissions reductions actually produced. The sale of carbon started in 2003 through an initial transaction with UK-based packaging company TetraPak, which bought the first credits—11,200 tons of CO<sub>2</sub>. Price has been on average US\$ 4.5/tCO<sub>2</sub>eq and a typical payment is US\$ 904 for a woodlot on 1 ha. The majority of participants have between 0.5 and 2 ha. At the end of 2012, 2,773.2 ha were under the Plan Vivo management plan, which corresponds to 2,127 smallholders engaged through PES agreements. In 2012, some US\$ 240,712 was paid to farmers for carbon services.

**LESSONS LEARNED.** Beneficiaries become discouraged if there is too much of a variation in payments among farmers. In order to address this concern, a bank for carbon credits was created to disconnect remuneration for tree planting from the sales of carbon credits thereby stabilizing payments. Among the main challenges the project faced was the variation of payment amounts between beneficiaries. At the onset, carbon prices negotiated for each transaction defined the level of payments to beneficiaries, which allowed for considerable variance and resulted in concerns among them. The creation of a bank for carbon credits helped alleviate this concern. Through a revolving fund that serves as a pre-financing mechanism, payments for tree planting are now disconnected from carbon credit sales and farmers receive more uniform payments. As a result, they can plant when it best suits them, instead of waiting for the sale of carbon credits to be finalized.

**Farmers are often unable to assume the upfront costs associated with tree planting. Assisting them to secure access to credit has therefore been paramount to the success of the program.** The need to pay substantial upfront costs associated with tree planting was another challenge for farmers. However, the Village Savings and Loan Association allows participants to use their purchase agreement as collateral for loans (repaid on their first carbon payments) and through the concentration of the bulk of payments in the first years, which helped address this issue.

**The cooperative community-based approach has been instrumental for the projects, in particular by allowing to control the transaction costs.** By taking care of a range of necessary activities, farmers' organizations have contributed greatly to make the project economically feasible. This approach has also built peer support and ensure sustainability overtime.

**Strong partnerships and the willingness to undertake complementary activities are imperative to attaining long-term success.** During the project, strong relationships between the communities and ECOTRUST were forged as support was broadened beyond the project's carbon component. Throughout the communities, ECOTRUST, in conjunction with its partners in the field of forestry and carbon markets, which have been equally instrumental to the project's success, helped build local capacity to run income-generating activities related to tree nurseries and bee keeping and increase access to markets for wood, fruit and fodder. Partnerships between the communities and the National Forest Authority were also facilitated which led to provisions which allow the use of public lands for tree planting and other related activities.

**CASE STUDY #2: Land Leases Program in the Amboseli Ecosystem**COUNTRY: **Kenya**STARTING DATE: **2008**MAIN REFERENCES: **AWF, 2011; Warinwa, 2014**

**CONTEXT.** Declared a Biosphere Reserve in 1991 by the United Nations Educational, Scientific and Cultural Organization (UNESCO), Kenya's Amboseli National Park is famous worldwide for its 1,500 elephants, wildlife and beautiful views of Mt. Kilimanjaro. In spite of this however, the park is too small (392 km<sup>2</sup>) to support viable populations of elephants, predators and certain ungulates and depends on buffer areas outside the park. One of the most strategic wildlife corridors outside Amboseli National Park is the Kimana group ranch (25,120 ha) that connects it to the Chyulu Hills, another protected area. While Maasai pastoralists have traditionally used this corridor for grazing livestock and other wildlife-compatible activities, it has been undergoing significant land-use changes over recent years. This has put its role in wildlife conservation at risk.

Following changing and more sedentary lifestyles, in addition to the breakdown of the traditional communal system of land management, the area has been divided into 60-acre lots that have been allocated to individual owners. These owners do not feel, on the whole, that they adequately benefit from the tourism industry and have looked for other opportunities, such as farming, leasing land to farmers and real estate development for tourism. As a result of this new arrangement, agriculture has additionally developed near the swamps where water is readily available. Elephants and other wildlife however, depend on these swamps for water and food and continue to access to them, leading to

a significant increase in human-elephant conflict. This has had negative ecological and economic impacts witnessed through heightened wildlife killings and crop destruction.

**APPROACH.** The African Wildlife Foundation (AWF) has been working around Amboseli National Park for decades, managing to build trustworthy relations with communities. In 2008, after assessing the situation and consulting with communities, it started a PES scheme in response to the conservation threat in the Kimana group ranch. This took the form of a lease program by which individuals, organized in landowners' associations, committed to adopt wildlife-compatible land uses and practices in exchange for payments. Real estate development, fencing, logging and farming were prohibited in the program areas, while grazing activities had to comply with a management plan.

**PAYMENTS.** Payment levels were defined by a market assessment of other leases in the region, mainly tourism and agriculture, and discussions with the community to reach consensus. It started in 2008 at 500 Kenya Shillings/acre with an annual increase of 2.5% - 3%. To avoid potential mismanagement associated with cash payment, it was decided that payments for each landowner would be made every 6 months, directly through electronic transfer to individual bank accounts that AWF helped open. This instilled the value of banking money for the future.

An organization of 50 landowners in one conservancy first piloted the scheme. The lease contract was discussed with this group after having been made available in local languages. AWF also paid a Maasai attorney, selected by the community, who met them in the absence of AWF to review the last version of the lease agreement to which changes were being made. The program was then extended to six other conservancies where landowners' associations had also been organized (in addition they all gathered in one association). It now includes 350 plus individual landowners in seven conservancies, protecting approximately 20,000 acres of critical wildlife habitat.

