Finance options and instruments for Ecosystem-based Adaptation

Overview and compilation of ten examples

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Key messages

- The report provides a comprehensive outlook on available financing sources and stipulates ten examples for project developers and practitioners who might be keen to learn from different finance approaches to implement and maintain EbA measures. It offers the opportunity to showcase possibilities for EbA to be considered within National Adaptation Plan (NAP) processes and Nationally Determined Contribution (NDC) strategies.

- Financing sources for EbA measures stem from both domestic and international funds, which originate from public and private sources. International funds from public sources include multilateral funds (for example the Green Climate Fund and the Adaptation Fund), multilateral development banks, bilateral technical and financial cooperation as well as debt-for-nature swaps. Domestic public sources, such as national funds and budgets, are complemented by private sources, which encompass certification schemes, nonprofit organizations and market debt.

- Several instruments are relevant for EbA financing. In addition to grants, green bonds and debt financing, payment for ecosystem services, risk insurance as well as taxes, fees and charges are possible. Access to green markets, equity financing and guarantees constitute further instruments. There is no one-size-fits-all solution for financing EbA, as measures are highly context specific regarding for example climate risks and ecosystems, geographical scale and level of implementation.

- Different stakeholders face different costs that require various financing mechanisms. Often, a combination of finance instruments and sources has to be applied to guarantee the coverage of both investment costs (the costs associated with the development of infrastructure, capacity and technology) and operating costs (the ongoing expenses incurred to support the coordination and facilitation of the EbA measure throughout its lifetime).

- The ten examples illustrate how the funding sources have been harnessed for different EbA measures, including flood prevention, desertification, forest degradation, resilience building, and carbon insetting:

  - In Cartagena, **Colombia**, a compensation for sealing green areas and an event fee which contribute to the city's environmental infrastructure for flood prevention, engage the private sector. By communicating the benefits of EbA measures, an incentive structure was created to leverage private finance sources.

  - The High Atlas Foundation Tree Nursery in **Morocco** blends public funding from governmental institutions for the project's non-profitable aspects with revenue generation through the sale of carbon credits and certified products. It thereby ensures long-term financial sustainability and independence from future donations.

- Degraded forests and agricultural landscapes were restored under the Green Climate Fund in the **Gambia**. Rural households within community-managed forest reserves and conservation areas benefitted from the multilateral public fund which was channeled to the Gambian Ministry of Environment through UNEP to provide a grant for the execution of the project.

- The **Philippines** People's Survival Fund provides financial support for resilience building on a local level. The national fund is dedicated to projects which are accredited based on their track record in the community, financial management and participatory practices, and which integrate poverty and disaster risk reduction with climate change adaptation objectives.

- In **Germany**, a credit system compensates ecological loss from development projects. The expected degradation of the ecological value of a project site is estimated and the required amount of credits is calculated. Each credit corresponds to a certain ecological value and is sold by landowners and bought by project developers to offset their environmental impact.

- The positive impact of EbA measures in the set-up of **insurance schemes** allows for a lower risk for the insurer. Customers and communities who invest in self-protection are offered discounts and hence are incentivized to invest into adaptation measures.

- A microfinance scheme increases the resilience of vulnerable rural populations involved in agriculture in **Colombia** and **Peru**. The provision of loans allows farmers to invest in sustainable adaptation practices, decrease their dependency on agriculture and improve their income and resilience towards climate change.

- The eco.business Fund invests in sustainable operations in **Latin America** by issuing market-rate loans to borrowers that fulfil certain conditions. This public-private partnership thereby promotes business and consumption that contributes to biodiversity conservation and climate change adaptation.

- **Carbon Insetting** refers to the direct investment of a company within its own value chain. In addition to offsetting carbon emissions, this approach helps companies boost resilience along their value chain and care for the ecosystems that provide their raw materials.

- In **debt-for-nature swaps**, financial debt owned by a developing country government is cancelled or reduced by a creditor in exchange for financial commitments to conservation. The voluntary transactions are regarded as 'win-win-win' solutions, where benefits accrue to debtors, creditors, and ecosystems of debtor countries.

- The **objective** of these examples is to provide a learning experience for actors interested in exploring different ways to access resources and engagement models for EbA financing.

List of abbreviations

ADB	Asian Development Bank
AE	Accredited Entity
AfDB	African Development Bank
BMU	Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU) (until March 2018: Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety (BMUB) – the abbreviation BMU is used consistently throughout this publication)
CCRIF	Caribbean Catastrophe Risk Insurance Facility
CFE	Community-managed forest enterprises
DFNS	Debt-for-nature-swap
DRR	Disaster Risk Reduction
EbA	Ecosystem-based Adaptation
EBRD	European Bank for Reconstruction and Development
EIB	European Investment Bank
GCF	Green Climate Fund
GDP	Gross Domestic Product
GEF	Global Environment Facility
GHG	Greenhouse Gas
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit
IDB	International Development Bank
IFC	International Finance Corporation
IKI	International Climate Initiative
IMR	Impact Mitigation Regulation
LDC	Least Developed Country
LDCF	Least Developed Countries Fund
LGUs	Local Government Units
MDB	Multilateral Development Banks
MFI	Micro Finance Institutes
NAP	National Adaptation Plan
NDC	Nationally Determined Contributions
NGO	Non-governmental Organization
ODA	Official development assistance
PPP	Public-Private Partnership for Climate Finance
PSF	People's Survival Fund
REDD+	Reducing Emissions from Deforestation and Forest Degradation and the role of conservation, sustainable management of forests and enhancement of forest carbon stocks in developing countries
SIDS	Small Island Developing States
UN	United Nations
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNFCCC	United Nations Framework Convention on Climate Change
USD	United States Dollar
WB	World Bank

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1 Introduction

Ecosystem-based Adaptation *(EbA) is the use of biodiversity and ecosystem services as part of an overall adaptation strategy to help people to adapt to the adverse effects of climate change.*[1] It is a conceptual approach that creates a link between biodiversity and ecosystem conservation approaches and sustainable socio-economic development as part of an overall strategy to adapt to the shocks and risks of a changing climate. Drawing from *services of the natural environment*[2], EbA actively uses ecosystems to increase, build and sustain resilient human and natural systems.

Given the urgency of climate change adaptation and often limited availability of funding, there is a need for cost-effective adaptation solutions and sustainable long-term strategies to secure funding. While EbA approaches are increasingly being considered at all levels, access to and options for financing projects, plans and strategies have been explored less. Thus, the financing of EbA has yet to gain the necessary attention to provide targeted guidance to policy makers and practitioners who seek access to finance for EbA.

A common factor in the financial environment of EbA measures is their often-limited ability to generate revenue in the short-term through their operation to sustain operating costs and to repay capital investment. Nevertheless, EbA projects are mainly targeted towards sustaining ot improving public (ecosystem) services and risk reduction for people in the context of climate change. This requires projects developers to assess multiple benefits of EbA measures compared to a business as usual scenario[3] and shift the focus to the overall value of a project. As an example, the High Atlas Foundation in Morocco, a private NGO that is building tree nurseries to support the struggle against desertification, seeks carbon finance through the sale of carbon credits. Buyers convinced by the Foundation's cause can purchase credits while offsetting their own carbon footprint. Funds generated from carbon offsets are in return channelled towards up scaled ecosystem services.

There is no one-size-fits-all solution for financing EbA as measures are highly context specific regarding e.g. climate risks and ecosystems, geographical scale and level of implementation, governance structures, socio-economic beneficiaries and time scales. The relevance and choice of a funding source or instrument is ultimately determined by the needs of the measure. Nevertheless, one important step to design a successful financing strategy for EbA is to identify the needs and align common objectives with funding sources. This report does not provide detailed guidance; it rather aims to provide perspectives on relevant options and an overview of the EbA relevant climate and biodiversity finance landscape. For further inspiration, this report highlights the experience of ten potentially replicable examples.

1 Convention on Biological Diversity (2009).

2 GIZ (2017): Valuing the benefits, costs and impacts of EbA measure; author: Emerton, L. available on adaptationcommunity.net

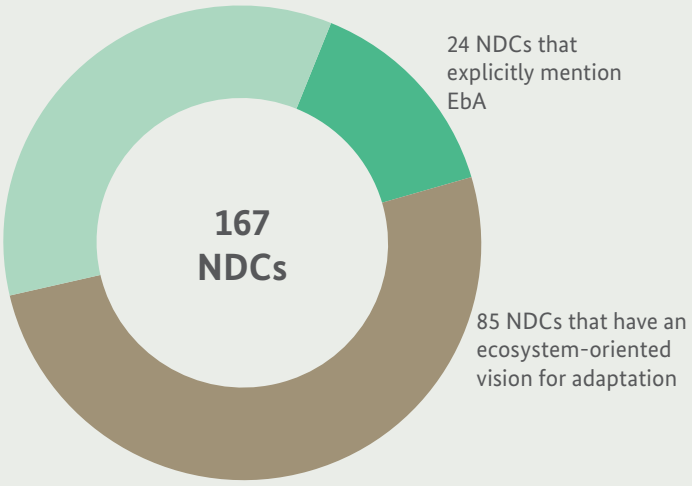
3 Business as usual scenarios describe the current development pathway to showcase the impact of the intended measure.

The publication presents:

i. a categorization of relevant financing sources for EbA,
ii. a list of financing instruments, and
iii. insights into ten potentially replicable examples to finance EbA measures.

The report provides a comprehensive outlook on available financing sources and stipulates examples for project developers and practitioners who might be keen to learn from different finance approaches. It showcases practical finance approaches relevant for the integration of (ecosystem-based) adaptation in the context of national and subnational climate policies such as Nationally Determined Contributions (NDC) and National Adaptation Plans (NAP).

Figure 1 **Inclusion of EbA in countries' NDCs (as of Jan. 2018)**



Source: Adapted from IIED & IUCN (2017) Ecosystem-based adaptation and the Paris Agreement.

1.1 The importance of finance support for EbA

The Paris Agreement, reached at the 21st Conference of Parties (COP21) in December 2015, calls on the world to keep global temperature rise to well below 2 degrees Celsius above pre-industrial levels. It also reiterates the need to enhance adaptive capacity, to strengthen resilience and reduce vulnerability to climate change.

Progress towards these ambitious goals depends on the successful implementation of the national pledges submitted by 167 countries in the run-up to and since COP21 – the Nationally Determined Contributions, or NDCs. NDCs spell out the actions countries intend to take to address climate change – both in terms of adaptation and mitigation. 24 out of currently 167 NDCs explicitly mention EbA as an essential means to domestically adapt to the effects of climate change [4,5]. Another 85 NDCs include adaptation approaches that are ecosystem-based.

This emphasizes the significance given to the implementation of EbA measures around the globe. More than 60 percent of countries' pledges have an ecosystem-oriented vision for adaptation and propose a range of conservation, restoration, agroforestry and community-led approaches to achieve this. [6] However, almost all NDCs that identify and reference ecosystem-based solutions, link their successful implementation to the condition of additional climate finance.

The recent UNEP Adaptation Gap report (2016) estimates that international public finance for climate change adaptation amounted to at least USD 25 billion globally in 2014, of which USD 22.5 billion was directed to developing countries. While this represented a continued increase since 2010, the study finds the current adaptation costs to be at least 2 to 3 times higher. [7]

Public finance for adaptation is often used to leverage or incentivize additional financing. There are currently no reliable estimates of the total amount of global spending on adaptation investment sources, especially regarding private adaptation finance sources. Sources not estimated on the global level often include domestic budgets and funds, financial instruments such as guarantees or insurance, green bonds, government revenue support schemes, and fiscal incentives. [8] A recent report from the UNEP provides insights into constraints of private investments to invest in adaptation measures due to uncertainty of investment returns, limited access to finance or overall risk aversion. However, companies are interested to contribute to adaptation finance in their self-interest. [9] Private finance sources already play an important role in adaptation finance today as showcased in selected case studies of this report. However, steady public investments continue to provide the foundation for adaptation investments.

4 IIED & IUCN (2016) Ecosystem-based adaptation: a win-win formula for sustainability in a warming world? (updated).

5 IIED & IUCN (2017) Ecosystem-based adaptation and the Paris Agreement.

6 ibid.

7 UNEP (2016) The Adaptation Finance Gap Report 2016. United Nations Environment Programme (UNEP), Nairobi, Kenya.

8 Climate Policy Initiative (2017).

9 UNEP (2016) Demystifying adaptation finance for the private sector. Authors: Druce et al.

Looking forward to 2030, the assessment of national and sector studies shows that adaptation costs in the period around 2030 are likely to be in the range of USD 140 – 300 billion per annum. The UN foresees the adaptation finance gap to be approximately 6 to 13 times greater by 2030 than international public climate finance today. [10]

At the Conference of Parties in Cancun in 2010, developed country Parties to the United Nations Framework Convention on Climate Change (UNFCCC) committed to jointly mobilize USD 100 billion a year by 2020 to support climate action (for both mitigation and adaptation) in developing countries. These ambitions were re-affirmed by the Paris Agreement, which entered into force in October 2016 and sets the framework for addressing climate change mitigation, adaptation and financing post 2020. The UNFCCC process has mobilized multilateral and bilateral donors to increase the financial support of mitigation and adaptation measures in developing countries.

[10] Ibid. – based on the assessment of national and sector studies.

1.2 Relevant financing sources for EbA measures

Sources of finance for adaptation can be distinguished between domestic and international funds that originate from public and/or private sources. The following overview follows this categorization and lists relevant sources for EbA measures.

International public finance sources

Multilateral funds

Multilateral funds are dedicated funds that support projects, policy processes and technical support for international cooperation. Some specifically take EbA approaches into consideration. Financed through national governments, funds are usually managed by a secretariat. This is a selection of relevant funds:

The Green Climate Fund (GCF) was operationalized in 2015 and is now the UNFCCC's main channel for climate finance disbursement. Through a rather complex application procedure, it dedicates 50 percent of its current USD 10.3 billion budget to adaptation measures.

The Pilot Programme for Climate Resilience (PPCR) aims to support poor countries' development plans, notably their National Adaptation Programmes, with approximately USD 1.2 billion. The PPCR operates through the setup of the Climate Investment Funds, which were designed by both developed and developing countries and are run by multilateral lenders such as the World Bank, the Asian and African development banks, the European Bank for Reconstruction and Development, and the Inter-American Development Bank.

The Least Developed Countries Fund (LDCF) started operating in 2001 under the UNFCCC process as part of the Global Environment Facility (GEF), and is designed to mainly help developing states draw up their National Adaptation Programmes. To date, the Fund has approved around USD 1 billion for projects and programmes in 49 countries reaching its foreseen investment limit.

The Special Climate Change Fund (SCCF) is a USD 362 million GEF fund that complements the LDCF but is open to all developing nations and provides financing to a wider range of actions related to climate change, with an emphasis on adaptation.

The Adaptation Fund was established as part of the UNFCCC structure to support specific projects in developing countries that are more likely to be severely affected by climate change. It channels its money through accredited implementing agencies: national, regional, and multilateral bodies that meet the Fund's criteria and help develop specific projects. The decision to transition the Fund into the new Paris Agreement regime was taken at COP22 (2016) in Marrakesh.

The Adaptation for Smallholder Agriculture Programme (ASAP) is a grant-based trust fund that was set up in 2012 by the UN's International Fund for Agricultural Development (IFAD). It helps smallholder farmers access information, tools, and technologies that help build resilience to climate change.

Multilateral development banks

Multilateral development banks, or MDBs, are supranational institutions set up by sovereign states, which are their shareholders. Their remits reflect the development aid and cooperation policies established by these states. They have the common task of fostering economic and social progress in developing countries by financing projects including adaptation measures.

The world's six large multilateral development banks (WB, IFC, IDB, EIB, EBRD, ADB and AfDB) delivered over USD 28 billion in financing in 2014 to help developing countries and emerging economies mitigate and adapt to the challenges of climate change. The latest figures bring total collective commitments of the past four years to more than USD 100 billion. In 2014, the six banks together provided over USD 23 billion dedicated to mitigation efforts and USD 5 billion for adaptation work, according to the fourth joint report on MDB climate finance.

Bilateral technical and financial cooperation

Bilateral cooperation sources support the technical and financial exchange between two governments for the implementation of policies, projects or specific measures. It is usually financed through bilateral development banks and national development organizations. The often grant-based cooperation enables the piloting of innovative concepts including EbA and limits the financial risk exposure of these activities. Examples of targeted bilateral funds include Germany's International Climate Initiative (IKI) under BMU. Since 2016, the ministry – via KfW Development Bank - is also supporting an EUR 25 million EbA facility[11] as a redemption fund under the Caribbean Biodiversity Fund (CBF). Other examples of bilateral financial cooperation include the Nordic Development Fund, the United Kingdom's International Climate Fund and the European Union's Global Climate Change Alliance (GCCA+) program.

Debt-for-nature swaps

Another possible source of public international finance for EbA measures are **debt-for-nature swaps**. This highly political approach sees the cancellation of debt in exchange for the conservation of natural ecosystems. Governments may negotiate with one or more creditors to have a portion of their debt cancelled, which is used in turn to fund a designated conservation initiative. Main examples include debt-for nature swaps and debt-for-development swaps. Example 10 of this report discusses examples of this approach in greater detail.

Private finance sources

Certification schemes

A number of national and international market mechanisms, **certification schemes** and foundations are generating additional incentives for the implementation of EbA measures especially in the context of forest, peatland and coastal ecosystems including mangroves. To name a few, carbon markets can, through i.e. voluntary carbon certification schemes, generate additional revenues by selling off carbon credits from avoided emissions. This also applies to incentives related to REDD+ that mainly reduce emissions from deforestation and forest degradation in developing countries with adaptation co-benefits. Other examples include the certification of ecotourism operations, forest and agricultural products and products from aquaculture and fisheries.

[11] Further information available at: www.kfw-entwicklungsbank.de/PDF/Entwicklungsfinanzierung/Veranstaltungen/DFF2017_Karbik_EbA_EN.pdf

Nonprofit organizations

Nonprofit organizations, such as national and international foundations and NGOs, can help to aggregate donations and green investments to provide support to national or local governments, programs or specific projects. This category of finance sources may operate on a regional, national, or international scale and may not be limited to a domestic context. Foundations and NGOs are often very experienced in the generation of knowledge materials for outreach activities to potential supporters.

Market debt

The by far largest source of potential private finance for climate change adaptation measures stems from investment and financial lending operations. However, access to capital investments and credits at regular non-concessional market rates is a major barrier for project developers in developing countries. With a growing interest for financial markets to invest in resilient and sustainable projects, EbA considerations can increase the appeal of measures for certain lenders and investors through i.e. Green Bonds.[12] Example 8 of this report focuses on the experience and setup of the eco.business Fund in Latin America.

Domestic public sources of finance

National (adaptation) funds and budgets

National adaptation funds are established by national or sub-national governments with the aim to financially or technically support adaptation action. They are often part of a country strategy or development plan to drive policy implementation. Many national funds receive their resources from national and international sources. One example of a solely domestically funded finance vehicle is the Peoples Survival Fund in the Philippines. Example 4 explores the experience of the Fund and its relevance for EbA projects in the country in more detail.

Domestic resources for national climate change funds are often generated through fiscal instruments. These can include taxes, levies and fees, the issuance of bonds, new subsidies and engaging in subsidy reform or even ecological fiscal transfers, e.g. between subnational governments.[13] At the same time, domestic budgets can integrate adaptation measures directly or support their consideration.

[12] For further reading on the concept of Green Bonds: www.climatebonds.net/market/explaining-green-bonds

[13] For further reading see the example of ecological fiscal transfer in Brazil: http://img.teebweb.org/wp-content/uploads/2013/01/Financing-conservation-through-ecological-fiscal-transfers-in-Brazil.pdf

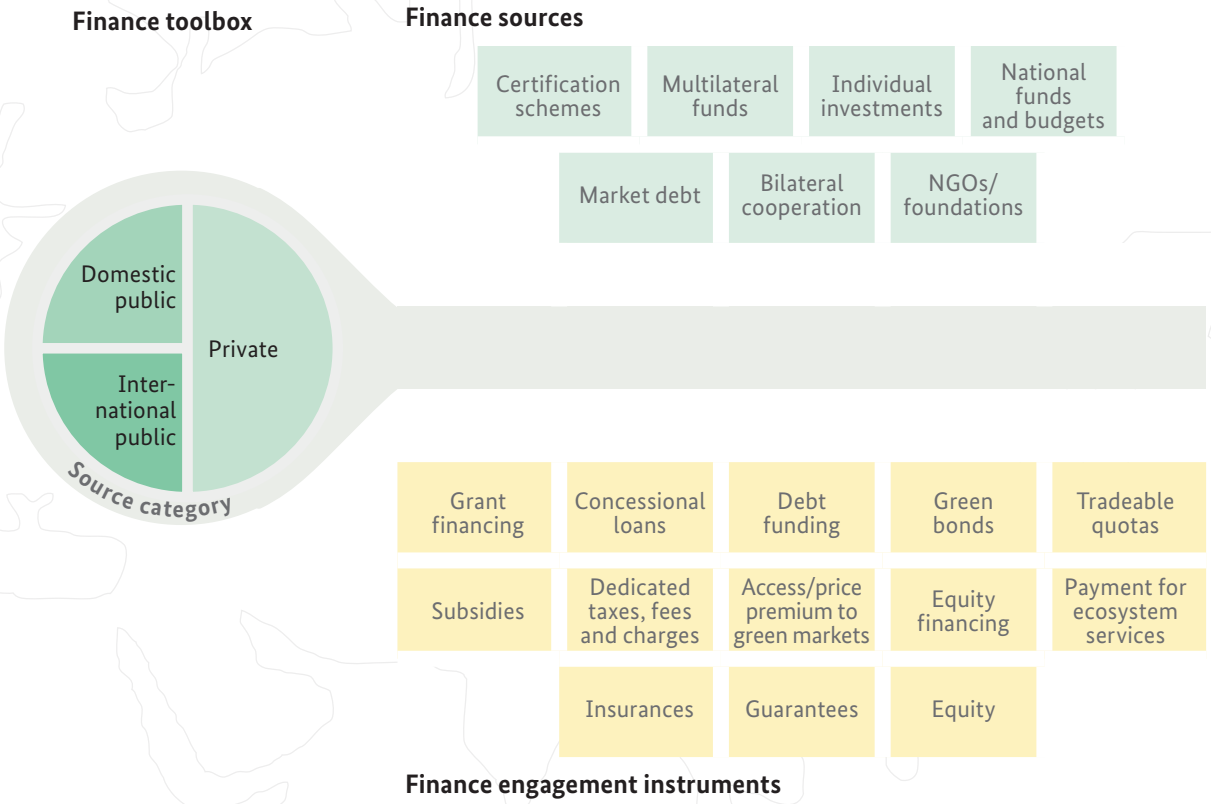
1.3 Overview of instruments relevant for EbA financing

EbA measures are often financed through a combination of instruments. Given that no specific EbA financing mechanism exists, the suggested instruments are selected on the basis that they deliver climate finance through a modality that can be relevant for EbA.

- Grant financing, where grant disbursements are linked to measures being implemented either indirectly (when delivered upfront) or directly (via results-based payments).
- Concessional loans, granted on terms substantially more generous than market loans either through below-market interest rates, by grace periods or a combination of both.
- Debt funding, where a fund pegs its debt terms and conditions to results tracked under the implementation of an EbA measure.
- Green bond financing, where a financing source offers credit enhancement by extending a credit guarantee to cover a portion of the debt marketed through a green bond. The business case, were applicable, would be applied to an EbA measure just like with any other investment project.
- Payment for ecosystem services (tradable or non-tradable), payments to reward the ecosystem services to those who maintain the service (e.g., payments for watershed management).
- Risk insurance, against losses due to weather extremes are a powerful development tool to strengthen communities' resilience. Incentivizing climate adaptation measures through risk insurance systems, where adaptation measures lower the risk of policy pay-outs, are gaining attention. Moreover, insurances address inherent investment barriers by providing security against underperformance risks. These schemes are often backed by international finance organizations lowering the risk for national policy providers. Advances in technology and the use of indices allow for a wider roll out in developing countries that have not been considered in the past.
- Tradeable quotas, establishment of quotas for the extraction of goods (such as firewood, timber, fish harvest, harvest of wild species) from natural ecosystems, to ensure their sustainable management.
- Subsidies, use of domestic budgets to subsidize the cost of a good or service to promote the uptake of technologies or practices that build adaptive capacity. A subsidy reform of financial support for unsustainable practices may also be considered.
- Dedicated taxes, fees and charges, taxation of activities that destroy, degrade or mismanage natural resources (e.g. taxation of pesticide use, unsustainable timber harvesting, others) – can in return be reinvested into measures strengthening adaptive capacities.
- Access/price premium to green markets, are market development tools that add value and increase market access for sustainable products and services, e.g., niche markets for ecosystem friendly products, often through the use of certification and labelling.
- Equity financing, where a finance source pegs its equity terms and conditions to results of an EbA measure.
- Guarantees, whereby a finance source offers revenue support through guarantees linked to performance delivery.

The following figure illustrates the summary of funding sources and financial engagement instruments that can be utilized to design and implement EbA measures.

Figure 2 Overview of financial sources and engagement instruments relevant for EbA finance.



Source: Authors illustration.

1.4 Case study analysis

Actors who seek funding sources for EbA measures are considering options and instruments that fit the needs and specific context of the respective activities. Often, a mixture of different instruments, sources and finance considerations have to be applied to guarantee sufficient support throughout the entire planning and implementation cycle. This includes the planning, implementation and long-term operation of EbA measures.

There are two general cost categories:

- **Investment costs.** These are the costs associated with investments in developing infrastructure, capacities and technologies for EbA solutions. These include research and development, human capacity development and coordination costs, construction materials and specialized equipment such as remote sensing technology for monitoring.[14] Investment costs are usually the highest during the development phase of an EbA measure. They need an external finance source that is either grant based or expects a return of investment through the value generated by the measure.
- **Operating costs.** These are the ongoing expenses incurred to support the coordination and facilitation of the EbA measure throughout its lifetime. These include human resources, equipment and communication costs. They also include administrative costs, such as those for financial oversight and the managing, monitoring and evaluating of programs, projects and initiatives.[15]

Apart from these costs, opportunity costs and transactions costs have to be considered too, as these costs are usually substantial for EbA and far higher than for grey, e.g. concrete-based, adaptation measures. **Transaction costs** refer to the time required when establishing an EbA measure and applying participatory or community-based approaches. The **opportunity costs** of an EbA measure relate to what people forgo to implement and maintain EbA measures in terms of alternative resource use opportunities and economic activities foregone. When looking at EbA, the distribution to whom funding is provided, plays also an essential role because different stakeholders might face different costs, that might require different financing measures. This will be reflected within the ten examples at hand.

The following section of this report introduces and analyses examples of finance options for EbA that successfully utilized different mechanisms and instruments to fund their design and implementation. The objective of these case studies is to provide a learning experience for actors interested in exploring different ways to access resources and engagement models for EbA financing.

One common dynamic across all finance examples that are included in this compilation, is the limited ability of EbA measures to generate sufficient revenue through their operation, to sustain their operation with the objective to contribute to current and future climate change adaptation and to repay investment costs. **A lack of revenue however does not mean that adaptation measures lack additional value.** The assessment of the value in terms of benefits, costs and impacts of any EbA measure (see e.g. GIZ 2017 for further details[16]) allows for innovative approaches to engage with different financial sources that share an interest in supporting benefits. Costs are only one of three indicators that can be used to assess the value of a project. Assess-

[14] Based on: NAP Global Network, Financing National Adaptation Plan Processes (2017).

[15] Ibid.

[16] GIZ (2017) Valuing the benefits, costs and impacts of EbA measure; author: Emerton, L., available on adaptationcommunity.net

ing and communicating other dynamics, such as benefits and impacts of EbA measures may incentivize different funding sources. In the example of engaging the private sector for EbA finance in Cartagena, Colombia (example 1), the project team engaged public international donors to support the establishment of a financing mechanism and convinced the municipality and private businesses to pay regular fees for the protection of the city against floods e.g. through mangrove restoration. Sometimes, EbA measures are only one part of a larger investment and operation. In the case of the High Atlas Foundation in Morocco (example 2), the not-for profit organization engages with a variety of finance sources such as grants, donations, carbon credits and selling of eco-certified fruits to support reforestation in the Atlas Mountains.

Other examples in this report support the creation of a framework that is beneficial for the implementation of EbA, therefore directing finance streams towards this sector. In the case of Restoring Degraded Forests and Agricultural Landscapes in The Gambia (example 3), a UN agency successfully applied for a grant from the Green Climate Fund to support the transformational change of the countries agricultural sector towards climate smart practices. The Philippines are one of the most vulnerable countries in the world to the effects of climate change. Example 4 on the People's Survival Fund explores the operational structure, set-up and experience of the government to establish a national fund that aims to support disaster risk reduction and adaptation projects at the local level. In the example of the German Impact Mitigation Regulation (example 5), a regulatory framework establishes an offset mechanism that not only prevents the loss of biodiversity, but also channels generated funds towards adaptation benefits based on ecosystem solutions.

EbA can also be utilized to de-risk investments and business interactions. As showcased in example 6, innovative disaster insurance solutions may reward individuals and communities that limit their exposure to weather extremes by using ecosystems. Similar logic applies to the interconnection of smallholder farmers and the providers of microcredits (example 7). Farmers who wish to invest in resilient techniques may find preferential conditions from credit providers that are able to assess the benefits of the investment. In the case of the eco.business Fund (example 8), regular market debt rates are applied for adaptation investments that would otherwise not be able to receive a credit from conventional banks.

One consideration that features in example 9 on carbon insetting is the value that EbA holds for companies that wish to climate proof their own supply chain and operations. The option of reducing a country's debt while protecting its environment through debt-for-nature swaps is a consideration and important ongoing discussion. Example 10 discusses this option and introduces the evolution of this concept.

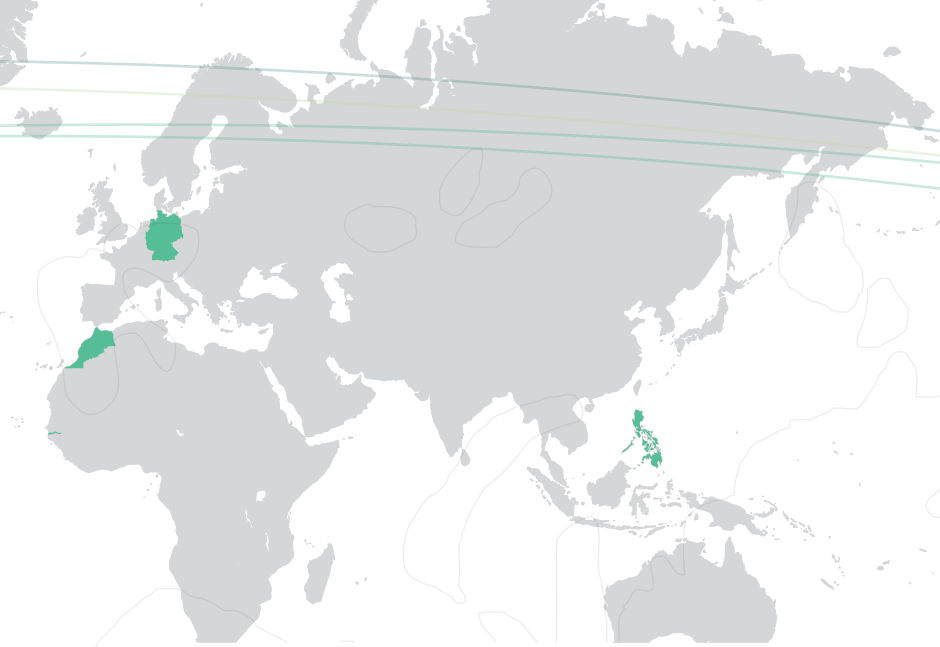
Financing EbA measures requires strategic thinking and knowledge of available sources to apply innovative approaches. The international EbA Community of Practice[17] facilitated by GIZ shares a large amount of experiences that future projects can draw from. Overarching recommendations from members – especially practitioners on public and domestic finance – on the engagement with finance options are, to:

[17] The international EbA Communtiy of Practice, supported by the BMU-IKI funded Global Project 'Mainstreaming EbA' – implemented by GIZ – is a knowledge and exchange network of EbA practitioners primarily from governments, international organizations but also civil society and research with an interest in strengthening Ecosystem-based Adaptation in planning and decision-making. Further information: www.adaptationcommunity.net/ecosystem-based-adaptation/international-eba-community-of-practice

- Develop innovative financial instruments by departing from local priorities and considering technical , institutional, financial, commercial and legal components.
- Set up finance strategies that promote the effective use of available financing mechanisms and explore new mechanisms and diverse financing sources.
- Provide transparency of investments associated with the funding, to allow stakeholders to trace the utilization of their investment.
- Allow for and plan the scalability of measures to increase the impact and attract new commitments from investors.
- Measure and report the achievement of activities that are being financially supported to showcase to finance providers that the objectives are being met. This helps to establish a trustworthy relationship with investors. Plan for the efficient use of funds with limited overhead costs.

2 Examples of EbA finance options and instruments

1	**Dedicated taxes/subsidies and fees** **Engaging the private sector for EbA finance in Cartagena**	
	Funding source	Private business and event fees; operational support from bilateral donors
	Measure	Contributions to the city's environmental infrastructure for flood prevention
	Country	Colombia
2	**Blending private contributions, business compliance and grants** **The High Atlas Foundation Tree Nursery**	
	Funding source	Donations and compliance payments from companies; carbon finance; bilateral donors
	Measure	Domestic tree nurseries to support the struggle against desertification
	Country	Morocco
3	**Multilateral funding** **Restoring degraded forests and agricultural landscapes under the Green Climate Fund**	
	Funding source	Multilateral public fund
	Measure	Restoring degraded forests and agricultural landscapes
	Country	The Gambia
4	**Financing resilience through a dedicated national fund** **People's Survival Fund**	
	Funding source	Domestic public finance
	Measure	Financial support for resilience building
	Country	The Philippines
5	**Biodiversity offsets** **German impact mitigation regulation**	
	Funding source	Private/Public compliance with regulation
	Measure	Biodiversity offsets
	Country	Germany



6	**Insurance solutions** **Relevance of insurance systems for EbA finance**	
	Funding source	Private/Public funds from international and domestic sources
	Measure	Discussion paper on risk reduction through the inclusion of EbA measures into innovative insurance solutions
	Country	Global
7	**Microfinance scheme** **Increasing the resilience of vulnerable rural populations**	
	Funding source	Private funds being leveraged through international public funds
	Measure	Provision of loans, awareness-raising/training on EbA measures
	Country	Colombia, Peru
8	**Market debt** **eco.business Fund**	
	Funding source	Private funds being leveraged through international public funds
	Measure	Broadening the availability of additional microfinance products and services
	Country	Latin America
9	**Carbon Insetting** **A discussion paper**	
	Funding source	Private funds
	Measure	Carbon insetting of companies and organisations
	Country	Global
10	**Debt-for-nature swaps** **A discussion paper**	
	Funding source	Public international finance sources
	Measure	Cancellation of financial debt in exchange for financial commitments to adaptation
	Country	Global

Example 1

Dedicated taxes/subsidies and fees

Engaging the private sector for EbA finance in Cartagena, Colombia

Wall graffiti. Photo: © Pixabay/ShonEjai, CC0 CreativeCommons
pixabay.com/en/background-graffiti-spanish-grunge-1559050

Urban ecosystem challenges in Cartagena, Colombia

Cartagena, a city located at the Caribbean coast of Colombia consists of over one million inhabitants, making it the fifth largest city in the country. Due to its strategic location, the port of Cartagena has grown into the largest port of the Caribbean coast, which is significant for the Colombian economy. The city is famous for its colonial centre, which is a UNESCO world heritage site. More than 3,000 ships pass through Cartagena's port each year and nearly 112,000 tourists visit the city per year from cruise ships alone.

A major challenge for the city however, is that it is prone to regular flooding. It is expected that the frequency and intensity of flooding due to rainfall and sea level rise will increase in the future. These problems are increased even further by new city developments and the sealing of water drainage surface.

Regular floods often create difficulties in commercial activities in the form of congestion, inaccessibility, and a loss of revenue. Overall, Cartagena requires new approaches that consider adaptation to climate change as a fundamental element of its urban planning, in order to protect economic activities, the welfare of the population and the health of ecosystems.

Infobox 1 Strategies for Ecosystem-based Adaptation to climate change in Colombia and Ecuador

Funding source	International Climate Initiative
Total beneficiaries	14,000 (in Colombia)
Implementation start & end date	2015 – 2018
Total financing (USD) Millions	1.95 Million in Colombia (1.35 Million in Ecuador)

Flooded Street in Cartagena. Photo: © Flickr/Jeffrey Beall, www.flickr.com/photos/denverjeffrey/1834606578, licensed under CC BY 2.0

Finding a sustainable financing instrument to address climate risks

To meet the above challenges, two measures with a focus on EbA are currently being implemented in and around the city: The restoration and maintenance of forests close to natural streams and rivers in the urban area and the conservation of mangroves near the city. Both activities increase protection against floods and provide multiple other benefits in the adaptation context.

The measures are supported through the project 'Strategies for Ecosystem-based Adaptation to climate change in Colombia and Ecuador'. This program is part of the International Climate Initiative (IKI) and implemented by GIZ and IUCN. The German Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU) supports this initiative based on a decision adopted by the German parliament.

A unique feature of the project is that it aims to establish a finance mechanism to support the continuation and expansion of EbA measures already in place. In collaboration with many municipal stakeholders, the project developed a simple methodology for the participatory design of financial instruments that are readily available for distribution and use.

In the long run, the EbA measures are to be refinanced through the city's own fee collection scheme for ecosystem protection. The financial sources will mostly consist of private funds through the collection of a municipal event fee (which is voluntary at present) and a rainwater drainage levy for businesses and private urban developers.

Engaging the private sector

The project identified several challenges and characteristics of the potential mechanism to generate funding for the conservation and extension of the EbA measures. Communicating the need for contributions to the city's environmental infrastructure, must be transparent and clearly linked to the needs of the community. Furthermore, it is essential to keep the transaction costs low to argue a direct impact of the contributions.

After extensive coordination with business and municipal representatives, a financial instrument with two sources of revenue was proposed.

1. A compensation for hardening and sealing green areas.

2. A specific fee for conferences and events that take place in the city. This is to compensate for the strain on natural resources due to these events.

Figure 3

Any generated contributions directly feed into an endowment fund that is separate from the city's revenue stream. The municipality will oversee collecting the levies. Oversight of the fund will be secured by external auditors. Moreover, an administrative body will structure the distribution of technical implementation, suppliers of goods and services, as well as operators of the measures.

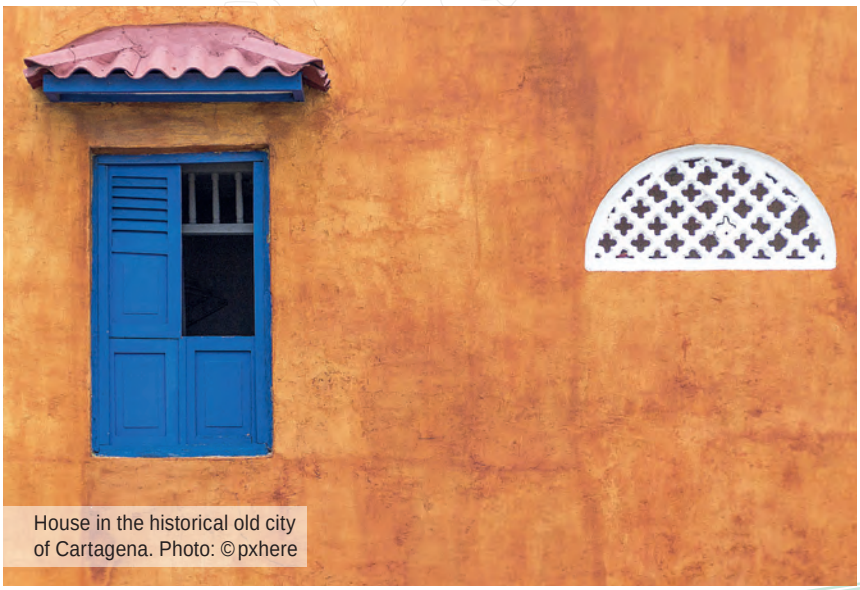
Box 1 Endowment Fund

An investment fund set up by an institution in which regular withdrawals from the invested capital is used for ongoing operations or other specified purposes. **Endowment funds** are often used by non-profits, universities, hospitals and churches.[18]

The metrics used for calculating and communicating the fees to the public differ according to the two financial sources.