While setting up the program cost some US\$ 50,000, approximately US\$ 550,000 had already been channelled through PES by the end of 2013. Depending on community willingness and funding availability, two to 15 year-long conservation leases were signed. To finance the program, AWF initially raised funds from private foundations, such as the Disney Nature Foundation and through government grants, such as the Royal Netherlands Embassy. AWF and the communities also entered into a tripartite agreement with a new ecotourism facility, Tawi Lodge, which agreed to finance, after year 5, the full costs of the PES in the conservancy in which the lodge operates. Between 2008 and 2013, they financed some US\$ 44,000 USD.

Finally, Kenya Wildlife Service accepted to take over part of the program's payments from July 2014 for US\$ 117,000 annually. Kenya Wildlife Service required leases be a minimum duration of 10 years to ensure long-term impact. This has led to new negotiations between AWF and representatives of six conservancies that have engaged in short-term leases. As it was difficult to reach an agreement with the conservancies' representatives, both parties agreed to let AWF negotiate directly with individual landowners. An agreement has already been reached for three conservancies at a rate of 600 Kenyan Shillings per acre with an annual 3% increase.

**LESSONS LEARNED.** Relationship building, local knowledge and a flexible approach were essential to the success of this program. This PES program highlights an innovative example of tourism providing benefits to communities for wildlife conservation. A key factor in its success has been the trustworthy relationships AWF has established with communities and other stakeholders. This required time and a flexible approach. The presence of local AWF community officers who come from the communities was imperative to interacting with the local communities.

**Complementary initiatives supporting the program's objectives have also been instrumental, in particular by raising the benefits for the farmers and lowering the costs for the programs.** For example, AWF is currently supporting members of these conservancies to enter into business with safari operators to enable them to charge operators for game drives within the conservancies. AWF, in partnership with Big Life Foundation, established a community scout program to prevent poaching and lease violations while providing employment to community members.

**The biggest challenge the program has to face is to build the collective dynamic necessary to support an environmental service generated at the landscape level.** This challenge arises from the individual property of land and the voluntary nature of the program. In fact, some landowners chose not to participate in the program and practice incompatible land uses while others have sold their land to developers and speculators. AWF has dealt with this by supporting collective dynamics at the community-level and sensitizing landowners to the value of not selling their lands, emphasizing the risks associated with losing this productive resource.

CASE STUDY #3: **Equitable Payments for Watershed Services in the East Usambara Mountains (Zigi River Catchment)**

COUNTRY: **Tanzania**

STARTING DATE: **2006**

MAIN REFERENCES: **Jambiya, 2013 and 2014; FAO, 2013**



**CONTEXT.** The Equitable Payments for Watershed Services (EPWS) is a global initiative managed by WWF Netherlands to test an approach to articulating ecosystem restoration and conservation with improved livelihoods among excluded farming communities. Five sites were selected in Africa, Latin America and Asia for the development of EPWS projects. They are structured around three phases. Phase I entails the realization of baseline studies necessary to build the case for specific land use change and land management interventions designed to enhance the flow of watershed services. Phase II entails the implementation of these interventions. In Phase III, local stakeholders are expected to take over both the management and financing of the EPWS scheme with the required adjustments to help ensure the sustainability of the project.

**APPROACH.** As part of this global initiative, WWF, supported by CARE, has been working since 2006 on the development of an equitable payments scheme for watershed services in the East Usambara Mountains of Tanzania. The focus is on the Zigi River Catchment part of the Pangani River Basin, which is the only reliable source of water for Tanga City (population 300,000). A first hydrological study identified sediment and nutrient loading in the Zigi/Kihuhwi sub-catchment as a major problem in the Zigi River and Mabayani Reservoir. It traced the causes to unsustainable land use practices associated with poverty (forest conversion,

crops within 25 meters of riparian zone) in the upstream part of the watershed, particularly in trouble spots. It proposed mitigating land use interventions such as terrace farming, agroforestry and tree planting, as well as other interventions (facilitating market access, linking to other institutions, etc). Another study furthered the understanding of livelihood strategies and land tenure situations, and identified the different wealth groups in the targeted communities.

Additional studies confirmed that an equitable payment scheme for watershed services is viable and legal in Tanzania, and identified the main water consumers. It also revealed the expected increase demand due to the expansion of current and upcoming investments in Tanga, for example, new cement plants and urban growth. Finally, a cost-benefit analysis made the business case for the watershed's conservation due to the increasing costs borne by the local water utility company, TANGA-UWASA. The sedimentation problem caused by erosion had already reduced the depth of the Mabayani reservoir by 38% and its storage capacity by 25%. Moreover, water treatment costs had doubled between 2005 and 2010 from US\$ 150,000/year to US\$ 300,000/year, and the situation was deteriorating quickly. In that context, watershed conservation measures seemed a cost-effective option for TANGA-UWASA.

**FINANCE.** The company decided to finance, together with WWF, the implementation of soil conservation measures<sup>49</sup> in key hydrological areas in the Zigi catchment. They committed to a financial allocation of US\$ 192,500 of a total program budget of US\$ 245,000. The funds will be disbursed progressively between 2013 and 2016, not under the form of cash payments at this stage, but rather to cover the costs of the required activities. The upstream communities organized within the “Conservation Farmers Union” and TANGA-UWASA signed a memorandum of understanding. Community trainings started for 300 farmers. Community-led monitoring of the activities’ hydrological impact to provide the necessary scientific evidence to scale up the program, helping it evolve into a formal PES scheme run by local actors with binding contractual commitments, also began. The MoU also allowed for new buyers of watershed services to be involved. Based on the hydrology and livelihood studies, WWF Tanzania expects water quality improvements to be demonstrated within two to three years. If such improvements are registered, the project may be scaled-up to cover the entire catchment.