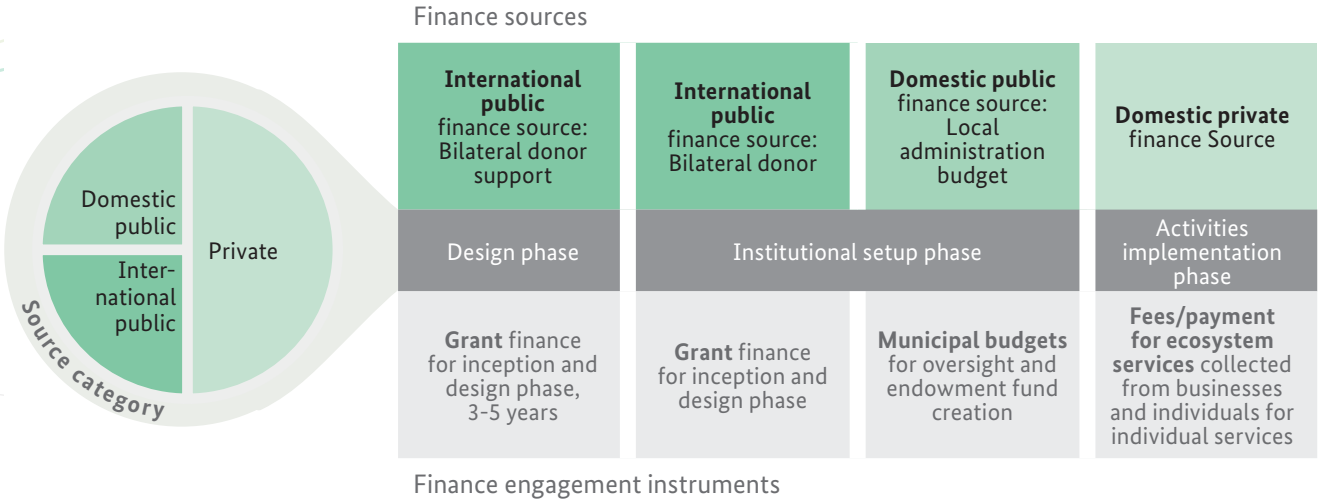
Justification and calculation of compensation for hardening and sealing green areas:
Unsealed soil serves as a natural drainage system for rainwater. When soil is being sealed by new developments, rainwater runs off the surface, causing downstream flooding. Businesses have an incentive

[18] For more information: www.undp.org/content/sdfinance/en/home/solutions/environmental-trust-funds.html



House in the historical old city of Cartagena. Photo: © pxhere

Figure 4 Visualization of finance approach: dedicated taxes/subsidies and fees



to contribute to the creation of additional areas for drainage, to offset the impact of their own development. The project team estimated the impact of a sealed surface per square meter to calculate a proposed compensation rate. They based the assessment on the principle that each square meter of construction results in a loss of rainwater retention capacity that generates flooding downstream. The project identified areas and actions that must be implemented to improve the retention and capture of rainwater and estimated costs for increasing the capacity of water storage.

Justification and calculation of compensation for event fees:
The outreach of the project with event organizers, hotels and other tourist businesses showed a general awareness of the environmental impact that accompanies mass tourism in Cartagena. Emissions from transportation from and to the city and additional water use from tourists exacerbates existing problems. Tourism is an important source of income for the region and options to minimize the environmental impact, including additional costs, should not deter people from coming. It proved to be a more convincing argument to have travellers contribute to relief mechanisms for problems they contribute to.

First pilot experiences were made by the voluntary participation of event organizers that included a fee into their costs. With a single event in Cartagena, the project helped raise enough financial resources to plant 1,200 trees and mangroves, which represents 12 percent of the city's annual tree planting goal.

How are ecosystem-based payments relevant for EbA?

Securing a finance stream for sustaining EbA is a challenge often experienced by donor-supported projects. To mobilize those potential sources of income for the implementation and continuation of measures, it is essential to work on local priorities for adaptation and to establish a common long-term objective and work together with national partners and communities that take ownership. Vulnerability and risk assessments can help to define those priorities and identify potential intervention points.

The experience in Cartagena exemplifies how a donor-supported project can create an incentive structure within an urban setting for leveraging private finance sources. The project team effectively communicated the value and benefits of contributing financial resources into ecosystem services. This helps support municipalities and national planning departments to mainstream EbA in their strategies.

Further information

For more information about the 'Strategies for Ecosystem-based Adaptation to climate change in Ecuador and Colombia' project, please visit their website www.giz.de/en/worldwide/38930.html

For further reading see PANORAMA solution 'Pilots for the restoration of mangrove ecosystems in Ciénaga de la Virgen (Cartagena, Colombia)' www.panorama.solutions/en/solution/pilots-restoration-mangrove-ecosystems-ci%C3%A9naga-de-la-virgen-cartagena-colombia

Example 2

Blending private contributions, business compliance and grants

The High Atlas Foundation Tree Nursery, Morocco

High Atlas Mountains from Tizi-n-Tishka pass road. Photo: ©Flickr/Anna & Michal, www.flickr.com/photos/michalo/2359585494/in/album-72157604228435233, licensed under CC BY 2.0

The High Atlas Foundation Nursery Projects

Communities situated in rural areas and mountainous regions of Morocco are highly vulnerable to the effects of climate change such as temperature increase and changing precipitation patterns. Harsh weather conditions combined with unsustainable traditional agricultural practices have significantly affected these Moroccan communities. To improve their living conditions, development and climate adaptation measures that regenerate ecosystems and help ensure lasting and sustainable progress need to be implemented.

As a response, the US-Moroccan NGO the High Atlas Foundation (HAF) has been implementing a development and adaptation strategy in various provinces of Morocco, including a tree nursery programme. HAF nursery projects are community-based projects dedicated to planting fruit-bearing trees in order to diversify land-use, generate income for communities, support inclusion of vulnerable groups in society, and reverse the effects of deforestation. The HAF funds its projects through a combination of public and private funding. Since 2006, 2.2 million seedlings from fourteen nurseries throughout five provinces of Morocco have been planted. Their nursery programme is currently expanding, and HAF is committed to planting one billion trees in the future.

Infobox 2 The High Atlas Foundation Nursery Program

Funding source	Balance between public and private funding: grants from governments and intergovernmental organizations; donations from companies and individuals; income through carbon credits.
Total beneficiaries	The HAF has established 14 community-based nurseries across Morocco.
Implementation start & end date	2006 – ongoing
Total financing (USD) Millions	USD 50,000 per nursery[19]

Financial mechanism

As an NGO, the HAF funds its nursery programme through a mix of public and private funding, in combination with carbon markets. The HAF receives donations from governmental institutions such as the US Department of State and UNDP, foundations such as the Alliance for Global Good and the Moroccan OCP Foundation, and donations by individuals, crowdfunding campaigns and a partnership with the search engine Ecosia (see box 2). It also generates income through the sale of carbon credits, by contracting businesses who buy these credits to offset their climate impacts. The fruit tree nurseries generate income through the sale of certified products. This income flows back into the communities, thereby ensuring the long-term financial sustainability of established nurseries, and independence from future donations.

Not all of these funding sources are suitable for the various project stages and types of activities that are implemented. For example, public funding can only be used for non-profitable aspects of the project, whereas carbon credits can only be generated after project implementation is well underway.

Large-scale donors

In the initial project phases, the HAF heavily relied upon donations from governments and inter-governmental institutions. These funds were used to establish the project plans, invest in machinery to process harvested products and to ensure biological certification of these crops.

Small-scale donations

As a second source of funding, the HAF generates income through small-scale donations from individuals and companies. Donations can be made through a dedicated interface on the HAF website and crowdfunding platforms the HAF cooperates with. Through the 'Giving Menu' on the HAF website, donors can choose which nursery project they want to donate to and what each donation can achieve. For example, a donation of USD 0.50 plants 1 fruit sapling, whereas 100 fruit trees are needed to economically and environmentally benefit one family. Next to this, the HAF engages with crowdfunding platforms such as GlobalGiving[2] to raise money. This allows HAF to reach out to potential donors and expand their donor base. GlobalGiving provides potential donors with the option to start a fundraiser, sell gift cards and have a 'project of the month' club, where donors can automatically donate their money into different high-impact projects. The HAF also organises annual fundraising events. Small-scale donors provide a relatively modest contribution to the HAF nursery projects. However, the funds can be spent at the discretion of the HAF, as opposed to grants for which donors often require specific allocation. Small-scale donations also connect donors to the projects, furthering community participation and long-term engagement.

[19] High Atlas Foundation (2018), www.highatlasfoundation.org/donations/giving-menu

[20] www.globalgiving.org is an online global crowdfunding community connecting non-profits, donors, and companies to access funds, tools and training to support the work of NGOs.

Box 2 Ecosia.org

Ecosia is a Germany-based social business, aiming to plant one billion trees. It has developed a search-engine that can be used as a substitute for other engines like Google and Yahoo. No costs are charged for using it. Ecosia generates income through advertisements, and with a price of EUR 0.22 for each tree, on average 45 searches are needed to plant a tree. At least 80 percent of the surplus income from ad revenues are used to support reforestation projects.

Since its launch in 2009, Ecosia has invested almost EUR 5 million and currently has over 5.5 million active users.

Ecosia invests in projects that are located in biodiversity 'hotspots': regions with high levels of threatened biodiversity. Moreover, Ecosia follows criteria to select projects: they should have a positive impact on the environment as well as local communities and animal species, and aim to create a situation where, in the long term, it is economically more attractive for communities to invest in their forests than to cut them down. Projects should also use native species and create mixed forests. In July and August 2017, Ecosia invested EUR 66,259 into three High Atlas Foundation nursery projects. Ecosia simultaneously funds a number of tree planting projects, and is constantly looking into new tree planting projects to fund.

By linking a simple action to a very concrete result, namely enabling the planting of a tree, Ecosia manages to engage large numbers of users. Showing users updates on tree-planting projects through blogs, photos and videos, make the positive impact of using the search engine tangible, motivating users to stick around. Importantly, Ecosia-users do not pay for the investments themselves, but rather channel private money from advertisements to development projects by using the search-engine.

Source: www.ecosia.org

Use of lands

The establishment of new nurseries is only possible if suitable plots of land are available in the communities. Through cooperation with a number of national and local actors, the land for the nurseries is lent or donated to the HAF by local schools and universities, cooperatives, the Moroccan Department of Waters and Forests, or the Moroccan Jewish Community, representing an invaluable contribution to the projects.

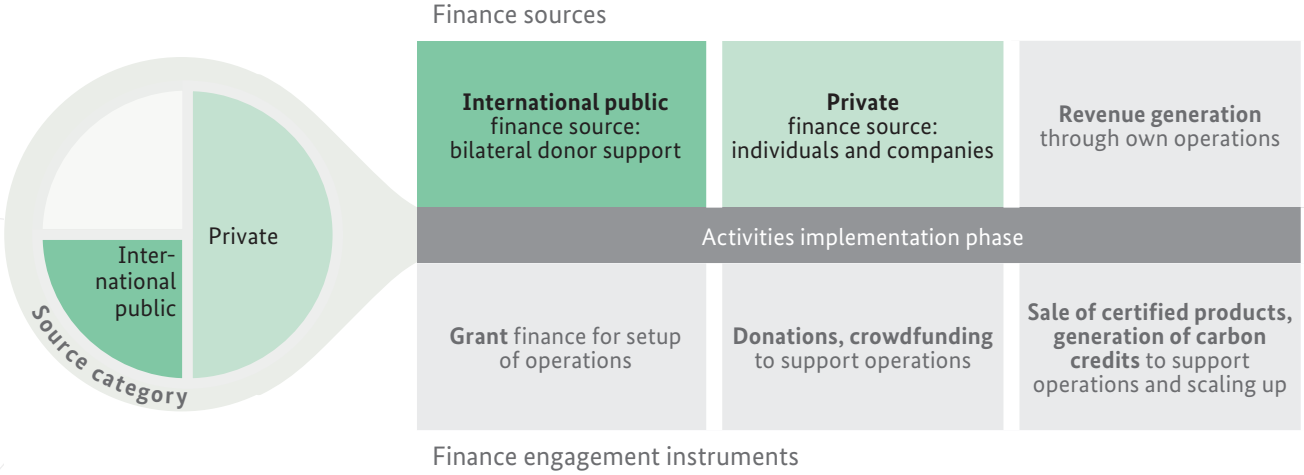
Product sales and product certification

The HAF introduces surplus farming and supports communities in processing and selling products generated by the fruit-bearing trees that are planted as part of the nursery projects. The HAF has used its grant funding to create an organic agriculture system and to seek biological certification for the products it produces. Over the past years, the demand for biological products has increased and today, through biological certification, the amount of revenue generated by the communities has only multiplied. Income generated through product sales flows back into the communities that produce the fruits and maintain the nurseries. The communities themselves decide how to invest their profits: for development projects or to channel profits back into the nurseries for example.

Carbon revenues

The HAF has been exploring opportunities for the use of carbon credits and is currently in the certification process. The certification of the forests created through the nurseries that function as carbon sinks, is a long and complicated process as

Figure 5 Visualization of finance approach: blending private contributions, business compliance and grants



these are located across the country and vary in type and size. Monitoring and reporting modalities must be established and because the HAF is pioneering forest certification in Morocco, a standardized approach does not exist yet. The HAF has secured a potential buyer for its first batch of credits once they are issued, which supports the carbon certification and issuance process. Once in place, the sale of carbon credits will provide substantial additional revenues, but more importantly, will create a financial model that enables discretionary spending. Moreover, carbon credits have the potential to become an ongoing source of finance, which is essential for the HAF to be able to continue its work, establish new nurseries and reach more communities across Morocco.

How the funding is used by the project

The different HAF nursery projects share similar impacts when implemented across different communities in Morocco. The projects are community-based and inclusive, specifically targeting vulnerable groups in society and providing them with meaningful work and an income source. Project plans, which are prepared by the community, must

Atlas Mountains. Photo: © Flickr/gefafwlsp, www.flickr.com/photos/jamesbrady/4221372911, licensed under CC BY 2.0

have a clear vision of how the creation of a nursery will facilitate empowerment of marginalized groups in the community. Moreover, the HAF has established two women's nurseries, where women are active stakeholders in the creation and implementation of nurseries managed by communities and take part in capacity-building programs that focus on agricultural techniques and project management. This not only expands social and gender roles, but also promotes overall self-resilience and engagement of entire communities.

In addition to these social and development benefits, the HAF nursery projects help communities adapt their livelihoods to new climate circumstances and additionally contribute to the mitigation of climate change through carbon sequestration in the planted forests.

Challenges, lessons learned, way forward

The success story of the HAF is to a large extend based on a carefully build-up network of potential donors and businesses that are willing to invest in the project. As such, their funding strategy is not easily replicated or up-scaled. However, the HAF shows that with the right ingredients, a strong project, good project rationale and an extensive network, a wide range of potential funding sources can be accessed.

Balancing funding sources

Mr. Yossef Ben-Meir, president of the High Atlas Foundation, underscores that the operation of the HAF has so far been a balancing act between different available funding sources. Whereas the HAF had sufficient financial means to set-up the first nursery and create the supply-chain for the products through funding by UNDP and the US Department of State, it did not cover all costs in the next project phases. An old connection proved instrumental, as Mr. Ben-Meir was able to secure a partnership with the Lucky Famers Market, who, as a commercial partner, was willing to invest in the upfront payment to the famers where public funds were not able to do so. A significant risk for a foundation like the HAF is to become undercapitalized: by being dependent on donations and grants an organization cannot secure stable and long-term income flows. The HAF is now trying to overcome this issue by participating in carbon markets, but

Atlas Mountains, Morroco. Photo: © Flickr/Pieter Edelmann, www.flickr.com/photos/mr-pi/24363778414, licensed under CC BY 2.0

Atlas Mountains, Morroco. Photo: © Flickr/Pieter Edelmann, www.flickr.com/photos/mr-pi/24880312162, licensed under CC BY 2.0

will continue to seek other funding sources to complement its funding mix.

How is this financial option relevant for EbA finance?

The strategy of the HAF, of looking beyond public donations to corporate partnerships, crowdfunding, market-based mechanisms and cooperating with innovative platforms such as Ecosia, has proven successful, and can be an inspiration for other NGOs that are struggling to access long-term finance or stable income flows. Investment costs and operating costs of EbA measures may require different funding sources, and public and private funding sources can complement each other in cases where either of the two does not cover the full range of activities that is implemented as part of an EbA strategy.

Moreover, the HAF exemplifies how EbA measures, such as re-vitalizing soils by planting trees, can be part of a larger development strategy that supports local communities. Integrating EbA measures into more encompassing development strategies that address climate change mitigation, adaptation and community engagement and development can broaden the scope of available financing sources.

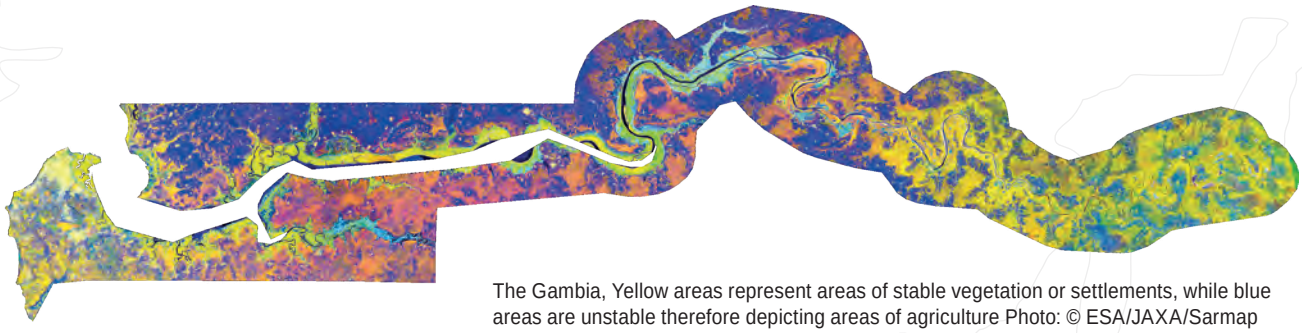
Further information

For more information about the High Atlas Foundation, please visit their website www.highatlasfoundation.org

Example 3

Multilateral funding

Restoring degraded forests and agricultural landscapes under the Green Climate Fund, The Gambia



The Gambia, Yellow areas represent areas of stable vegetation or settlements, while blue areas are unstable therefore depicting areas of agriculture Photo: © ESA/JAXA/Sarmap

The Green Climate Fund and large-scale Ecosystem-based Adaptation in The Gambia

The Green Climate Fund (GCF) is a global finance mechanism created to help developing countries such as The Gambia, adapt to climate change and limit or reduce their greenhouse gas (GHG) emissions. The GCF was established in 2010 by the 194 Parties to the United Nations Framework Convention on Climate Change (UNFCCC), as a direct response to the climate challenge. The GCF launched its initial resource mobilization in 2014, and rapidly gathered pledges worth USD 10.3 billion. These funds come mainly from developed countries, but also from some developing countries and regions. The Fund pays attention to the needs of societies that are highly vulnerable to the effects of climate change such as least developed countries (LDCs) and African States. It essentially aims to catalyse a flow of climate finance to invest in low-emission and climate-resilient development, driving a paradigm shift in the global response to climate change.

Climate change is exacerbating the effects of poverty in The Gambia, which is one of the poorest countries in Africa. Gambian rural communities in particular, are threatened by the impacts of climate change. In response to this threat, The Gambia is transitioning towards a sustainable green economy, based on climate-resilient livelihoods and rigorous, evidence-based management of natural resources.