**LESSONS LEARNED.** The project has benefited from favourable conditions, namely a small watershed and a committed water utility company. Indeed, despite limited and, at times, unavailable data (an important constraint for the studies), project’s feasibility has benefitted greatly from the small size of the watershed which made easier to establish a link between unsustainable land use practices and sedimentation problem. The fact that the ES buyer was an environmentally-committed water utility company facing growing demand and increased water quality problems has also helped.

**Building an equitable PES scheme takes time and much effort, in particular to build a trustworthy relationship, a common understanding among stakeholders and the necessary political support.** Aware of the need to focus on the strategic goal of facilitating the relationship between buyers and sellers of watershed services – two very different stakeholders- WWF has decided to outsource technical work to external consultants. In fact, a shared understanding of EPWS has proved crucial both for stakeholder buy-in and for consultants to deliver the desired outputs. Moreover, bringing buyers on board and making them subscribe to the program have both required adequate time and a well-articulated strategy. Finally, political will and leadership from key stakeholders have been instrumental for the project’s success.

**Through its phased approach, the project highlights the importance of setting up pilot tests before launching a PES scheme.** This allows for a more complete assessment of the mechanism before local stakeholders take responsibility.

**The AfDB recently started to pilot the integration of PES into its projects.** Through the use of PES, AfDB seeks to mobilize new sources of sustainable finance; ensure project investment sustainability over time by maintaining incentives for forest

conservation; and foster effectiveness in project implementation. In Burkina Faso<sup>50</sup> and DRC<sup>51</sup>, **through the Forest Investment Program (FIP)**,<sup>52</sup> AfDB will use PES as a means to secure the sustainability of projects’ outcomes over time by maintaining incentives for forest conservation. In DRC, PES will serve as an implementation mechanism for the project. Indeed, to ensure project effectiveness, the support it is offering (*i.e.* “payment” for ES) will be dependent upon compliance of communities with the land use plans that will be defined in the first phase of the project. AfDB will also support the Niger Basin Authority to establish a PES mechanism for the sustainable financing of Niger River ecosystems preservation.<sup>53</sup> This mechanism should be funded through the payment of royalties by large hydroelectric dams, irrigation schemes, cities, etc. for the water they use. While implementation of these PES schemes has not started, in the future it will be important for AfDB to share experiences and lessons learned around their design and operation.

**On the whole, NGOs have played a leading role in developing PES schemes in Africa** (which may explain the relatively small scale of such programs). This is contrary to what has happened in Latin America, for example, where government-funded national PES programs have been established. Most African governments are still reluctant to use scarce public resources to finance large-scale PES programs. However, government funding at the scale of large protected areas has been carried out, as exemplified by Case Study #2. However, this may change in the future with REDD+. The main support African governments have provided has been to the devolution of land rights—from full property to limited use—to local communities and governments, allowing them to benefit from PES agreements (see Case Study #1).

The following chapter assesses the multiple ways to support PES development in Africa, in particular, how to build PES-enabling institutional frameworks and make concrete PES initiatives successful on the ground.

50 AfDB (2013c)

51 AfDB (2013b)

52 The FIP is a targeted program of the Strategic Climate Fund (SCF), which is one of two funds within the framework of the Climate Investment Funds (CIF) for which AfDB is an implementing agency. The FIP supports developing country efforts to reduce deforestation and forest degradation and promote sustainable forest management that leads to emissions reductions and enhancement of forest carbon stocks (REDD+). It finances large-scale REDD+ investments in 8 pilot countries in Africa, Asia and Latin America. See <https://www.climateinvestmentfunds.org/cif/node/5>.

53 AfDB (2014) and Enoumba (2013)

49 Such as terrace farming, agroforestry, riparian zone restoration, woodlot establishment, etc.





**SUPPORTING  
PES  
DEVELOPMENT  
IN  
AFRICA**



## BUILDING A PES-ENABLING INSTITUTIONAL FRAMEWORK IN AFRICAN COUNTRIES

As previously mentioned, PES is not a panacea for all environmental problems but **can provide a solution when environmental degradation is due to a lack of financial value for the ES produced by the ecosystem. This value should be superior to the sum of: (1) the opportunity costs of the ES “sellers”; (2) the implementation costs of the desired activities; and (3) the transaction costs** for initiating, running and controlling the schemes. Thus, when opportunity costs are very high (for example, with mining), PES may not be able to compete, and the right tool, from a conservation point of view, may be legal regulation.

Therefore, certain basic conditions must be met for PES to be implemented. **Figure 5 presents the necessary institutional conditions for PES development in Africa, the level of constraint they represent, the possibility to address these constraints and the main actions recommended.**

**FIGURE 5.** TOWARDS PES-ENABLING INSTITUTIONAL FRAMEWORKS IN AFRICA

ENABLING INSTITUTIONAL CONDITIONS	CURRENT LEVEL OF CONSTRAINT	POTENTIAL TO ADDRESS IT EFFECTIVELY	ACTIONS RECOMMENDED
Solvent demand for ES is necessary to finance PES schemes.	Very Important in particular for water and biodiversity services (cf. demand at local or national levels) <sup>55</sup>	Can be partially addressed but will remain the main constraint for the development of PES schemes for water services and, to a lesser extent, for biodiversity services	<ul style="list-style-type: none"> <li>• Establishment of REDD+ funds or other environmental trust funds<sup>56</sup></li> <li>• Earmark tax for environmental conservation<sup>57</sup></li> <li>• Revision of legal framework on the management of environmental impacts to support private sector contribution to conservation, including through offset mechanisms</li> <li>• Support sufficient funding for REDD+ and climate resilience through climate funds and cap-and-trade mechanisms</li> <li>• Build on national PES/benefit-sharing mechanism to be developed in the framework of REDD+ to leverage funding for other ES such as biodiversity conservation and watershed protection</li> </ul>

54 In Africa, where poverty is widespread, there is a lack of solvent demand for ES at the local or national levels. For carbon services (see case study #1 on the Trees for Global Benefit Program in Uganda) and, to a lesser extent, biodiversity services, demand would usually come from the international community. In some areas of the continent, there is potential local demand from private companies for biodiversity services (see case study #2 on the land leases program in the Amboseli ecosystem in Kenya) and water services (see case study #3 on Equitable Payments for Watershed Services in the East Usambara Mountains) but it is often difficult to mobilize it. Public money is usually too scarce to fund PES at the national level in Africa, but this may change with economic development. Emerging countries such as South Africa have been able to fund national PES schemes (Turpie, 2008; Karsenty, 2013).

55 For more information on 16 environmental trust funds in Africa, see CAFE's (Consortium of African Funds for the Environment) website: <http://www.consortiumcafe.org/>

56 Recognizing the difficulty to mobilize voluntary private funding for PES, Karsenty (2013) suggests potential national earmarked taxes on water consumption, large-scale agriculture, mining, oil and gas extraction, international flights, etc. can be foreseen to fund public PES schemes. While these national, earmarked taxes to fund PES have spread in Latin America countries such as Costa Rica or Mexico, they have not developed in Africa, except in South Africa. Building evidence and awareness of the benefits associated with forest conservation seem key to establish these earmarked taxes.

ENABLING INSTITUTIONAL CONDITIONS	CURRENT LEVEL OF CONSTRAINT	POTENTIAL TO ADDRESS IT EFFECTIVELY	ACTIONS RECOMMENDED
<p>Secured land rights</p> <p>ES “sellers” do not need to have full land ownership in the form of land titles for PES programs to be implemented, but ‘exclusive rights’ are needed for allowing effective contract enforcement.</p>	<p>Important</p> <p>Clear exclusive land rights are rare in Africa. In fact, conflicts over land rights are numerous and the state is often legally the “presumed landlord”. However, many countries, such as Madagascar, since 1996, and Cameroon, since 1994, have set a legal precedent for the recognition of community rights over land through “delegation” or “transfer” of rights.</p>	<p>Can be addressed as a no regret option as it is currently a key constraint for rural development in Africa</p>	<p>Clarification of land tenure rights through participatory mapping and, at least, collective rights registration</p>
<p>Communities’ organizational, financial (to invest in different land uses), technical (for PES negotiation or to implement required land-uses) and productive (sufficient land available for production) capacities</p>	<p>Important</p>	<p>Can be addressed</p>	<p>Strengthening communities’ capacity through the decentralization of NRM. This is characterized by the devolution of rights, responsibilities and financial benefits to local communities and governments, which is currently under development in many African countries<sup>58</sup>.</p>
<p>Contracts enforceability/legal security</p>	<p>Regular</p> <p>Legal systems are often poorly-efficient in Africa, but this is not a major constraint to PES development</p>	<p>Contract enforceability can be addressed indirectly by stopping contract execution</p> <p>Legal security can be partially addressed</p>	<ul style="list-style-type: none"> <li>• Building of a PES-enabling legal framework<sup>59</sup></li> <li>• Clarification of ES credit rights and benefit sharing mechanisms<sup>60</sup></li> </ul>
<p>Coordination at the landscape level among different thematic and sectoral public agencies</p> <p>For large-scale public PES to develop, it is important that different thematic and sectoral public agencies dealing with land uses coordinate themselves at the landscape level.</p>	<p>Regular</p> <p>Rarely the case in Africa</p>	<p>Can be addressed, especially among environmental thematic agencies</p>	<ul style="list-style-type: none"> <li>• Integration of specific environmental thematic agencies (for forest, wildlife, protected areas, water, etc.) under one institutional body at the landscape level<sup>61</sup></li> <li>• Political dialogue on land-use planning and work coordination at the landscape level between different sectoral agencies (environment, agriculture, mining, energy, etc.)</li> </ul>

57 In addition to supporting PES development by lowering transaction costs, this would also provide numerous benefits for rural development and conservation.

58 Legal provisions constraining PES development should be revised and legal provisions could be established to provide more legal security. (Greiber, 2009)

59 The legal framework for carbon rights and benefit sharing should be clarified as part of the REDD+ preparation processes.

60 In Costa Rica, the national system of conservation areas (SINAC) was created in 1995 and contributed to the development and implementation of the national PES program two years later. The SINAC is an institutional system for decentralized and participative management that integrates the competencies of the Ministry of Environment in terms of forest, wildlife and protected areas, to plan and implement NRM policies and activities in Costa Rica. It is composed of 11 conservation areas that cover the whole national territory.