Implementing EbA is a significant part of this strategy. The GCF will enable large-scale EbA in The Gambia by investing USD 20.5 million. EbA will both protect the environment and facilitate the development of a sustainable, natural resource-based economy to the benefit of and in participation with vulnerable rural communities in Community Forests (CFs) and Community Protected Areas (CPAs).

The Gambia's existing forest policies is the promotion of decentralized natural resource management community forests to community-based committees.

EbA will be integrated into national, district and village level planning.

The investment in EbA and the establishment of a climate-resilient natural resource base through concrete on-the-ground interventions on forest and agricultural landscape restoration, aims to increase the generation of ecosystem goods and services, and thereby provides a pioneer example of how EbA projects can access the GCF investment funds.

About the financial mechanism

The Gambia, as a developing country Party to the UNFCCC, is eligible to receive resources from the GCF, which will finance the agreed full costs for activities that enable and enhance action for adaptation. The Gambia is an LDC with a GDP of USD 488 per capita and therefore, it does not have the financial capacity to manage loans or reimbursable grants, consequently requesting resources in the form of a 100 percent grant.

Project FP011 titled 'Large-scale Ecosystem-based Adaptation in The Gambia River Basin: developing a climate resilient, natural resource based economy', was submitted by the accredited entity UNEP on behalf of the Government of Gambia, and was approved by GCF in June 2016, with the agreement being signed in June 2017. The project will be implemented for a duration of 6 years between January 2017 and December 2022, together with the Ministry of Environment, Climate Change, Water, Forests and Wildlife (MoECCWFW). The GCF grant will be comprised of USD 20 million, while the government of Gambia has pledged USD 5 million to the project.

Rationale for GCF involvement

To achieve maximum results, the GCF seeks to catalyse funds by opening markets to new investments, multiplying the effect of its initial financing. Thereby, the GCF aims to maximize the impact of public finance in a way that may attract new sources of private finance to increase the investment in adaptation (and mitigation) projects. The EbA project in Gambia has considerable potential to contribute to the achievement of the Fund's objectives as it covers 3 out of its 8 impact areas. The GCF has identified the following impact areas:

Infobox 3 Large-scale Ecosystem-based Adaptation in The Gambia: developing a climate resilient, natural resource-based economy

Funding Source	GCF		
Accredited Entity	UNEP		
Executing Agency	Ministry of Environment, Climate Change, Water, Forests and Wildlife		
Total Beneficiaries	Rural Gambian households within and adjacent to community managed forest reserves and conservation areas	Direct Beneficiaries 11,550 (50 % Women)	Indirect Beneficiaries 46,200 (50 % Women)
Implementation start and end date	1 January 2017 – 31 December 2022		
Total Financing (USD) Millions	GCF: 20.5 Million	Government of The Gambia: 5 Million	

1. low-emission energy access;
2. low-emission transport;
3. energy efficient cities and industries;
4. sustainable land use;
5. increasing climate-resilient sustainable development;
6. increased health and well-being;
7. resilient infrastructure; and
8. resilient ecosystems.

The project has potential to contribute to the following three GCF impact areas:

- enhancing livelihoods of the most vulnerable people, communities and regions – through diversification of supply sources and supply chain management;
- increasing health and well-being, and food and water security – through climate- resilient crops; and
- protecting ecosystems and ecosystem services - through ecosystem conservation and management as well as sustainable land use.

GCF investment criteria

As there is a high demand for financial support, the GCF Board has developed a set of investment criteria to evaluate where the Fund can make the most effective investments. The following section will focus on how the large-scale EbA project in The Gambia meets this set of criteria.

Impact potential

The targeted beneficiaries of the project are rural households within and adjacent to community-managed forest reserves and conservation areas. The project will use EbA to increase crop and livestock productivity as well as the supply of resources from forest ecosystems under climate change conditions. The primary adaptation impacts of the project will be to reduce the socio-economic impacts of increasing rainfall variability on rural households that rely on livelihoods such as farming, fishing and livestock production. Agricultural landscapes and degraded ecosystems including forests, mangroves and savannahs will be restored using climate-resilient tree and shrub species across an area of at least 10,000 hectares. This will be complemented by the establishment of natural resource-based businesses managed by local communities. GCF funding will be used to secure equipment and infrastructure to support this establishment of community managed businesses within at least 125 communities.

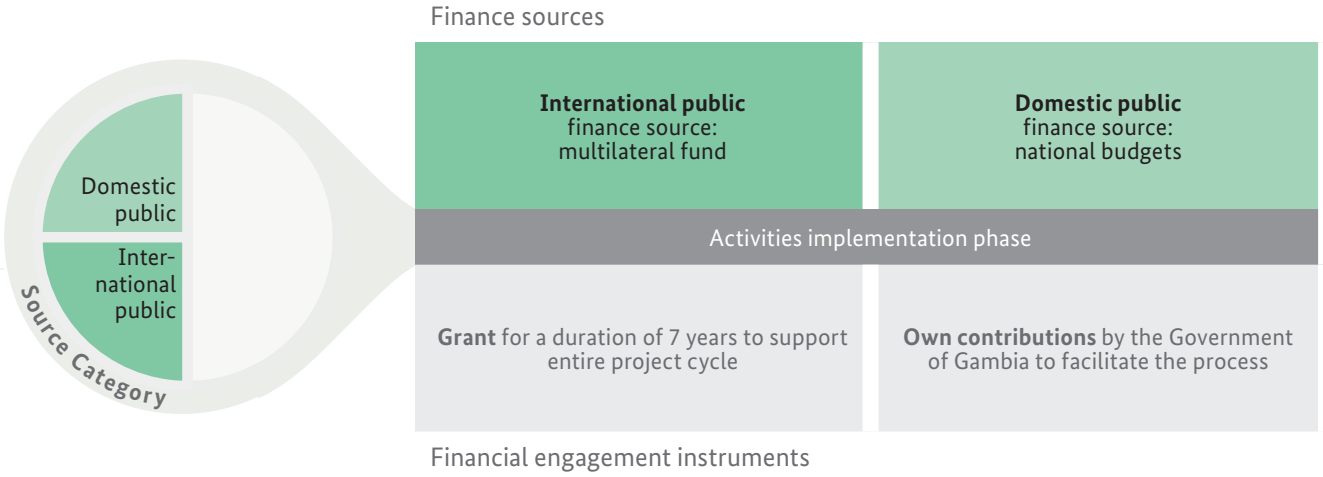
Paradigm shift potential

The paradigm shift that this GCF project proposes essentially aims to change the perspective of the Gambian society by enabling Gambian governmental decision-makers and the private sector to invest in growing their natural resource base to increase climate resilience and strengthen the economic sectors already based on natural resources. The change in perceptions is perceived to result in a paradigm shift whereby local municipal budgets, national budget allocations and private sector funds will be invested in the restoration of degraded ecosystems in a climate-smart manner to increase the supplies of commercially valuable ecosystem goods and services. The information and knowledge generated by the project will provide an improved evidence-base to support further investment in and promotion of EbA as part of The Gambia's response to climate change.

Sustainable development potential

The project's primary quantifiable adaptation benefits for members of community-managed forest enterprises (CFE), will be an increase in the annual household income as well as food security by USD 330 – 770, equivalent to a 70 percent increase of GDP per capita. The climate resilient natural resource-based businesses are intended to be complementary, rather than additional to existing ag-

Figure 6 Multilateral funding



ricultural livelihoods, and will provide a safety net of food security and income to households that are particularly vulnerable to crop failure or reduced crop productivity. An additional indirect impact of the project's EbA investments will contribute to the climate resilience of project beneficiaries through increased physical protection against the negative impacts of climate change.

Country Ownership

The project will maintain a strong focus on alignment with emerging national priorities and other ongoing initiatives related to climate change. The contribution of the GCF project, through engagement with the national climate change coordination committee and related stakeholders such as the NDC and NAP development teams, will be to provide information and guidance to promote the integration of EbA into national adaptation and mitigation plans. More specifically, the project will be closely coordinated with the development of mid and long-term priorities related to climate change such as those activities and approaches promoted by relevant national strategies and action plans on climate change, including the draft National Climate Change Strategy and the NAP process.

Efficiency and Effectiveness

Several measures are included to ensure the cost-effectiveness and efficiency of the project. Firstly, during the implementation phase of the project, analyses of the potential EbA interventions will be undertaken at each site to include consideration of cost-effectiveness and potential return on investment. A dedicated project management unit will be established to ensure that all EbA interventions are implemented in a timely manner based on the protocols for different landscapes. Local communities and regional extension officers will be trained in the implementation of EbA in line with the prospective deliverables. Secondly, the project will identify opportunities to increase cost-effectiveness by building on the existing capacities, information and infrastructure established by past and ongoing initiatives.

Needs of the Recipient

The national economy in The Gambia is mainly reliant on the agricultural sector, which contributes 26 percent to the country's GDP. Over 70 percent of Gambian households rely on natural resources and rain-fed, subsistence farming as a source of food and income. However, many of these households do not generate enough food or income from farming activities to meet their annual needs and experience a 'hunger season' between July and September.

Inevitably, these rural communities rely heavily on ecosystem goods and services derived from woodlands, savannahs, wetlands, mangroves and rivers to supplement their livelihoods. These ecosystem services include water provision, maintenance of soil fertility and erosion control, while ecosystem goods include fuelwood and non-timber forest products (NTFPs).

Financial arrangement between GCF, UNEP and the Gambian Ministry of Environment

Table 3 Breakdown of funds by activity

Budget line	Total (USD)
Staff and other personnel costs	5,490,356
Contractual services	8,082,500
Travel	890,400
Equipment vehicles and furniture	5,591,500
Operating and other direct costs	492,000
Project total	20,546,756

The project is administered by UNEP, in the capacity of Accredited Entity (AE) to the GCF. UNEP has requested an accredited entity fee of 9 percent of total project costs over the 6-year implementation period. The AE fee will be used to cover the cost of project supervision including preparation, implementation, completion, evaluation and reporting. The GCF coordination and management to ensure the GCF fiduciary standards, as well as its knowledge management, are maintained and upgraded accordingly. The GCF funds will be channeled through UNEP to the Gambian Ministry of Environment, Climate Change, Water, Forests and Wildlife. UNEP will then enter a Project Cooperation Agreement (PCA) with the Ministry of Environment to provide a grant of USD 20.5 million for the execution of the project. The PCA will establish clear roles and responsibilities for both parties for the delivery of the proposed activities, the schedule and conditions for instalments and the determination of the prevailing and fiduciary standards (please refer to Table 3 for a breakdown of the funds by activity).

How financing through the mechanism is implemented

The primary adaptation benefits of the project will be derived from an increased availability of ecosystem goods and services under the current and future scenarios of climate change, and will be delivered through targeted restoration of degraded ecosystems. The selection of appropriate EbA interventions and selection of plant species to be used, will focus on plant species that generate useful or commercially valuable products that can be marketed by community managed businesses. The goods generated from the natural resource base established by the project will be harvested, packaged and marketed for sale by these businesses, thereby diversifying and increasing the income of participating households.

Furthermore, goods generated by the project such as fruits, firewood and building materials will also be directly consumed by households, thus improving household nutrition and food security while reducing household expenditure of cash. The project will support the establishment of at least two community managed forest enterprises. Assuming that the number of beneficiaries participating in each business may vary from 20 to 50 participants, the project's investments will directly benefit 10,250 community members. The number of community forestry enterprise members that will participate directly in the project are estimated to be 11,550 people. If each beneficiary supports a household of four people, the number of indirect beneficiaries are estimated to be 46,200 people.

Main challenges, lessons learned and way forward

The large-scale nature of the project distinguishes it from prior ecosystem restoration projects undertaken in The Gambia, all of which have been conducted over relatively small areas. The project's approach to integrate EbA initiatives into ongoing initiatives and development planning is inherently scalable. With regards to upscaling and replication, the project's approach is in strong alignment with ongoing initiatives and priorities in the country such as the renewed policy for decentralization of forest management to community managed enterprises.

However, the large-scale nature of the project also creates its own set of challenges. These challenges include effective and timely coordination between different government departments that have not previously worked together. The scope of the project, which aims to develop and promote successful natural resource-based business, will also require new technical skills and capacity building at the local level and a development of an ambitious entrepreneurial approach.

How is the GCF relevant for EbA finance?

The GCF is one of the major public climate finance distributors with a spending target of 50:50 balance between mitigation and adaptation projects over time. The Fund aims to allocate 50 percent to adaptation for nations that are particularly vulnerable to climate change, including LDCs, Small Island Developing States (SIDS), and African States. The Fund aims to achieve this goal by channelling financial resources to developing countries and catalysing climate finance, both public and private and at international and national levels. The example from The Gambia showcases one approach of how an EbA proposal to the Fund can be successful. However the following section also looks at some of the limitations of the fund.

Currently, GCF's priority is to combine the modalities of cooperation by also focusing on other forms apart from grants, including a growing integration of the private sector. Climate mitigation, and to some extent also adaptation, can have immediate benefits for the private sector because it can help production and trade to become more cost-efficient through energy efficiency and efficiency in the use of materials, water and land. There are also competitive advantages associated with a changing climate such as opportunities to access new markets, develop new technologies and products. However, the growing interest in integrating the private sector can pose a challenge for middle-income countries to make a business-case.

Almost half of the projects signed off in 2015 were approved for LDCs and SIDS. Although there are more projects from middle-income countries since then, the total share for LDCs remains relatively high. While this is a welcome trend for the most vulnerable countries, there is a need to adjust the framework to better accommodate the needs of middle-income countries.

Additionally, the GCF also has a stronger inclination to invest in large-scale projects rather than local community projects and hence sub-national priorities remain marginal. Lastly, application for a GCF project is also a long process that requires intensive project preparation and capacities.

Further information

For more information about the Large-scale Ecosystem-based Adaptation in the Gambia please visit their website www.greenclimate.fund/-/large-scale-ecosystem-based-adaptation-in-the-gambia-river-basin-developing-a-climate-resilient-natural-resource-based-economy

Example 4

Financing resilience through a dedicated national fund

People's Survival Fund, the Philippines

Islands. Photo: © pixabay/Engin_Akyurt, pixabay.com/en/ada-blue-ocean-sky-coastline-2446541, licensed under CC BY 2.0

Philippines People's Survival Fund

The Philippines is one of the most natural-hazard prone countries in the world, with more than 20 typhoons on average striking the country annually, often causing extensive loss of life and property damages. These storms have become more severe and frequent in recent years. Four of the country's 10 most catastrophic storms have occurred in the past decade, and sea levels in the Pacific Island country are expected to rise at a rate three times greater than the world average in the coming decades, making the country highly vulnerable to the negative impacts of climate change. Preparing communities for these impacts and the consequences of natural disasters requires investments. Finance is essential to fund projects and interventions that respond to climate-induced disasters and build resilience. However, funding, especially on local level, is lacking.

In July 2011, the Climate Change Act of 2009 was amended to create the People's Survival Fund (PSF) in the Philippines. The law creating the PSF is embodied in RA 10174 which states the 'Act Establishing the People's Survival Fund in the Philippines to Provide Long-term Finance Streams to Enable the Government to Effectively Address the Problem of Climate Change'. The Act integrates adaptation and resilience-building measures from the national level, through the Philippines Climate Change Commission (CCC), to the local (barangay) level, and integrates poverty reduction with disaster risk reduction and climate change adaptation objectives.

Hence, the PSF was devised to mainstream climate change adaptation into government policy and to secure financing for adaptation projects.

Infobox 4 The People's Survival Fund

Funding source	General Appropriations Act (National Revenue)
Beneficiaries	Local Government Units (LGUs) and Accredited Local/Community Organizations
Fund approval	2012 (First call for project proposals started in 2015)
Total financing (USD) Millions	20 per year

Financial mechanism

The PSF is established to finance adaptation programs and projects of local government units in line with the National Framework Strategy on Climate Change and National Climate Change Action Plan. An appropriation of PhP 1 billion (USD 20 million) under the General Appropriation Acts served as its opening balance. The initial allocation may be increased by mobilizing other funding sources such as local government units and the private sector.

The PSF is intended for adaptation activities that include water resources management, land management, agriculture and fisheries, infrastructure development, natural ecosystems including mountainous and coastal ecosystems among others - and serve as guarantees for risk insurance needs for farmers, agricultural workers and other stakeholders. Although not explicitly mentioning EbA, the adaptation priorities provide an entry point. It can also be used to establish regional centres and information networks and to strengthen existing ones, to set up forecasting and early warning systems against climate-related hazards, and to support institutional development such as preventive measures, planning, preparedness and the management of impacts. Projects are expected to be aligned with the national/local CCA-DRR development plans, vulnerability and risk assessments and national or local strategic frameworks.

Rationale for national-level involvement

The Philippines is among the most vulnerable countries in the world to weather-related extreme events, earthquakes and sea level rise, and the government recognizes that the country is already experiencing the consequences of climate change. Over the last seven years, the country has experienced severe weather events that resulted in stark damages to livelihoods and human lives. Typhoons Ondoy, Pepeng, Sendong, Pablo and Typhoon Haiyan (Yolanda) claimed the lives of more than 9,000 people, caused economic damage and losses amounting to approximately USD 18.6 billion, and affected new areas, which previously had not been hit by strong typhoons.

In response to the country's vulnerability to climate-related events and disasters, Philippine policy makers have come up with new parameters to meet these challenges. In 2012, Congress enacted the People's Survival Fund to source financing for climate action by local governments. As the Fund is designed to build resilience at the national, local government and individual level as well as between the government, international partners and the private financial and insurance sectors, the Philippines is heading in the right direction to be the first country to ensure a comprehensive approach to funding resilience.

PSF investment criteria

The PSF envisions to support adaptation activities of local governments and communities. The Fund focuses on local government units with high poverty incidence that are exposed to climate risks and have key biodiversity areas. While all local/community organizations will be eligible to access the fund upon accreditation, the accreditation process will partly be based on the organization's track record in the community and/or field of expertise,

financial management and participatory practices (please refer to Table 5 for details).

Furthermore, fund allocation is prioritized based on whether the project includes

a. a level of risk and vulnerability to climate change;
b. participation from the affected communities in the design of the project;
c. poverty reduction potential;
d. cost effectiveness and sustainability;
e. responsiveness to gender-differentiated vulnerabilities; and
f. availability of a climate change action plan.

Financial arrangement between PSF Board, Climate Change Commission and Department of Finance

The fund is managed by the PSF Board (PSFB), which is composed of six governmental representatives and three non-government sectoral representatives. The governmental representatives are the Secretaries/heads of the Department of Finance, National Economic and Development Authority, Department of Budget and Management; Department of Interior and Local Government; Philippine Commission on Women, and the Climate Change Commission (CCC).