ENABLING INSTITUTIONAL CONDITIONS	CURRENT LEVEL OF CONSTRAINT	POTENTIAL TO ADDRESS IT EFFECTIVELY	ACTIONS RECOMMENDED
Ecological (the state and trend of environmental degradation; the link between this degradation and the land uses promoted on the one hand and ES generation on the other hand) and economic information (opportunity and labour costs associated with conservation, ES values)	Regular Rarely available in Africa	Can be addressed	Funding made available for such studies provided a real opportunity. Feasibility for PES development has been identified at this stage (based on a list of indicators or scorecard) to ensure the effectiveness of such financing.
Intermediary organizations and necessary human skills for PES development	Regular Still lacking in many parts of Africa	Can be addressed	Capacity building for: <ul style="list-style-type: none"> <li>• Building the business case for PES and mobilizing resources (conservation finance tools)</li> <li>• Environmental compensation (enabling national legal framework, methodological approaches for biodiversity offset)</li> <li>• Sharing lessons learned from Africa and abroad (for national PES programs)</li> </ul>

Source: Authors based on Bond et al., 2008; Dillaha et al., 2007; Economic Commission for Africa, 2004; Laurans et al., 2011; Landell-Mills et Porras, 2002; Greiber, 2009; Karsenty, 2013; Rodriguez, 2014; Ruhweza and Waage, 2007; Wunder, 2005

To sum up, the main obstacles to PES development in Africa relate to poverty conditions limiting the local demand for ES, insufficient land tenure and legal security, lack of coordination among public agencies, and the lack of technical and economic information, as well as technical skills. To the notable exception of the insufficiency of local demand for ES and legal system inefficiency, most of these issues can be overcome prior to PES development. This may, however, take time and increase transaction costs.

Looking beyond a PES development agenda, the establishment of these conditions is similarly crucial for rural and sustainable development on the continent.

## MAKING PES WORK IN AFRICA

To be successful, PES schemes need to be developed in a structured way. Box 2 summarizes key steps, which may not be sequential and may be complemented by other tasks (e.g. clarification of land tenure, capacity building) under specific situations.

### BOX 2. KEY STEPS FOR PES DEVELOPMENT

#### Scoping:

1. Identification of a potential case for a PES: Where ES' lack of value threatens ES generation for which there is a potential solvent demand through a specific type of PES scheme.

#### Feasibility assessment:

2. ES study assessing the problem, its direct causes and potential options to solve it (law enforcement, economic incentives, informational instruments, etc.), including specific activities to implement and their locations
3. Livelihoods and land tenure analysis
4. Legal and institutional framework study
5. Stakeholder analysis, including buyer and seller profiling
6. Cost-benefit analysis based on economic analyses of "willingness to accept"<sup>61</sup>/ "willingness to pay" and on potential transaction costs

#### Design:

7. Sensitization of main stakeholders to the case for a PES scheme
8. Facilitation of dialogue and negotiation of a potential PES agreement
9. Governance and institutional framework, operational rules, procedures and payment mechanism
10. Draft PES contract design
11. Signing of a PES contract

#### Implementation:

1. Implementation of activities
2. Monitoring and evaluation of environmental and social impacts, as well as participant satisfaction
3. Stakeholder dialogue for learning and improvement
4. Adjustment of the scheme

Source: Authors, based on Echavarría (2004), Jabiya (2013) and Smith et al. (2008)

61 Including an assessment of opportunity costs.

**Lessons learned on key success factors and best practices**

are summarized in Figure 6. They draw upon a review of literature at the international level, as well as on the aforementioned studies and the AfDB workshop, which addressed the specificities of the African context. The principles summarized in the table help practitioners address **the risks and challenges associated**

with PES implementation in Africa: **increased conflict over land; power asymmetry resulting in unfair arrangements; vulnerable groups negatively affected; elite capture; ES trade-offs (especially in favour of carbon through forest plantations); mismanagement; corruption and cultural/motivation change.**

**FIGURE 6.** KEY SUCCESS FACTORS AND BEST PRACTICES FOR PES IMPLEMENTATION IN AFRICA

OBJECTIVES	KEY SUCCESS FACTORS AND BEST PRACTICES	
	GENERAL PRINCIPLES	SPECIFIC PRINCIPLES AND APPLICATIONS IN AFRICA
Efficiency	<ul style="list-style-type: none"> <li>• Correctly targeting ES “sellers”: Usually where additional ES may be gained (<i>i.e.</i> for forest ES where deforestation is high and where there are more ES/hectare), but poverty criteria can also be included.</li> <li>• Correctly defining the price: Usually close to the opportunity cost level to maximize conservation gains; social considerations may also prevail, however</li> <li>• Paying after the required actions have been carried out (not before) to ensure conditionality</li> <li>• Control transactions costs</li> <li>• Provide clear, transparent and enforceable sanctions for non-compliance in combination with risks management mechanisms</li> </ul>	<ul style="list-style-type: none"> <li>• Delegate activities to the community (recruitment, training, organization, monitoring and reporting, etc.) to reduce transaction costs. This requires upfront investment in capacity-building<sup>63</sup></li> <li>• Use electronic payments to avoid mismanagement and corruption in a context marked by poor governance</li> </ul>
Environmental integrity	<ul style="list-style-type: none"> <li>• Pay attention to potential leakage effects such as shifting deforestation outside the project area. For example, if payments are made for forest conservation, others actions have to be carried out to limit pressures on forest for wood fuel (through the promotion of improved stoves or of a sustainable supply of charcoal from sustainably managed tree plantations) or agriculture (through agricultural intensification).</li> <li>• Pay attention to the permanence of the project outcomes (forest plantation or conservation). Options to ensure this include spreading payments over a long period, retaining some payments (or carbon credits) to cover potential future losses, as well as effectively addressing the real drivers of environmental degradation, through the transformation of production systems</li> <li>• When there is already a law prohibiting environmental degradation, payments should be transitional and support law compliance on the long term. They should be part of a strategy aiming to build the communities’ capacity to comply with the law, in particular through the transformation of their production systems.</li> <li>• Recognize multiple benefits in targeting and payments to manage trade-offs and synergies between them<sup>64</sup></li> <li>• Adopt safeguards, certification, and grievance and redress mechanisms</li> </ul>	<ul style="list-style-type: none"> <li>• Ensure communities are able to comply with PES contracts (in particular, in the long term) through: (1) combining incentives for investment and compliance with an agreed land zoning; (2) ensuring payments are used for activities that will alleviate pressure on the resources to be conserved, for example, through the use of specific money.</li> <li>• With respect to ES generated at the landscape level (<i>e.g.</i> wildlife conservation), ensure involvement of entire community through: (1) supporting collective dynamics at the community-level, including by strengthening local institutions; (2) building awareness of the program’s benefits and the drawbacks of other options.</li> </ul>

62 Reynolds (2012), through its study of 42 programs in Africa using carbon offset payments to fund tree-planting activities, highlights the need to invest in building local institutions that will be key to “monitor, impose sanctions, and distribute benefits”. According to him, “Contrary to expectations, community-based projects on lower-quality sites often successfully generate and sell offsets, while private for-profit initiatives appear susceptible to collapse”.

63 Poorly-designed carbon sequestration projects, for example, could negatively impact both the watershed and biodiversity if they lead to large-scale monoculture plantations.

OBJECTIVES	KEY SUCCESS FACTORS AND BEST PRACTICES	
	GENERAL PRINCIPLES	SPECIFIC PRINCIPLES AND APPLICATIONS IN AFRICA
Equity	<ul style="list-style-type: none"> <li>• Ensure the PES scheme is designed to bring benefits to the poor, in particular in terms of its operational rules (targeting criteria, conditions, processes, etc.), its governance bodies (where the poor should be represented), and specific outreach and capacity building activities</li> <li>• Adopt safeguards, certification, and grievance and redress mechanisms</li> </ul>	<ul style="list-style-type: none"> <li>• Conduct a livelihoods and land rights study early-on</li> <li>• Support land-use rights clarification as a preliminary step for developing PES<sup>65</sup> to avoid increasing conflicts over land<sup>66</sup></li> <li>• Accept some form of proof of land possession to satisfy participation requirements in lieu of official land title, either in certain circumstances or program-wide<sup>67</sup></li> <li>• Build capacity of communities to negotiate PES agreements, including by facilitating their access to independent legal advisors to avoid asymmetric agreements<sup>68</sup></li> <li>• Ensure representation of vulnerable groups to avoid elite capture<sup>69</sup></li> <li>• Build smallholders' financial capacity to participate in PES</li> <li>• (in particular for reforestation activities) through: (1) supporting access to credit, including by allowing part of the payments for ES to be committed to debt repayment; (2) concentrating the bulk of payments in the first years while ensuring farmers then have the right incentives to maintain the plantation for the required period</li> <li>• Allocate a percentage of the payments received to community projects (collective payments)</li> <li>• Ensure cash is wisely managed at the household level through the use of in-kind payments or specific moneys; and by instilling the value of banking money for the future through payments on bank accounts</li> </ul>

64 In the context of its national PES program, Socio Bosque, Ecuador has trained community paralegals to help potential participants resolve disputes, obtain title documents, and understand their legal possessory rights (FONAFIFO, CONAFOR and Ministry of Environment, 2012)

65 By creating new economic benefits associated to land, it can increase land conflicts, especially where land tenure rights are not secure, which is often the case in Africa (Economic Commission for Africa, 2004). From that perspective, particularly vulnerable groups are the people using common lands (without clear rights on them) for grazing and wood collection. According to Pagiola et al. (2005), there is anecdotal evidence that, because of PES increasing the expected benefits associated with land tenure, some powerful groups muscled out poorer land users who lacked secure tenure in Colombia's Cauca Valley.

66 This is the case in Mexico's national Payments for Hydrological Services program and in Costa Rica's national PES program (FONAFIFO, CONAFOR and Ministry of Environment, 2012)

67 PES contracts may be concluded in a situation of power asymmetry, negatively affecting local communities (Karsenty, 2004). For example, long-term contracts can limit land management activities to a narrow range of alternatives, dispossessing communities of their control and flexibility over local development options and directions. They can also fail to take into account the future increase of opportunity costs resulting in a poverty trap for communities or impose on communities the burden of bearing risks that are outside their control, such as the consequences of natural disasters.

68 The interests of specific social groups within communities that may not be part of PES schemes – in particular those without land (Wunder, 2008) – may not be taken into account enough through the restriction of some rights to harvest products (timber, food, non-timber forest products, etc.) or access to ecosystem services. For example, payment for watershed services schemes that measure success in terms of water flow may create incentives to divert water from the irrigation of local crops to downstream water delivery in a drought year, jeopardizing subsistence farmers. Likewise, the full range of stakeholders may not be compensated: conservation may represent fewer jobs for people with no rights to the resource but whose economic activities depend on it; or fewer resources for the states from taxes on economic activities (for example, timber transformation). On the contrary, PES face a risk of elite capture, but this is not specific to this instrument.