The CCC evaluates and reviews project proposals for funding and recommends approval of the proposal to the PSF Board. Once the project proposal has been approved, Fund disbursement will be facilitated through a Memorandum of Agreement. Regular monitoring and reporting are also agreed upon

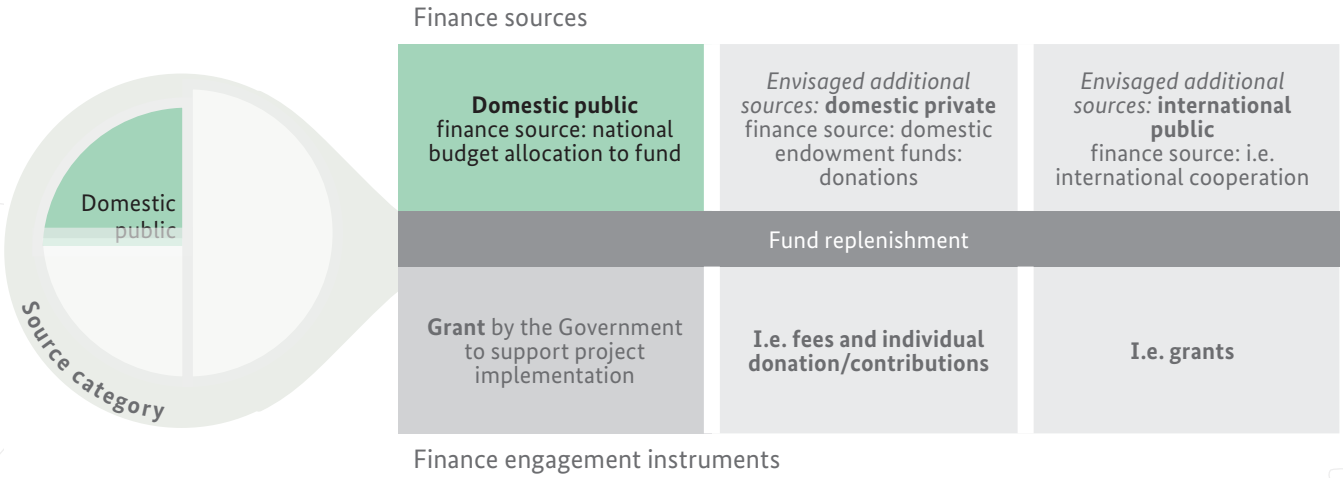
How the funding is used by the PSF

In October 2015, the Board officially opened the call for project proposals to the PSF As of December 2017, the Board approved the funding for four local government units Nine other proposals are under consideration. PSF funding will support the projects of the Municipality of Lanuza, Surigao Del Sur and the Municipality of Del Carmen, Siargao Islands, Surigao del Norte, Municipality of San Fernando, Camotes Island, Cebu, and the Municipality of Gerona, Tarlac, which aim to support the implementation of the respective local climate change adaptation plans and consider the climate risks in these localities. The PSF Board expressed that as these LGUs are in vulnerable areas, poverty may further worsen if no adaptation measures are undertaken. Lanuza is proposing a total of PhP 47.5 million (USD 900,000) of which USD 740,000 is proposed for funding under the PSF with USD 160,000 as LGU counterpart for their adaptation project, while Del Carmen is proposing a total of PhP 95.6 million (USD 1.8 Million) of which USD 1.5 million is proposed to be funded under PSF and USD 270,000 will be allocated by LGU and state college counterpart.

Table 5 PSF investment criteria

Local Government Units (LGUs)	Accredited Local/Community Organizations
• Poverty incidence of 40 percent • Exposure to climate risks 30 percent – this threshold reflects the potential climate change risks of the province in relation to projected mean temperatures, rainfall change and extreme weather events. • Presence of identified key biodiversity areas of 30 percent. Biodiversity areas are categorized as the following: globally threatened species and restricted-range species.	• Local/community organizations which are already accredited under DILG MC 2013-70/DSWD-DBM-COA joint resolution are eligible to submit a proposal to access the PSF, once the submitted Certificate of Accreditation is validated by the Climate Change Office (CCO). • Those which are not already accredited can submit to the accreditation process of the CCO by doing the following: submitting the relevant documents for verification to the CCO. The CCO will then verify and approve the documents based on site validation and eligibility criteria to access the PSF.

Figure 7 Visualization of finance approach: financing resilience through a dedicated national fund



Main challenges with the PSF implementation

When the fund was signed into law in 2012, the PSF was conditionally approved a budget of USD 10 million for three consecutive years until 2014. However, since the conditions for the release of the budget were not achieved, the actual funds were not allocated to the PSF. In 2015, the PSF received PhP one billion (USD 200 million). However, local governments have not yet accessed the funds as of date and the budget therefore remains intact.

Some of the proposals submitted are also business-as-usual projects which do not qualify for the PSF, and did not necessarily reflect adaptation measures. Thereby projects capacity and awareness on the specific requirements of the fund have hindered the success of some of the LGUs. This challenges is however being addressed by the Board in cooperation with relevant national and local agencies, as well as civil society organizations and development partners. As the urgency of adaptation and the demand at the local level is recognized, the Board continues to revisit its processes to effectively and efficiently allocate resources. During the Board meeting in November 2016, it was agreed that a certain portion of the Php 1 Billion allocation will be used as a grant sub-facility to support the LGUs in in developing and enhancing the design of projects that are science and risk-based to meet PSF requirements.

How is the People's Survival Fund relevant for EbA?

The PSF integrates poverty reduction with disaster risk reduction and climate change adaptation objectives. Hence, the PSF was devised to mainstream climate change adaptation into government policy and to secure financing for adaptation projects with an emphasis on the needs of the communities. Projects are expected to be aligned with the national/ local CCA-DRR development plans, vulnerability and risk assessments and national or local strategic frameworks. Certain EbA measures that may need piloting or further research can also be funded under the PSF. Likewise, EbA measures that are specific to the vulnerability of a certain community or LGU can also be funded.

The experience from the Philippines supports the collection of insights into the operational structure and set-up of a national fund that aims to support adaptation projects at the local level.

Further information

For more information about the People's Survival Fund please visit their website http://psf.climate.gov.ph
Email: psf.ccc@gmail.com

Example 5
Biodiversity Offsets
Impact Mitigation Regulation, Germany

Yew tree (Taxus baccata) in the pristine forest area Mittelsteighütte, Bavarian Forest National Park; Photo: Wikimedia Commons/Willow

Biodiversity Offset Scheme in Germany

As the result of the implementation of a biodiversity offset scheme, an actor that causes harm to biodiversity or nature through a development project, is obliged to pay for measures that restore or preserve ecosystems and nature somewhere else (cost-by-cause principle). For example, if the development of a new highway leads to adverse effects on biodiversity and ecosystems, those responsible for constructing the highway must compensate for any negative impacts to ensure there is no net loss or net gain of biodiversity.

Germany has one of the oldest biodiversity offset schemes, with the German Federal Nature Conservation Act from 1976 introducing the first legal requirements for compensation measures for ecological harm caused by development projects.[21] Since then, the scheme has evolved into the German Impact Mitigation Regulation (IMR, or in German 'Eingriffsregelung'), which currently serves as the legal basis for mandatory biodiversity compensation measures. Under the IMR, project developers are obliged to bear offset costs if biodiversity is negatively affected through their development projects. As such, the IMR aims to ensure the prevention of a net loss in biodiversity in Germany.

The IMR has been developed at the national level and is subsequently implemented by federal states

[21] OECD (2016) Biodiversity Offsets: Effective Design and Implementation, p. 176

that apply the legislative structure on a case-by-case basis, whereby the documentation, evaluation and organizational procedures and responsibilities on the federal level are rather flexible. The regulation covers the landscapes beyond protected and conservation areas and is thereby supplementary to European legislation as it excludes areas that are already protected under Natura 2000, the European network of protected natural areas.[22] Additionally, development projects in agricultural, forestry and fishery sectors are excluded, as long as these follow 'codes of good practice'.[23]

Infobox 6 Impact Mitigation Regulation in Germany

Funding source	Biodiversity Offset: Self-sufficient funding
Total beneficiaries	Implemented country-wide in Germany
Implementation start and end date	1976 – ongoing
Total financing (USD) Millions	There is no clear picture of the ecosystem financing that has been generated through the IMR

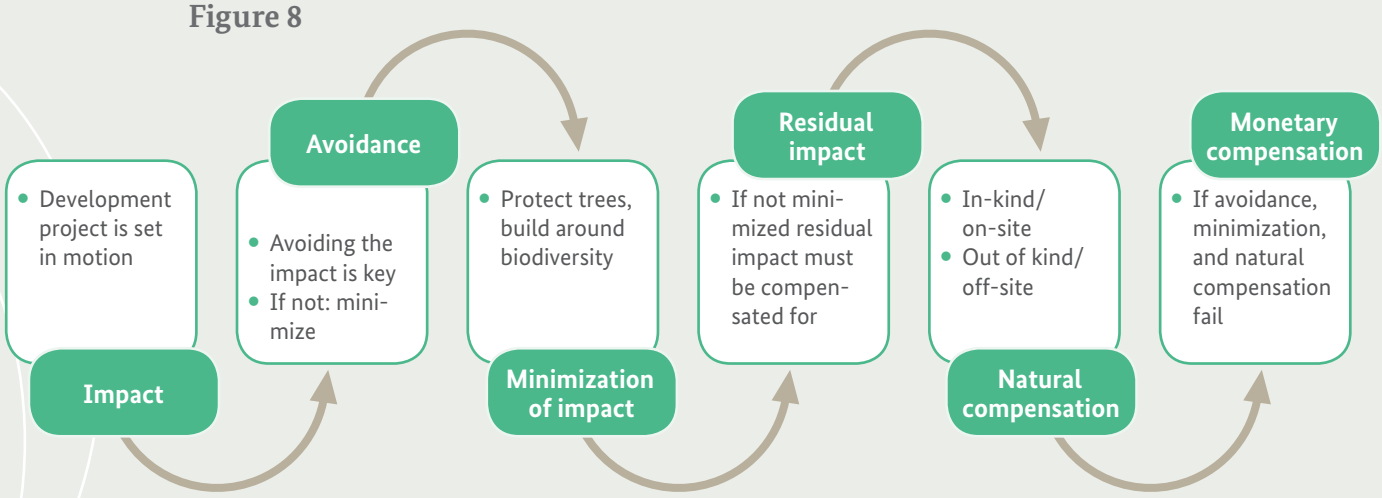
Financial mechanism

The IMR is applicable if a planned project potentially changes the land surface or groundwater levels, with major negative effects on the function of natural systems or on the landscape scenery.[4] As shown in the figure 8, the IMR sets out that projects should always aim to avoid any adverse ecological impact. If impact cannot be avoided, project developers are required to compensate for these impacts through 'compensation measures', which is natural compensation in-kind and on-site, or located elsewhere. Finally, as a last resort when no compensation measures are possible, payments may be required to compensate for the remaining adverse impacts. Compliance is monitored and regulated by the government.

Natural compensation measures

Avoidance of adverse ecological impacts always has to be prioritized. In other words, a project developer cannot pick and choose between avoidance and reduction of impacts on the one hand and compensation measures on the other.[25] Once it becomes clear that negative ecological impact as part of a

Figure 8



IMR activity sequence. Source: M. Böttcher (2013) Webinar 'The main principles of the German Impact Mitigation Regulation'; IMR

[22] For more information, consult the website of the European Commission here

[23] p. 14 Abs. 2 BNatSchG

[24] Wende, et al. (2005) Mitigation banking and compensation pools: improving the effectiveness of impact mitigation regulation in project planning procedures, Impact Assessment and Project Appraisal, p. 101

[25] Wende, et al. (2005), p. 102

development project cannot be avoided, a project developer is required to apply compensation measures. Compensation measures are not designed to generate a profit, can be supplied by any actor and must be realized before or during the project implementation phase. [26] Furthermore, restoration compensation measures should be directly connected in terms of location and type of measure to the affected ecosystem.

The project developer is required to estimate the expected degradation of the ecological value of a project site, thereby calculating the required amount of 'credits' needed to compensate for its development project. Through acquiring the corresponding amount of credits, the project developer ensures that sufficient compensation measures are implemented to compensate for ecological loss inflicted through the development of its project.

Credits and eco-accounts

The IMR uses an offset approach known as biobanking, whereby the value of ecosystem loss and compensation measures are calculated in credits and each credit corresponds a certain ecological value. As such, a monetary value is attached to biodiversity and ecosystems. Biobanking is a mechanism that seeks to ensure that biodiversity outcomes from offset projects are known with certainty before development projects are allowed to impact the environment. [27] A registry is where offset credits are stored. The ecological value of a credit will be based on the size of a habitat and standardized values of different habitat types. The monetary value of a single credit is based on a full costing principle of a compensation measure, meaning that the price includes all costs, from planning to project implementation and monitoring, as well as securities, risks and bridge financing. [28] Prices are fluid and adjust over time to the actual costs. [29]

[26] Wende, et al. (2005), p. 101

[27] OECD (2016) p. 52

[28] Darbi and Wende (IOER) (2015): German impact mitigation regulation – an example towards no net loss of biodiversity? Symposium 124 'Biodiversity management and development: challenges, opportunities and new directions'

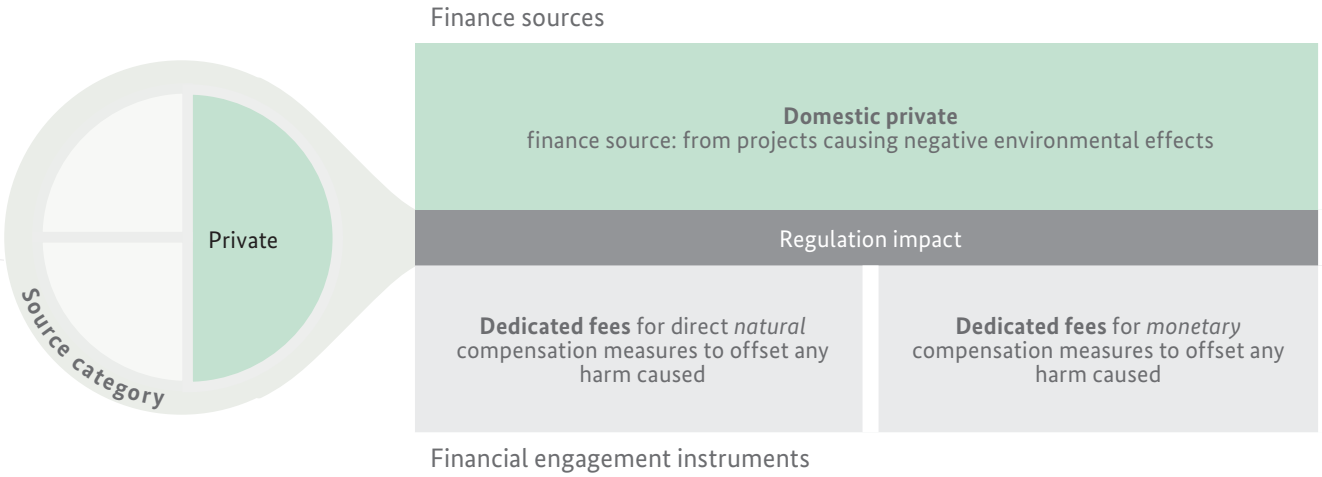
[29] Darbi and Wende (IOER) (2015)

[30] OECD (2014) Biodiversity Offsets: Effective Design and Implementation policy highlights, p. 5

[31] Wende, et al. (2005) p. 103

Bavarian Forest, Germany. Photo: ©Flickr/Stefano Montagner, www.flickr.com/photos/stemonx/542716918, licensed under CC BY 2.0

Figure 9 Visualization of finance approach: biodiversity offsets



Given that each credit represents a certain environmental value, project developers can offset their environmental impact by buying credits from the bank. Providers on the other hand, can acquire credits by protecting or enhancing biodiversity on their land. By selling the credits, landowners earn an income that can be used for the implementation of biodiversity (or: compensation, mitigation or adaptation) measures, or for maintenance of the sites used for compensation. In that way, biobanking transfers the legal liability from the developer to the provider.[30] Next to selling credits to project developers, credits can also be sold to organisations, businesses or governments that want to invest in biodiversity measures, i.e. for corporate social responsibility reasons.

Compensation pools or mitigation banks

Following the amendment of the German Nature Conservation Act in 2002, more flexibility in applying compensation measures has been allowed, for example: the close spatial and functional connection between impact and compensation has been eased.[31] This has led to the creation of so-called 'compensation pools' or 'mitigation banks'. Pools are a collection of usable sites and compensation measures that can be relatively easily accessed if compensation measures are required. The introduction of pools has further simplified the implementation of compensation measures and makes compensation activities more cost-efficient, and can even make compensations pools profitable. Allocated land for compensation measures essentially decreases the chance that compensation obligations are waived or reduced because of lack of appropriate and eligible land areas.

Monetary compensation

In cases where adverse ecological impact cannot be avoided and natural compensation measures are not feasible, project developers are required to offset their impact through monetary compensation. The amount of financial compensation owed is the average costs of compensation measures that should have been, but could not be, implemented, as well as the average costs for planning, space (area), maintenance, and administrative costs.[32] If it is impossible to measure these costs, the required amount of monetary compensation is based on the length and severity of the project and its impact.[33] Compensation is used to finance conservation measures elsewhere, normally these compensation measures are implemented by the responsible local or regional nature conservation administration.[34]

[32] Niedersächsischer Landesbetrieb für Wasserwirtschaft, Küsten- und Naturschutz. Die Eingriffsregelung nach dem neuen Bundesnaturschutzgesetz. http://bit.ly/2JeCYnU
[33] Ibid.
[34] Wende, et al. (2005), p. 103

How financing through the mechanism is implemented

The IMR enables financing of biodiversity and ecosystem conservation in two ways. First, project developers pay for compensation measures. Secondly, when no compensation measures can be applied, monetary compensation is required. This monetary compensation is earmarked by authorities for further natural compensation measures.

Challenges, lessons learned, way forward

Central factors for the successful implementation of an offset scheme in general can be identified. First, for an offset scheme to be effective, a mandatory system that is supervised by a central actor is a key aspect.[35] Enforcement of such a system requires institutional capacity to monitor, register and follow up on implementation. Secondly, an effective scheme requires a systemic metric system, that consistently calculates loss and gains as so to ensure that offsetting in practice does not lead to a degradation of ecosystems.[36] Finally, to achieve no net loss or net gain of biodiversity, compensation measures must be linked, to some extent, spatially, temporarily and functionally to the compensated land.[37] Another important factor in the effectiveness of biodiversity offset schemes is the functional connection between the compensation and the adverse biodiversity impact. In case a compensation measure is not linked in terms of, for example, type of habitat that is protected, ecological value of the affected area or long-term effects of the impact on ecosystems, the offset does not result in an actual 'no net loss' of biodiversity. This risk has been further increased through the introduction of compensation pools, as these allow for less strict equivalence in terms of spatial and functional characteristics between the compensation measure and the area that is compensated for.[38] Moreover, the use of a wide variety of methods to assess equivalence and additionality further contribute to a risk of biodiversity loss through the use of compensation pools as an offset mechanism.[39]

Finally, effective monitoring of conservation measures is central to ensuring the long-term compensation effects of the activity.

How is the Impact Mitigation Regulation relevant for EbA?

Whereas the IMR aims for no net loss of biodiversity, the framework of the IMR offers possibilities to design a system that creates an obligation for project developers to implement EbA measures if their projects affect ecosystems that are vital for climate change adaptation. It is an interesting option for EbA measures in land use types beyond the conservation sector. Alternatively, the system can integrate the option to apply EbA measures in its credit calculation system. For example, in the German state Mecklenburg-Vorpommern a compensation measure is allocated more credits if the implemented activity is of 'high quality', meaning that if a measure uses regional species, plants or climate-resilient measures, it is valued more. Through such a mechanism, the use of climate resilient and ecosystem-based measures is financially more attractive than the use of 'regular' compensation measures. This further encourages the implementation of EbA without project developers having to pay additional fees from compensating their impacts. Finally, monetary compensation payments can be earmarked for EbA measures, thereby providing a funding source for these measures.

[35] Darbi and Wende (IOER) (2015)
[36] Darbi and Wende (IOER) (2015)
[37] Darbi and Wende (IOER) (2015)
[38] Madsen, et al. (2010) State of Biodiversity Markets Report: Offset and Compensation Programs Worldwide, p. 39
[39] Madsen, et al. (2010), p. 39

Box 3 IMR implementation in the federal state of Hesse

The implementation of the Impact Mitigation Regulation in Hessen is based on the use of eco-points to evaluate the value of negative ecological impacts and compensation measures. A compensation measure proposed by a landowner is evaluated by a regional nature conservation authority to approve a certain number of eco-points to be allocated to the measure, based on the difference in the ecological value of the land before and after the compensation measure has been implemented. Eco-points represent the ecological value of different land use and biotope types based on nature protection laws from international to federal level. This assessment has resulted in 11 categories with sub-classifications, to which a certain number of eco-points are assigned per square meter.

An assessed compensation measure and its accompanying eco-points are registered in an eco-account by the regional authority. After registration the landowner can use the eco-points to offset his own ecological impact, or sell them to other firms or individuals who can use them to compensate for their impacts. The use of the eco-points is tracked in the registry. Given that both positive and negative ecological impacts are calculated in the same manner and are both expressed in eco-points, it is relatively easy to match ecological degradation with appropriate compensation measures.