OBJECTIVES	KEY SUCCESS FACTORS AND BEST PRACTICES	
	GENERAL PRINCIPLES	SPECIFIC PRINCIPLES AND APPLICATIONS IN AFRICA
Sustainable partnership	<ul style="list-style-type: none"> <li>• Build the business case by investing in environmental and economic studies and awareness-raising activities</li> <li>• Secure sustainable and diversified funding sources</li> <li>• Design schemes that are culturally appropriate and, when required, allow payments to non-additional activities (activities already carried out, for example) to avoid perverse incentives<sup>70</sup></li> <li>• Establish efficient monitoring and evaluation system with clear targets and baselines (in particular on the programs' ecological impact) to reassure ES "buyers" that programs do deliver the expected ES benefits.</li> </ul>	<ul style="list-style-type: none"> <li>• Start with a pilot and demonstrate the benefits through strict monitoring and evaluation of the ES provided</li> <li>• Invest in building trust and common understanding through capacity building and dialogue</li> <li>• Take time to develop the PES schemes</li> <li>• Select the right partners (with the right experience) to work with communities<sup>71</sup></li> <li>• Help communities in accessing complementary support (for access to markets, surveillance, etc.) strengthening the PES scheme's goals</li> <li>• Invest in M&amp;E for environmental and social impacts<sup>72</sup></li> </ul>

Source: Authors based on AWF, 2011 ; Ecoagricultural Partners and ECOTRUST, 2012; ECOTRUST, undated and 2012; Engel et al., 2008; FAO, 2013; Fonafifo et al., 2012; Jabiya, 2013; Laurans et al., 2011; Peskett et al., 2011; Smith et al., 2006<sup>69</sup> <sup>70</sup> <sup>71</sup>

69 In the context of its national PES program, Socio Bosque, Ecuador has trained community paralegals to help potential participants resolve disputes, obtain title documents, and understand their legal possessory rights (FONAFIFO, CONAFOR and Ministry of Environment, 2012)

70 PES may trigger cultural conflicts or negative changes. As participants in the AfDB workshop mentioned, many local communities in Africa recognize an intrinsic value to natural resources; for them, water, forests, mountains or land are all gifts from God (Enoumba, 2013). PES may hurt this traditional view and may change the logic that applies to decisions on natural resources management from one governed by ethics and social interest to a more utilitarian and individualistic one, resulting in counterproductive effects (Vatn, 2010). For example, in some cases, people who have already planted trees without incentives could threaten to cut them if they need to so as to be eligible for PES programs incentivizing tree plantations. PES may also erode law enforcement if it is considered as a substitute, rather than a way to complement it (Legrand et al., 2013).

71 Though a long and costly process, the importance of establishing dialogue and trust among stakeholders cannot be overlooked, as emphasized by the experiences of the projects presented at the AfDB workshop (AWF, 2013; Jabiya, 2013; Ngigi, 2013).

Generally speaking, **to be successful, PES schemes should be designed to adapt to the social and institutional context and trajectories in which they are implemented** (Muradian et al., 2010; Legrand et al., 2013) – **and appear as fair** (Wunder, 2005; Pascual et al., 2010; Reynolds, 2012). Indeed, as exemplified by the case studies presented in this document, it seems particularly relevant in the African context to ensure an equitable approach to PES.

Among the proposals of PES schemes adapted to Africa is a national REDD+-funded scheme and its envisaged application by the government of DRC (Gouvernement de la RDC, 2013) as proposed by Karsenty (2011, 2013). It is presented in Box 3.

### BOX 3. PROPOSAL FOR A NATIONAL REDD+-FUNDED PES SCHEME IN DRC

According to Karsenty, it is necessary to consider the legitimate right of poor African populations to develop, while addressing the real drivers of deforestation. He proposes to “combine investment in more intensive agricultural technologies with direct incentives linked to ecosystem preservation provided by PES”. This will make it possible to conserve forests in the short and long term. Following that perspective, the DRC government is planning to have two principal modalities for a national REDD+-funded PES scheme:

- “PES-investment”: not permanent and usually with individual payments, it will fund activities necessary to alleviate pressures on the forest;
- “PES-zoning”: permanent, with generally collective payments at the village level, it will pay for compliance with an agreed zoning that will determine the forest areas to be conserved.

This will result in a kind of integrated conservation and development project, the implementation of which will be tied to the collective compliance of the agreed zoning. The AfDB-supported FIP project in DRC will test this approach (AfDB, 2013).

To ensure that payments are not misused (especially for the “PES-investment”), Karsenty (2011) proposes the adoption of a voucher system that limits the use of payments to the purchase of specific goods, such as agricultural inputs. These goods are defined in the PES contracts and are required to ensure conservation sustainability.

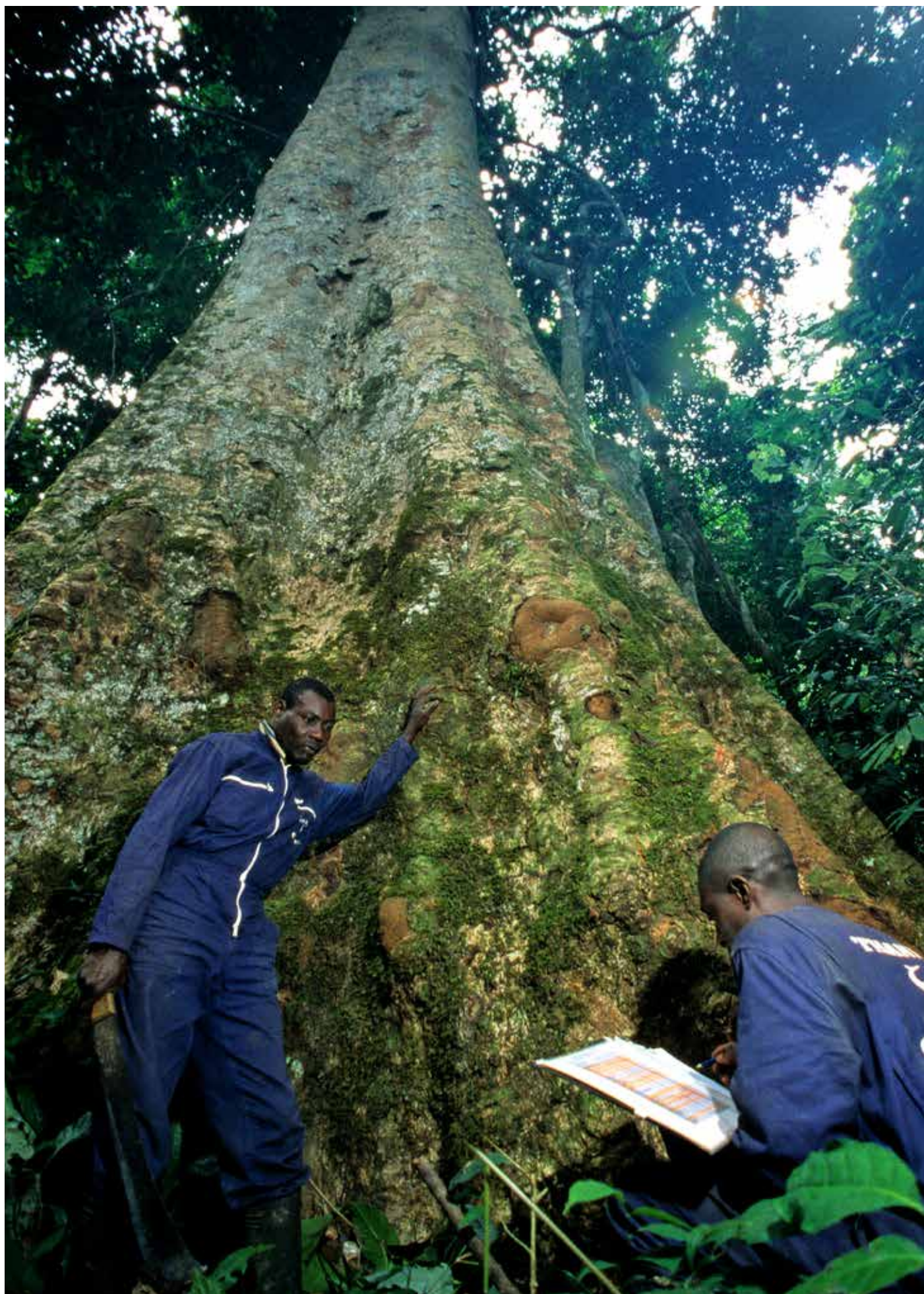
Taking into account the limited capacity of public administration in DRC, Karsenty (2013) also proposes that this national PES scheme be implemented through public-private partnerships. The specifications and evaluation would be prepared by the public administration. The administration will then provide funds for NGOs or companies to implement the schemes at the local level.

Finally, the national PES scheme in DRC envisages the use of SMS-based technology<sup>72</sup> when people have no bank account to mitigate mismanagement risks.

*Source: Authors based on Karsenty, 2013 and Gouvernement de la RDC, 2013*

<sup>72</sup> Mobile banking involves the use of “bank” accounts based on mobile phone technology. Initiated in Kenya where it is widely used, this system has been recently used in DRC for public administration salaries payment.





# CONCLUSION





Though PES is not yet significantly developed in Africa, many projects are currently underway. Indeed, PES represents a promising instrument to address challenges to sustainable NRM in Africa. It has the potential to help raise new sources of sustainable finance, improve the efficiency of conservation actions, secure the flow of environmental services for businesses and infrastructures that rely on it, and ultimately provide benefits for poor, rural populations.

To realize this potential, enabling institutional frameworks should be put in place, in particular through clarification of land tenure and support to local communities' organizational capacity. Of paramount importance for PES to be implemented at scale is the setting up of legal, institutional and fiscal mechanisms to generate new public and private funding for conservation. This includes funding from international climate finance initiatives such as REDD+. From this perspective, PES' development fits into a broader conservation finance and modernization agenda. In the long term, it is reasonable to expect that economic growth would favour the emergence of a stronger solvent demand for ES at the local and national levels. It should also lead to the strengthening of PES-enabling legal and institutional frameworks.

Specific measures are also required to make PES work in the African context and mitigate the risks associated with them: unfair arrangements, mismanagement, increased conflicts over natural resources, elite capture and perverse incentives. This stresses the need to take time to build understanding, awareness, trust and capacity among stakeholders during the development of such mechanisms. Delegation to the community of PES activities should also be favoured to lower transaction costs, a major barrier for PES development in Africa. This approach will also strengthen the mechanism's sustainability over time.

Finally, it is crucial to frame PES as a tool for development, a condition for it to find its place in the current sustainable development agenda of the continent. To achieve this, PES schemes shall be explicitly designed, in terms of their operational rules and governance, and through a fair and participative process, to bring benefits to the poor. Payments should not only cover opportunity costs but also allow for the necessary investments to make local livelihood systems compatible with conservation objectives in the long run.

The background of the page is a close-up photograph of rice panicles. The panicles are green and yellowish, showing individual grains. The image is split vertically, with the left side being a blurred, semi-transparent version of the same image, and the right side being a sharp, clear image. The word 'BIBLIOGRAPHY' is overlaid on the left side in a dark, bold, sans-serif font, with a dark horizontal line underneath it.

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