The price of eco-points is determined by the buyer and seller. Demand for eco-points mainly comes from traffic infrastructure projects, industrial parks and housing projects. Supply mainly comes from public organizations such as the eco-agency, municipalities and public foundations that own land. Prices differ between various regions in the state, depending on demand.

Some adverse impacts cannot be compensated for through ecological compensation methods. If this is the case, project developers are required to pay a set price for each eco-point their project is required to compensate for. These payments are earmarked for nature or landscape-enhancing measures in the nature area where the impact occurs.

As an enforcement mechanism, non-compliance with the IMR is considered an administrative offence, sanctioned with a monetary penalty.

Like the IMR, local or regional regulations can complement pre-existing national or international compensation requirements. In that way, offset regulations can improve or strengthen the use of adaptation and compensation measures at local level. An offset mechanism can be used voluntarily for compliance, can be implemented at community level, and can through the dedicated use of generated funds finance ecosystem measures that are not economically viable without the offset mechanism.

As such, biodiversity offset schemes have potential for scaling up and replication in other countries or regions.

Further information

Please find the text of the Eingriffsregelung (in German) www.bfn.de/themen/planung/eingriffe/eingriffsregelung.html

Recommendations for further reading on the biodiversity markets and offset and compensation programmes

- OECD (2015) Biodiversity Offsets: Effective Design and Implementation
- Madsen, Becca; Carroll, Nathaniel; Moore Brands, Kelly; (2010). State of Biodiversity Markets Report: Offset and Compensation Programs Worldwide

Example 6

Insurance solutions

Relevance of insurance systems for financing EbA

New Mexico, United States. Photo: © Braden Collum, unsplash.com/photos/149vt6evNQQ

Insurance and EbA

Insurance mechanisms are an important instrument embedded in a comprehensive risk management system for development, since uninsured losses expose vulnerable populations to more insecurity. Accessible insurance solutions on the other hand, increase the adaptive capacity of vulnerable groups to climate and disaster risks by providing a safety net in times of need and thereby strengthening resilience. However, disaster-related insurance is often not available or too expensive for a significant portion of the population in many developing countries. Innovative index insurance solutions, combined with public sector support, can seek to overcome these constraints.

EbA offers powerful benefits to reduce the vulnerability of communities and to increase the resilience, e.g. through reef or mangrove restoration, to the adverse effects of climate change. Taking these positive impacts of EbA measures into account when exploring the use of insurance schemes to increase financial protection could allow the provider of the policies to lower the expected loss levels of the underlying risk. Insurers could therefore individualize pricing by offering discounts to customers and communities who invest in EbA-based self-protection and hence lower their risk rates.

Subsequently, tailored insurance schemes present the opportunity to incentivize private and public investments into adaptation measures. Insurance products with a specific focus to address inherent investment barriers that are specific to i.e. EbA measures, can provide additional financial security against underperformance risks of policy holders. Tailored insurance products partially backed by climate finance can assure capital providers that the

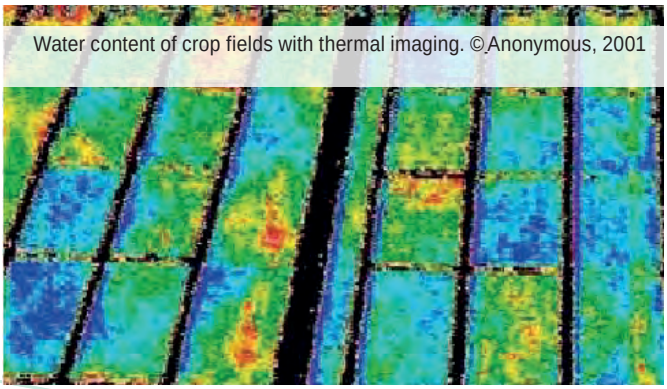
supported activities will generate financial savings over time.

Index-based insurance solutions

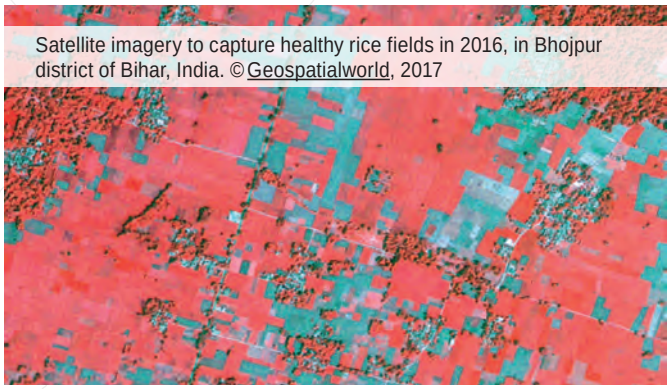
Traditional insurance pays out actual estimated economic losses to the insured party, e.g. farmers, but may go along with higher transaction costs and prohibitive risk premiums; in addition, such indemnity-based insurance may not be available for more complex risks, or for risks where post-disaster losses are difficult to calculate. Index-based risk insurance bear advantages as it pays out solely on an ex ante agreed, objective parameter of the triggering event. Once a certain parameter threshold is hit, e.g. a certain precipitation rate in case of a flooding, automated pay-outs regardless of the actual losses are made to the policy holders in the affected areas. It may also use remote sensing that can provide frequent satellite-based data, allowing for close monitoring of indicators at the communal level.

Index-based Insurance has several advantages over traditional insurance and is being increasingly applied in developing countries. Index-based insurance provides pay-outs to insured farmers based on the monitoring of an independently observable weather variable, such as rainfall, which is closely correlated to agricultural yields. Index-based insurance eliminates costs associated with traditional agricultural insurance, such as moral hazard (the insurance incentivizes farmers to change towards a more risky behaviour after getting insurance coverage, e.g. by working less precise), and inaccurate loss adjustment (errors in estimating pay-outs based on losses). Index-based insurance only requires the chosen variables to be monitored and can dramatically lower transaction costs and premiums, while also removing the burden from farmers to prove their losses. In addition, index-based insurance policies can be flexibly applied at the micro level (to individual farmers and households), meso level (to agricultural suppliers, farmer associations, or NGOs), or the macro level (to government or relief agencies).[40] There are however disadvantages connected with index-based insurance solutions. One of them is that the precise application may be dependent on the accuracy and availability of data which poses a challenge in many contexts. Also, the indices are connected to a certain basis risk, e.g. the possibility that the pay-out under the pre-agreed index does not match the losses of the insured party.

[40] International Fund for Agricultural Development and World Food Programme (2011). Weather index-based insurance in agricultural development: a technical guide. www.ifad.org/ruralfinance/pub/WII_tech_guide.pdf



Water content of crop fields with thermal imaging. ©Anonymous, 2001



Satellite imagery to capture healthy rice fields in 2016, in Bhojpur district of Bihar, India. ©Geospatialworld, 2017

Catastrophe Bonds

Catastrophe bonds are high-yield bonds, that can be sponsored by local or sovereign governments to acquire financial protection for climate and disaster risks. Catastrophe bonds are generally issued by Special Purpose Vehicles and placed to capital market investors, who provide capital that is used to indemnify the sponsor (i.e. the local/sovereign government) in the case of weather extremes or disaster events. Index-based triggers, such as a particular storm surge height for a hurricane, can also be used as underlying pay-out mechanisms for Catastrophe bonds.

Catastrophe bonds are rising in popularity because the low interest environment has driven significant capital from investors into this asset class, thereby leading to more attractive conditions for catastrophe bond sponsors. In addition, as multi-year instruments they fill the temporal gap left by traditional insurance companies, which generally offer one-year policies only. Municipal governments seek to plan development in longer terms, while insurance companies are careful to move beyond an annual time scale when assessing property risk. Catastrophe bonds provide the long-term protection against risks, which governments seek and insurance companies have failed to provide.

These bonds provide needed private-sector risk capital for affected areas; however, like traditional insurance, they may also lead to a higher risk of moral hazard, in that municipalities underinvest in resilience measures because they know that they are insured. To mitigate this moral hazard, a new type of catastrophe bond has been discussed more recently. Some bonds offer a rebate option, rewarding municipalities that invest in disaster protection, also called resilience bonds. They assess the degree of risk reduction for a given protection measure and then i.e. reduce the rates that a municipality must pay to its catastrophe bondholders, i.e. the bond investors. Thereby, the government is insured in the case of disaster but still has an incentive to invest in resilience.

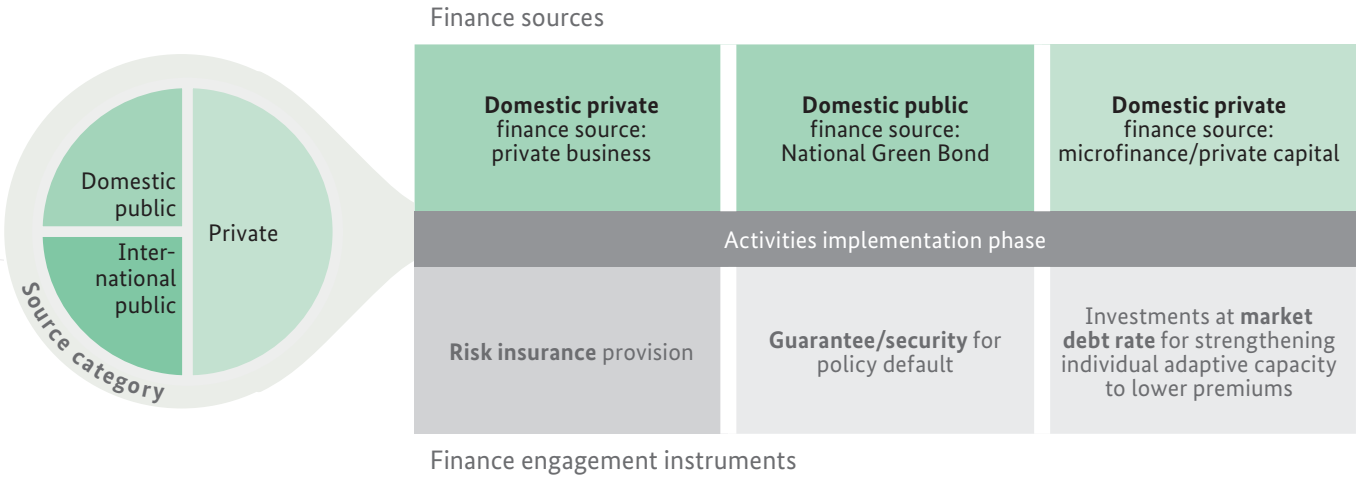
Application

In the field of adaptation, significant progress has been made in the agricultural sector. The International Climate Initiative (IKI) with financing through the German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU) for example launched an insurance instrument for agricultural microcredit schemes to support adaptation activities in Peru. Farmers living in coastal regions are particularly at risk from the El Niño weather phenomenon. Pay-outs to individuals and companies operating in the agricultural sector are linked to climate data parameters that have been proven to predict damaging events, such as rising ocean surface temperatures, which correlates with the onset of the El Niño phenomenon.[41] Farmers covered by the scheme thereby receive comparable pay-outs upfront, based on the overall incidence of a weather event rather than actual reported crop loss, which is more challenging due to the complexity of claim handling. The fact that payments are disbursed before actual losses caused by the expected weather event occur, enables farmers to invest in prevention measures.

Further to this, another example of an insurance scheme benefiting the tourism sector and currently being designed, involves EbA measures to lower risks from storm surges and sea level rise: Coral reefs reduce beach erosion and damages to coastal infrastructure from hurricanes along the Caribbean coasts, providing a critical service to the tourism industry. However, hurricanes themselves can severely damage reefs. An investment is needed after a hurricane to restore coral reefs so they continue providing coastal protection. Therefore, The Nature Conservancy, the Quintana Roo State

[41] More information about this IKI project is available at: http://bit.ly/1LdV9z3.

Figure 10 Visualization of finance approach: Insurance solutions



Government, the reinsurer Swiss Re and a Mexican hotel owner's association collaborate to transfer this risk through a reef and beach insurance. The scheme, and index-base instrument, will payout an agreed amount when a hurricane of category 4 or 5 destroys the coral reefs, and funds will be used to restore corals in order to maintain beaches and reefs in the long run.

Another example relating to insurance is the InsuResilience Global Partnership on climate risk insurance.[42] This initiative aims to mobilise donor countries and the private sector to enhance climate risk insurance and address climate change-related resilience issues of the most vulnerable and poor people. The objective of the initiative is to insure up to 400 million poor and vulnerable people by 2020. The initiative builds on existing facilities such as African Risk Capacity in Africa (ARC), Central America and Caribbean Risk Insurance Facility (CCRIF), and Pacific Catastrophe Risk Assessment and Financing Initiative (PCRAFI).

How are insurance systems relevant for EbA?

Traditionally, insurance helps to provide relief in the aftermath of a disaster by transferring the respective risks to party that is more diversified and hence can absorb the risk more efficiently. EbA approaches can support the reduction of climate risks. With benefits for insurances and customers, insurance schemes can provide a convincing link for investments into ecosystem-based solutions. New technologies, such as remote sensing supporting index-based insurances are an additional way to lower transaction costs and burden on customers.

The commercial use of the described solutions is still financially difficult. Public finance support and backing for the set-up of these schemes is therefore needed. The EbA Community of Practice can therefore seek to engage with the insurance industry to increase the level of understanding of the potential that EbA holds.

Further information

International Fund for Agricultural Development and World Food Programme. (2011). Weather index-based insurance in agricultural development: a technical guide.
www.ifad.org/ruralfinance/pub/WII_tech_guide.pdf

Insurance for agricultural microcredit schemes to support adaptation to climate change
www.giz.de/en/worldwide/13259.html

Insurance for ecosystems to restore and maintain beaches and coral reefs along the Caribbean coasts of Mexico
global.nature.org/content/insuring-nature-to-ensure-a-resilient-future

InsuReslience Initiative
www.insuresilience.org

[42] More information available at www.insuresilience.org

Example 7

Microfinance scheme

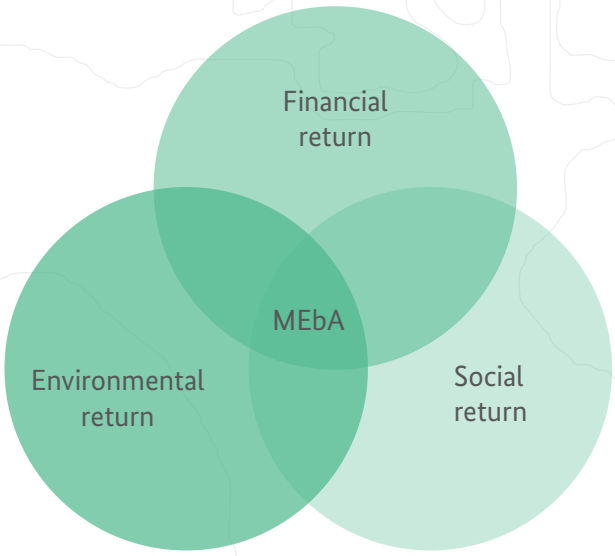
Increasing the resilience of vulnerable rural populations, Colombia and Peru

Chicamocha national park, Colombia. Photo: © pixabay/TRAPHITHO

Colombia and Peru are located along the Andes mountain range in South America and share both a common border and traditions: agriculture is one of the most important traditional economic activities in the region; it accounted for 7 percent of Peru's GDP in 2012 and 6.7 percent Colombia's GDP in 2014 (World Bank, 2015). The Andean region is a biodiversity hotspot that has undergone significant changes over the past decades, especially in forested areas. Most of the land area in the region has been increasingly converted for agricultural purposes. Hence, practices that affect ecosystems and the climate of the region are related to agricultural activities that involve extensive animal husbandry, single crop production, intensive use of fertilizers and intensive soil tillage.

The consequences of extreme climatic events such as droughts and floods pose an increasing threat to rural and peri-urban communities of Peru and Colombia. The most significant risk for agriculture in the region is posed by the changes in type, frequency and intensity of extreme weather events. At the regional level, the Inter-American Development Bank (IDB) estimates that Andean agricultural output could decline by 12 to 50 percent due to the negative impacts of climate change (Ortiz, 2012). Such decline is expected to impact the livelihood of vulnerable populations involved in agriculture in both Peru and Colombia.

Figure 11 Microfinance for EbA at the interface of environmental, social and financial returns



Infobox 7 Microfinance for Ecosystem-based Adaptation (MEbA) scheme in Colombia and Peru

Funding source	International Climate Initiative
Implementation start and end date	April 2012 – December 2017
Total beneficiaries	7,000 small farmers received awareness-raising/training on EbA measures; 11,000 EbA loans disbursed
Total financing (USD) Millions	12.5
Number of participating microfinance institutions (MFIs)	3 in Colombia, 2 in Peru

The diversification of income sources and economic activities strengthens the socio-economic resilience of communities. Strategies for the conservation of the natural environment and for a sustainable and diversified production are key to strengthen the resilience of ecosystems, which, in turn, support the livelihoods and climate resilience of communities. Sustainable development in rural areas is not possible without considering the positive or negative impacts of production practices in environmental, social and economic terms. This concept of triple bottom line refers to the capacity of Microfinance Institutions (MFIs) to deliver better adaptation results through climate smart credit methodologies as illustrated in Figure 11.

Financial mechanism

A clear majority of the population in the Andean region of Colombia and Peru has limited economic resources and is highly dependent on agriculture. Although communities have already begun implementing measures to adapt to these adverse effects, the need to effectively disseminate and transmit information and knowledge regarding climate change and climate resilience persists. Investments in EbA activities aim to improve the resilience of individuals and communities to these threats and ensure the sustainability of ecosystem services that they depend on.

The concept of microfinance refers to the provision of small loans given to populations with limited financial resources, which could help communities improve their socioeconomic standing and overcome poverty in the long run. Over the years, this concept has expanded and now MFIs cover a range of products and services in addition to loans, including savings accounts, national and international transfers as well as micro-insurance. Peru has 73 MFIs that provide services to 5.3 million borrowers (16.7 percent of the population), with a total of USD 12.3 billion in loans granted. Peru and Colombia are both countries with best microfinance environments. In Colombia, 44 MFIs serve 3.3 million borrowers (approximately 7 percent of the population), who have received USD 6.75 billion in loans and deposits reaching USD 4.5 billion (CGAP and MIX Market 2018).[43]

[43] Microfinancegateway and MIX Market (2018) www.microfinancegateway.org/es/pa%C3%ADs/per%C3%BA www.microfinancegateway.org/es/pa%C3%ADs/colombia www.themix.org/mixmarket/countries-regions/colombia www.themix.org/mixmarket/countries-regions/peru

In both countries, microfinance has helped marginalized populations improve their standard of living and reduce levels of poverty; making the sector one of the most effective tools for poverty alleviation. Microfinancing has also proven to be an efficient mechanism to promote financial inclusion in both countries.

The Microfinance for Ecosystem-based Adaptation (MEbA) is an International Climate Initiative (IKI) project, financed by BMU and implemented by the United Nations Environment Programme (UNEP). The MEbA project facilitates the access to microfinance products and services for small-scale farmers to invest in sustainable adaptation practices and improve their income and resilience towards climate change. The targeted farmers in the Andean region of Colombia and Peru are characterized by high climate vulnerability due to low income (approx. USD 500 a year), lack of access to social or financial services, low technical capacities, high exposure to climate risks and small landholdings (typically between 1 and10 hectares).

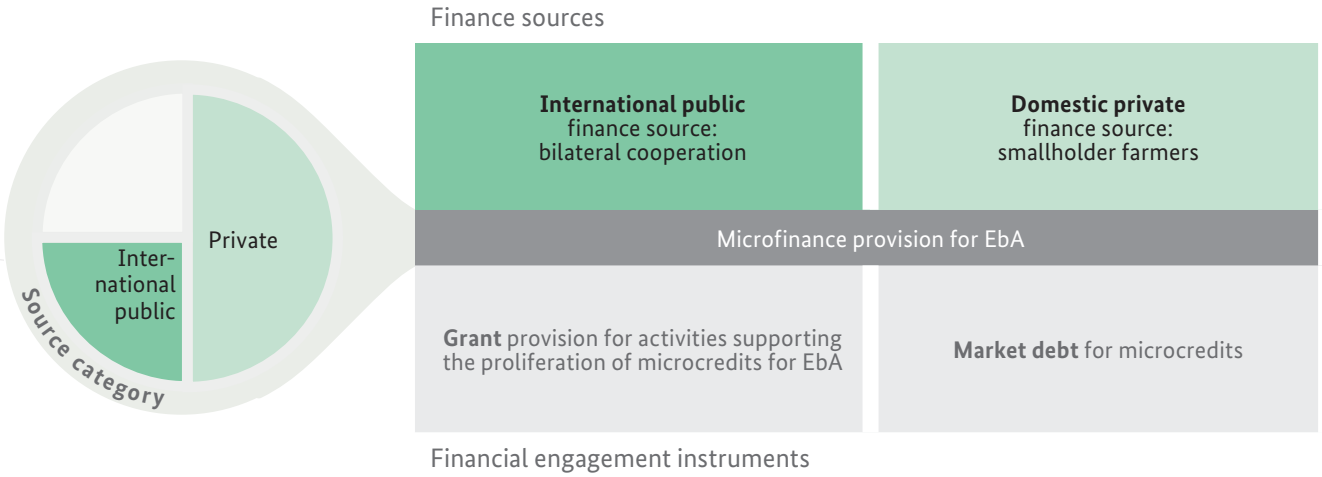
MEbA project

The project seeks a paradigm shift through private sector engagement in adaptation finance by facilitating microfinance products aimed at small-scale farmers to invest in EbA options, thus improving their income and resilience to climate change. MEbA builds capacity in MFIs in Colombia and Peru to i) raise client awareness on climate impacts and EbA options; ii) train staff on climate change and conservation concepts; iii) manage agro-climate risks and improve information systems; iv) develop EbA micro-loans and services, and v) foster technical partnerships to assist clients in EbA implementation. With the tools developed by the project, MFIs autonomously promote EbA loans and cater to their clients' needs while improving efficiency and reducing costs. MEbA also works with governments and development banks to set an enabling environment for replication and scale-up. The project is now in the process of expanding to other MFIs in Latin America, the Caribbean and Africa.

Figure 12 MFI branches (yellow) and inplemented pilots (green) in Colombia and Peru

The project seeks to show private finance institutions that when their clients' climate vulnerability is reduced via investment in EbA options, the vulnerability of their investment portfolio is also reduced. To this end, project partners are developing new strategies and are adjusting and expanding their climate-related portfolio. They are also developing and broadening the availability of additional microfinance products and services, primarily in the areas of rural development, sustainable water management and reduction of disaster risk. In

Figure 13 Visualization of finance approach: microfinance scheme



parallel to this, partner MFIs are conducting campaigns to raise public awareness of microfinance options that take aspects of climate change adaptation into account.

The project's basic approach focuses on integrating a better understanding of climate risk variables in the credit methodology of MFIs. It seeks to improve financial risk management to increase understanding of the agricultural lending market, thereby increasing the incentive for MFIs to better access the market. The information generated will not only allow for improved risk management by the MFIs, but will also be valuable for the customers. On the other hand, farmers are presented with options for EbA that will allow them to reduce their climate and production risks through better agricultural practices, income diversification and maintenance of the ecosystem services that sustain their activities. The long-term aim of the project is to foster an enabling environment through incentives in policy and financing to provide risk-adjusted pricing, tailor-made products and enhanced services based on the smart use of climate data, which will become available through the consolidation of initiatives promoted by the project.

How the financial instrument is used by the project

MEbA products and services are microfinance instruments that aim to promote or support EbA investments. Since they are similar in nature to the financial products that MFIs already offer for the agricultural sector, MFIs can embed MEbA products and services in in their agricultural lending products. MEbA products and services are classified in segments based on the term of the loan and the type of activity it finances. The existing types of products in which EbA options are included are:

1. Working capital loans (short-term), which finance investment in working capital such as inputs, seeds and fertilizer, among others. Repayment schedules are planned based on a crop harvest – that is, during a single growing season. Measures contributing to EbA included in this type of product are organic fertilizers, crop diversification, integrated pest and nutrient management, among others.
2. Fixed asset loans (medium-term), which are longer-term loans to finance investment in fixed assets such as equipment, machinery and tools, among others. These are loans given based on several economic activities, so their repayment is typically scheduled over the course of several seasons. Measures contributing to EbA, which are embedded in this type of product are agroforestry systems, drip irrigation systems, rainwater reservoirs, beekeeping, aquaculture, solar dehydrators and greenhouses with sustainable management of nutrients, soils and pests, among others. 3) Community loans (short-to-medium-term): loans for community investments such as seed banks, terracing, fog catchers, reforestation for soil restora-

tion and sustainable forest management. And 4) Additional services: training and capacity building for customers or groups of customers, offered by the institution itself or through information exchange with strategic partners, aimed at promoting sustainable productive activities such as conservation agriculture, organic agriculture, agroecology and integrated management of nutrients and pests.

The drip irrigation system and other EbA-related measures – such as the use of organic fertilizer, crop diversification and terracing – increase the resilience of small farmers through a better use of ecosystem services. These measures also reduce production costs, increase productivity and diversify income streams.

Out of the forty EbA measures identified by the project 20 are being offered by MFIs to their clients via financial products, This has resulted in the disbursement of more than 11,000 EbA-specific micro-loans delivered under the project, resulting in roughly USD 15 million of private investment towards sustainable adaptation alternatives.

The collaboration between IKI, UNEP and MFIs

The MEbA project initiated its activities in April 2012 with the signing of the grant agreement from the International Climate Initiative to the United Nations Environment Programme (UN Environment) as the implementing agency. The Frankfurt School of Finance & Management participated as executing partner until 2015. The 2012-2017 implementation period (Phase I) of MEbA focused its operations in the Andean Region of the two countries, working with three partner MFIs in Colombia (Bancamía, Contactar and Crezcamos) and two in Peru (Fondesurco and Solidaridad) with the aim to build capacity, develop EbA-oriented microfinance products and services, and to raise awareness for existing EbA options. It is expected that a second phase will be approved by the BMU starting in 2018 to replicate and upscale the project in additional MFIs and countries in Latin America, the Caribbean and Africa.

MEbA assists MFIs in improving their risk management, partly through the improvement of data quality on their clients, and collection and integration of relevant climate data into their credit methodologies. The project also provides them with awareness-raising materials. Another important component in the project is the involvement of relevant stakeholders in policy and financing, including government institutions of the respective countries, especially the Ministries of the Environment in Peru and the National Planning Department in Colombia, national development banks, microfinancing associations, regulatory bodies, technical providers and local NGOs. Collaboration with third parties aims to help MFIs develop capacity in providing technical assistance to the farmers. Finally, the presence of sound policies in relation to climate change in Peru and Colombia provides a good basis for collaboration with government institutions as the project outcomes can fit into their policy agenda.

How financing through the mechanism is implemented

The MEbA project is working with different government actors in Peru and Colombia to promote the inclusion of the microfinance sector as a strategic partner to help catalyse sustainable climate change adaptation processes. Given the innovative approach and potential for replication of the actions promoted by the project, the governments of both countries have been receptive to providing greater space for collaboration with MFIs in the public policy instruments that are being developed in the areas of climate change, agriculture and the environment. In addition, the finance sector in both countries is increasingly interested in developing dedicated credit lines to provide improved lending conditions to MFIs that promote EbA alternatives. This initiative has gained particular momentum in Colombia, where Bancoldex, a national

development bank, is partnering with UN Environment to develop a proposal to the Green Climate Fund for replication and upscaling of the MEbA concept. These kinds of partnerships can lead to greater access to information, training and financing to improve the current and future conditions of small farmers. On an international level, there is also scope for fostering greater private sector involvement to promote sustainable schemes such as Ecosystem-based Adaptation.

While the actions promoted by MFIs can have significant positive effects on the quality of life of their customers and the maintenance of ecosystem services, a policy framework is needed to support the continuous and coordinated participation of the private sector in adaptation. This is because the public finance available is not sufficient to meet the needs of vulnerable populations to protect their economic activities from potential negative impacts or take advantage of the market opportunities that emerge because of climate change. Public-private partnerships are key and the more the different roles and responsibilities are explicitly laid out in national, sectoral and local plans and policies, the easier it will be to bridge the financing gap and attend to the needs of the most at risk segments of society.

Main challenges, lessons learned and way forward

The microfinance sector in Peru and Colombia represents an opportunity for financing and executing adaptation actions at a very local level and at a scale which is significant to small producers. In the long run, however, public funds will not be sufficient, and it will be important to develop mechanisms to channel funds from the private sector.

Microfinance institutions, governments, development banks and associations should commit to promoting the greater availability of concessional financing and information, as well as establishing partnerships to enable the provision of technical assistance to small agricultural producers. In relation to policies and regulations, it was proposed that climate change variables should be incorporated into all planning processes, while promoting the interaction of policy makers and international negotiations with the microfinance and private sectors. A holistic strategy of risk management is needed, and should include such aspects as awareness-raising of best practices, the conservation of ecosystems and their services, the provision of technical assistance and support to agricultural producers and risk transfer mechanisms.

Some of the key challenges remaining are to improve lending conditions and efficiency in the day-to-day operations of MFIs so that end clients have financial incentives to invest in EbA. Risk transfer mechanisms, such as micro-insurance, may be useful to accompany EbA loans but significant improvements are still needed in both the supply and demand aspects. Technical capacity, including the ability to view adaptation as a long-term process in which several planned EbA investments are needed in each farm, remains an area that requires joint participation by MFIs, technical partners and government outreach programmes.

How is microfinance relevant for EbA finance?

The MEbA approach focuses on integrating climate risk variables in the credit methodology of MFIs through improved financial risk management, thereby creating products and services through microfinance instruments that aim to promote or support investment in EbA alternatives. The MEbA model in Peru and Colombia represents an opportunity and a strategic linkage between financing small producers and execution of adaptation actions which can be replicated in other regions. The MEbA project is working towards such replication as of 2018.

Further information

For more information about the IKI Microfinance Scheme in Colombia and Peru please visit their website www.international-climate-initiative.com/en/nc/details/project/257/?iki_lang=en

Example 8
Market debt
eco.business Fund, Latin America


Photo: © Bamshad Houshyani, Climate Focus

The eco.business Fund

The eco.business Fund is a public-private partnership (PPP) that supports the promotion of business and consumption that contributes to biodiversity conservation, the sustainable use of natural resources, climate change mitigation and adaptation. With a focus on preserving biodiversity, the Fund's investments aim to generate financial as well as environmental returns. It offers a number of different financial products to sustainable businesses and operations, mainly in the form of long-term senior loans. Additionally, the Fund has established a Development Facility as a separate entity that provides technical assistance to support both local financial institutions and their clients to enhance the impact of their activities.

The eco.business Fund was initiated by KfW Development Bank on behalf of BMZ and in cooperation with Conservation International (CI) and Finance in Motion. Amongst its investors are KfW with own funds, FMO, the European Union, ASN Bank and the Development Bank of Austria (OeEB). The Fund has a geographical focus on Latin America, and receiving entities must be located in countries that are eligible for official development assistance (ODA).

Infobox 8 eco.business Fund

Funding source	Loans
Total beneficiaries	942 loans have been issued to eco-businesses and sustainable activities
Implementation start and end date	The Fund was launched in December 2014, and is open-ended fund
Total financing (USD) Millions	As of Q4 2017, USD 160.7 million investor commitments

Financial mechanism

The eco.business Fund is an investment vehicle that finances eco-businesses and sustainable operations

by providing loans and other financial products[44] on commercial terms, mainly through local financial partner institutions. By providing "green credit lines" and technical assistance to those partner institutions, local financial sectors get strengthened, in particular with respect to a "greening" of these economies. The eco.business Fund operates as a PPP, and receives its funding from a combination of donors, multilateral organizations, development finance institutions, NGOs, foundations and private investors. Both financial institutions and non-financial institutions can serve as partners to the Fund.

Funding sources of the fund

Being a PPP, the eco.business Fund relies on different types of donors and investors. The Fund's structure is designed in a way that contributions from public investors, donors and development finance institutions are leveraged by private investors. In other words, public investors provide a basic level of funding, which is substantiated by private funders to increase the financial resources of the Fund, and so to achieve maximum impact. Central to this structure is that the investments by the public sector function as a 'cushion' for investment losses that are incurred by the Fund. These funds, to a certain extent, protect the investments from the private sector, thereby lowering investment risks for private investors. That way, the Fund's structure successfully allows for private capital investment in green finance where this was not viable before, given the usually perceived high risk of business investments in developing countries. So far, this innovating structure has enabled the Fund to commit private financiers: the share of private investors is about one third of the fund's total financial commitments.[45] The differentiated types of shares, with their own risk-return profiles and target parties, are listed below.

- Senior notes, targeted at private investors, including institutional investors, NGOs and foundations.
- Subordinate notes/loans, targeted at private investors, financial institutions and development financial institutions. Recently, the Calvert Social Investment Foundation has invested USD 5 million into the eco.business Fund.[46]
- Senior shares, targeted at private investors, financial institutions and development financial institutions. In 2017, the Dutch bank ASN Bank invested USD 25 million into the eco.business Fund.[47]
- Junior shares, targeted at donors.

As of September 2017, the Fund has a total investor commitment of USD 160.7 million.[48]

Investments by the fund

Loans

The eco.business Fund mainly provides loans to local financial institutions, which then lend the money to eligible borrowers, whose businesses hold certifications evidencing their sustainability and contribution to biodiversity. In that way, the financier is close to the businesses and communities it invests in. As a second branch of their work, the Fund provides financing directly to sustainable companies activities that meet the Fund's eligibility criteria, to a maximum of 15 percent of the portfolio.

[44] The Fund provides the following financial instruments: medium to long-term senior loans, subordinated debt, term deposits, subscription to bond issues, certificates of deposits, syndicated loans, promissory notes, term enhancement instruments, stand-by letters of credit, and guarantees.

[45] eco.business Fund (2017, 31 July) ASN Bank Invests USD 25 million in eco.business Fund

[46] eco.business Fund (2017, 14 August) Calvert Social Investment Foundation Invests USD 5 million in eco.business Fund to Conserve Natural Resources and Biodiversity in Latin America

[47] eco.business Fund (2017, 31 July) ASN Bank Invests USD 25 million in eco.business Fund

[48] eco.business Fund (2017, 30 September) eco.business Fund at a glance

All financial products offered by the eco.business Fund are market-based products. Processing of Fund investments takes on average 2 to 6 months. As of December 2017, the Fund has contracted 10 financial partner institutions, and has approved 12 investments in Costa Rica, Ecuador, El Salvador, Colombia, Panama, and Nicaragua.

Criteria for individual loans

Individual loans can be issued directly through the eco.business Fund, as well as indirectly through local financial institutions. In both cases, end-borrowers need to fulfil one of the following conditions:

- The final borrower is a **certified producer** and holds a certification for organic, ecological or bio-production. Examples of eligible certifications are UTZ certified or certifications from the Rainforest Alliance. Certified producers need to be continuously monitored and subject to regular controls.
- If the activity is not certified, the investment should demonstrate a clear positive impact on biodiversity protection and/or the sustainable use of natural resources. Eligible measures must demonstrate proven positive environmental effects. The Fund establishes a 'green list' of eligible measures, which is customized for each partner financial institution. This list of eligible measures includes for example reduced pollution, reduced soil deterioration and reduced water use.

Monitoring and reporting requirements

Partner institutions of the Fund are required to reporting on a semi-annual basis on how they allocate money through their borrowing activities. Moreover, the Fund commissions impact studies for selected cases. The major share of investments by the eco.business Fund, that goes into certified production processes, is covered by the monitoring and reporting standards of the respective certification schemes.

Technical assistance

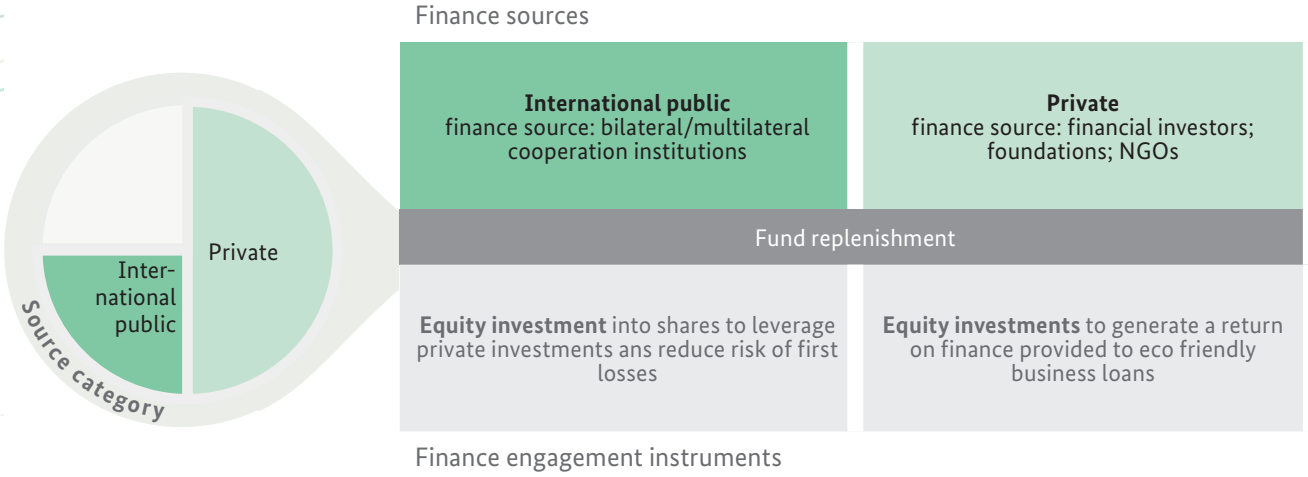
With the aim of enhancing the impact of its investments, eco.business Fund has established the Development Facility as so to be able to provide technical assistance to borrowers with the aim of strengthening their positive impacts. This technical assistance focuses on supporting financial institutions in making lending to sustainable businesses a central and viable element of their investment portfolio; supporting local businesses in their sustainable practices; and sector technical assistance through for example market research and awareness campaigns. Moreover, financial institutions are also supported in their monitoring and reporting duties, as so to increase transparency and accountability of the financing processes. The Development Facility has a different financing structure from the investment fund, and is funded through donor grants. The Development Facility Committee is headed by KfW and composed of members from CI, ISEAL and ITC. Currently, it has an aggregate project volume of USD 1.5 million. [49]

How the financial instrument is used by the projects

The target region of the Fund is Latin America and the Caribbean, and the Fund focuses its financing activities on biodiversity hotspots to achieve maximum impact. The eco.business Fund invests in eligible projects in four focus sectors:1) agriculture and agri-processing; 2) fishery and aquaculture; 3) forestry, and 4) eco-tourism. Within these sectors, the Fund invests in a wide range of activities that contribute to its goals.

[49] eco.business Fund (2017, 30 September) eco.business Fund at a glance

Figure 14 Visualization of finance approach: market debt



Box 4 Sustainable coffee production

The eco.business Fund invests in coffee producers that implement mitigation measures to lower the adverse environmental impact of coffee production. For example, the Fund promotes shaded coffee plantations that use agroforestry systems, thereby preventing soil erosion, sustain forests that function as carbon sinks, and reduce the use of fertilizers. Moreover, the Fund supports the establishment and maintenance of seed banks, where coffee plants can be grown that are more resistant to climate change and less susceptible to pests and diseases. Additionally, the Fund invests in effective use of water, as well as continued access to water in changing weather conditions and less predictable rainfall patterns. Through the Fund, business owners can further strengthen their sustainable practices by accessing private funding, a funding sources that is normally not available to these small-scale business owners.

Sources: eco.business Fund (2017) Casal S.A. A Look Into Shade-Grown Coffee in El-Salvador & eco.business Fund (2017) The World of Coffee

The Fund is planning to expand and create a separate sub-fund for African countries.

How the financial mechanism is relevant for an EbA finance strategy

Access to capital investment and credit at non-concessional market rates is often a major barrier for developers of EbA projects and activities. Where EbA measures often only generate ecological and social, but often no immediate direct financial returns, private investors have no financial incentive to invest in these types of projects. Bridging this gap, the eco.business Fund provides an example of how a public-private partnership can be used to successfully leverage private financing to climate change mitigation and adaptation activities. Through a structure whereby public investment protects the first losses from private investors, the Fund has successfully generated private financing for ecosystem mitigation and adaptation activities that were not of interest to private financiers before. As such, the structure of the eco.business Fund allows for financial support of EbA measures by business owners that want to limit their environmental impact by improved sustainable use of their ecosystems, and adapt their practices to a changing climate. By ensuring long-term sustainability of their practices, these types of measures also have a positive effect on private sector development and income generation in the partner countries of the Fund.

Moreover, the technical assistance facility provided by the Fund enables knowledge transfer and capacity building complementary to investments, thereby strengthening the Fund's impact and creating sustainable measures. Through awareness-raising and outreach activities, the Fund involves communities and local businesses in greening their operations. Given that the Fund operates through local financial institutions, measures are ensured to be optimally adapted to local circumstances, as well as community-based.

Further information

For more information about the eco.business Fund, please visit their website www.ecobusiness.fund, or or Email: k.ouldchih@ecobusiness.fund.

Example 9
Discussion
Carbon insetting

Schrecksee, Allgäu, Germany. Photo: © pixabay/PIRO4D

Brief history of carbon insetting

During the late 1990's carbon offsetting and the associated term 'carbon neutral' emerged as an influential paradigm for businesses and individuals seeking to address climate change. The term refers to an economically efficient means of reducing emissions for an organisation or company that may find it expensive to reduce their own direct emissions, and thereby opt to 'offset' their carbon emission by subsiding the same quantity of emissions at less cost elsewhere.

A growing number of organizations and companies have started exploring new approaches that can balance the relationship with the ecosystem they depend upon, by engaging in transformative integrated and integral socio-economic and environmental projects. Both to secure their development and participation in a more sustainable world. In line with this vision, the concept of insetting was initially presented in 2009 by Dr Richard Tipper, managing director of Ecometrica – a leading provider of greenhouse gas accounting services. The concept of insetting refers to the direct investment of a company within its own value chain (up and down stream) to reduce its carbon footprint, strengthen the values chain's resilience as well as strengthen cooperation among different actors of a value chain and opening new markets for environmental-friendly products. In addition to just offsetting carbon emissions and trading certificates at a (global) market, insetting helps companies boost resilience along their value chain and care for the ecosystems that provide their raw materials. Climate-smart practices, mostly from downstream the values chain, are certified by independent actors (e.g. PlanVivo), based on these certificates, pro-

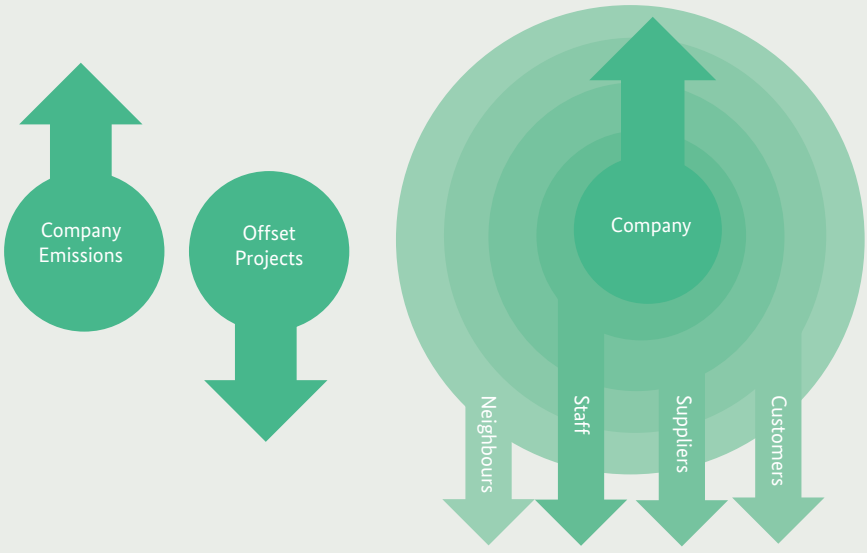
ducers are financially compensated by companies from their value chain. This strengthens cooperation and allows companies to access new markets with environmental-friendly products. These climate-smart practices consist of internally offsetting the negative social and environmental impacts associated with their business (climate, water, biodiversity, soils). Insetting can be a powerful tool that can create shared value along the entire value chain of a company. At the heart of an Insetting program, lies the integration of socio-environmental considerations within the strategy of a business which includes the following:

- secure supply chains and sourcing;
- control of environmental footprint;
- preserve resources and core business;
- reinforce group values and employee empowerment;
- add value to the product; and
- engage consumers and partners.

For the most part, offsetting is more appealing to some companies as it requires less work and is simple to operate with minimum supervision. Insetting on the other hand could be more challenging for businesses, but it could also be a better strategic investment for the company. From a purely business standpoint, companies are more inclined to be involved with insetting projects instead of spending money on carbon offsets since the same money can be utilised to strengthen their own direct supply chain. The concept was coined and promoted by sustainability standards Plan Vivo and PUR Projet, and it is a potentially powerful notion that can simultaneously benefit both businesses and the environment. Speaking to businesses in 2014, Tristan Lecomte, co-founder and president of PUR Projet, noted that 'insetting is a way to help companies to regenerate the ecosystem that they depend upon, to make the offsetting strategy more legitimate, more linked with the business.'

Figure 15 illustrates the differences between carbon offsetting and insetting. In the case of offsetting the emissions and reductions are discrete activities and there is no interaction between the parties except a financial transaction. In the case of insetting there is an exploration and partnership with various stakeholders to identify emission reduction opportunities.

Figure 15 Differences between carbon offsetting and insetting



Source: Ecometrica, 2009

Benefits of insetting

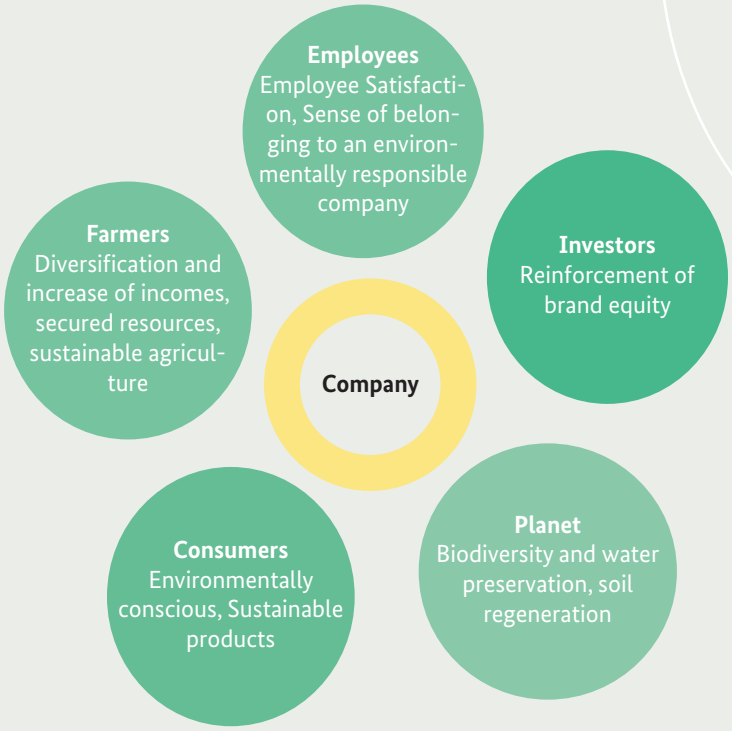
A major advantage of the insetting approach besides climate change mitigation and adaptation is that there may be additional benefits for a company such as opening new markets with eco-friendly products, increased actor's loyalty and supply chain efficiencies that can be integrated in to the overall economic assessment and a broader business strategy by reducing emissions along the supply chain to create a long-term competitive advantage.

An additional benefit that policy makers should be aware of is that insetting encourages businesses to tackle emissions sources that existing business-focused policies tend not to address, such as consumer and employee energy consumption. Insetting projects work with companies to regenerate the ecosystems they rely upon and strengthen their supply chains through agroforestry, land restoration and sustainable agricultural practices while empowering local communities to operate long-term socio-environmental projects, hence offering good entry points for EbA measures.

How is insetting relevant for EbA?

Insetting takes a holistic approach, tackling both environmental and social challenges by financing carbon offset projects to build resiliency in their supply chains and restoring the ecosystems on which their growers who provide the raw material depend. Targeted initiatives can address growing water scarcity and protecting the local water supply by preventing soil erosion and landslides in a region that has been heavily deforested. Insetting aims to ensure more than just offset carbon emissions and can help companies boost resilience and care for the ecosystems that provide their raw materials while creating shared value along the entire value chain of a company. At the heart of an Insetting program lies the integration of socio-environmental considerations within the overall business strategy. Insetting can prove to be an ideal strategic investment for the company.

Figure 16 Potential effects of carbon insetting by a company

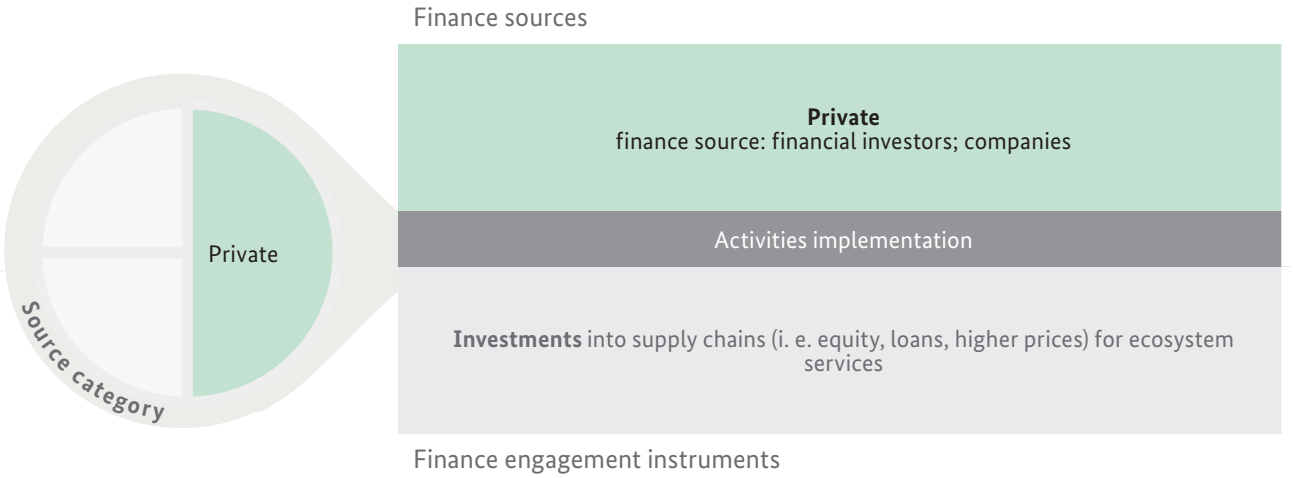


Source: Ecometrica, 2009

Key examples

Nespresso's initiative with PUR Projet to plant 10 million trees in Colombia, Ethiopia, Mexico and Nicaragua aims to reach carbon neutrality by 2020. In the case of Nespresso, tree planting is more than just 'greenwashing' but rather is in line with the company's incentive to build resiliency in their direct supply chains while restoring the ecosystems that their coffee growers depend on. The company is investing USD 600 million over five years as it sees insetting as a "virtuous cycle," says its French division president, Arnaud Deschamps: "You plant trees to offset your emissions. You help your farmers with better land, better ecosystems and better revenues, so their children want to be farmers too.

Figure 17 Visualization of finance approach: discussion, carbon insetting



And we upgrade the coffee quality for our consumers."

The head of sustainability at Nespresso, Jerome Perez, in an interview with an international newspaper (Guardian, 2015) further explains the company's insetting approach by stating: "By planting trees in coffee farms, you are protecting the coffee bushes from heavy rain, and we know that adverse weather events impact a lot on the production of Arabica coffee in the last few years in Colombia. Trees also prevent landslides, protect the soil, the water, the biodiversity, and ultimately the sequestration of carbon - these elements are making insetting a very relevant approach."

The Accor hotel group which operates approximately 470,000 rooms across 92 countries has a water and electricity footprint equivalent to a 1 million inhabitant city. Instead of offsetting, the hotel group is focusing on local projects that are relevant to its own activities. One such example is that, together with PUR projet, Accor identified the potential to strengthen community groups within its direct supply chain in Morocco by planting olive groves and helping to set up a female-run olive oil business. Since women in the area often face challenges finding work, the hotel provided the budget to plant the olive trees so that the women of the region maintain the trees and transform the olives into olive oil, whereby part of the olive oil produced is sold back to its hotels. Accor now has similar projects in other countries growing rice and vegetables. Accor is also involved in the more traditional 'tree-planting' initiatives, however it only does so in areas close to its hotels to make it visible for its customers. This is believed to be an effective marketing strategy to ensure the loyalty of environmental conscious customers.

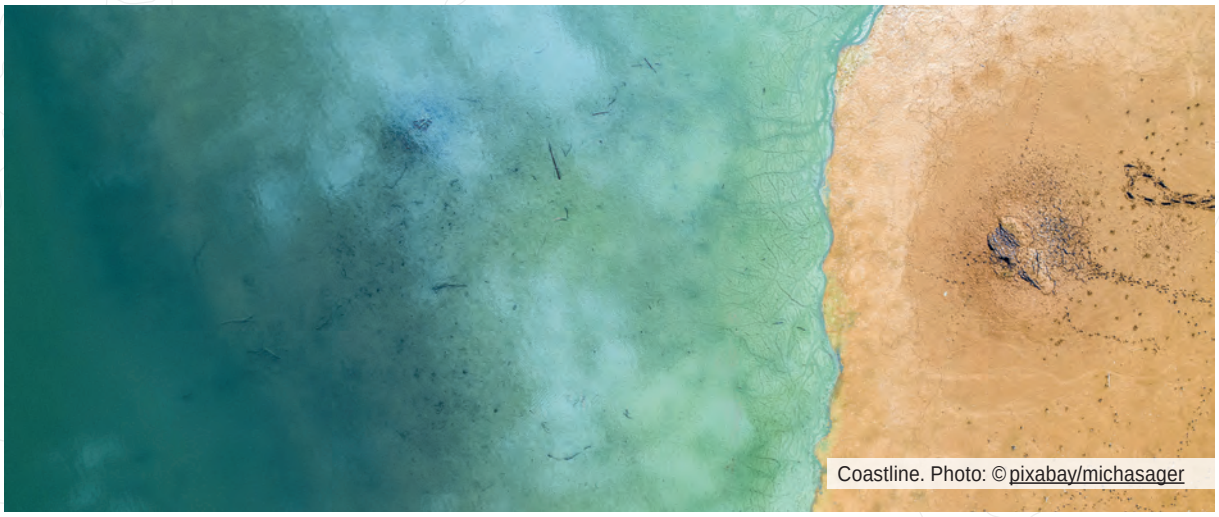
Further information

International Carbon Reduction & Offset Alliance (ICROA) website: www.icroa.org

PUR Projet website: www.purprojet.com

Climate Action Now; Summary for Policymakers (2015) website unfccc.int/resource/climateaction2020/media/1173/21789-spm-unfccc-lowres.pdf

Example 10
Discussion
Debt-for-nature swaps


Coastline. Photo: © pixabay/michasager

A brief history of debt-for-nature swaps

Debt-for-nature swaps (DFNS) have been showcased as a win-win solution to finance conservation in the developing world since its inception. They emerged in the 1980s as the brainchild of Thomas Lovejoy and draw on the linkage between reducing a country's debt while protecting its environment. DFNS are often a voluntary transaction in which financial debt owed by a developing country government is cancelled or reduced by a creditor, in exchange for financial commitments to conservation – in local currency. The DFNS mechanism provides some debt relief for such countries and generates funding in local currency for priority biodiversity conservation projects. DFNS were considered an innovative mechanism for enhancing conservation efforts while simultaneously alleviating debtor countries' need for hard currency.

The idea emerged from the consensus that much of the world's biological diversity is harboured in the same countries that face the greatest financial strain from foreign debt.

The concept of debt-for-nature swaps is based on the model of debt-equity swaps, in which private sector interests buy discounted debt and exchange it for local currency investments in the indebted country. While debt-for-equity swaps did provide the initial outline for the financial mechanism, debt-for-nature swaps have a very different purpose. A debt-for-equity swap is used to generate profits for the investor, whereas a debt-for-nature swap does not seek profit, but rather provides additional funds for conservation activities within a country.

While building on the debt-equity model, debt-for-nature swaps have channelled a new way of thinking about conservation and initiated opportunities to involve institutions not previously engaged in conservation efforts. Advocates of the mechanism have successfully found new opportunities and tailored the mechanism to the national circumstances over the years. Today there are emerging examples of harnessing similar creativity and strategic partnerships to tackle the greater challenge of attracting more private investment on terms that balance economic returns with conservation objectives over the long term.

In 1987, the Government of Bolivia and Conservation International (CI) signed the first debt-for-nature swap agreement. This swap was a huge win for CI, as they purchased a face value of USD 650,000 in Bolivian bank debt for at a discounted price of USD 100,000. CI then traded that debt to the Bolivian government, in an agreement detailing several steps of how the Bolivian government can protect the rainforests. In return, the Government of Bolivia provided the Beni Biosphere Reserve with maximum legal protection and created three adjacent protected areas totalling to up to 2.7 million acres. It also agreed to provide 250,000 in local currency for management activities in the Beni Reserve.

Box 5 Steps required for debt-for-nature swaps

1. **Awareness:** An indebted country establishes general guidelines for a debt-for-nature programme and invites participation from conservation organizations.
2. **Advocacy:** An international conservation organization and local private and public organizations reach agreement on a conservation programme.
3. **Feasibility:** The participating conservation organizations verify that sufficient funding will exist for the debt purchase or that debt donations or partial forgiveness may be possible.
4. **Approval:** The partners request government approval for the swap, usually from the central bank and the Ministry of Finance, and often from the government ministry that has jurisdiction over the relevant sector where the proceeds will be used.
5. **Negotiation:** Specific terms of the swap are negotiated, including the exchange rate from foreign currency to local currency, the redemption rate and the local investment instrument.
6. **Signature:** Debtor government and creditors sign the DNSDNFS agreement and all supplementary agreements with third parties. The signing of the agreement will provide a formal guarantee to the debtor government with a relinquishment of part or the totality of the creditors' rights.
7. **Transfer of funds:** The debt is acquired and is presented to the central bank of the indebted country which cancels the debt and provides funds in local currency, either in the form of cash or bonds.
8. **Implementation:** The conservation projects are implemented over the life of the agreed programme.
9. **Monitoring of funds transfers and results:** Based on the agreements signed, the debtor government will report evidence of the payments made and results achieved.
10. **Replication and scale up:** The model of the DFNS is replicated with other creditors.

Similar swaps soon followed, for example the Nature Conservancy, World Wildlife Fund and Conservation International brokered numerous similar debt-for-nature swaps with commercial debt between 1987-1997, mainly in Latin American countries. Between 1987-1997 debt-for-nature swaps, depending on the financial terms of the deal, achieved significant financial leverage and generated large-scale funding for conservation. During this period, debt-for-nature swaps accounted for USD 134 million worth of commercial developing country debt, purchased at an average discount of 78 percent, with USD 126 million of local currency counterpart funds targeted at conservation initiatives (Development Finance International, 2009). It is estimated that USD 1 invested in a DFNS transaction can generate USD 2 or more in local currency investments in conservation. Since 1987, over USD 1 billion in environmental funding have been generated through DFNS, benefiting nearly 30 countries. Hence, DFN transactions represent 'win-win-win' solutions, where benefits accrue to debtors, creditors, and important ecosystems of debtor countries.

Main challenges, lessons learned and way forward

Economists question the inefficiency of debt-for-nature swaps, and debt-equity exchanges in general, that often require the debtor country to value both a 'conservation commitment and the debt' and fear that excessive use of such swaps could lead to damaging inflation in the debtor country. From an environmental perspective, debt-for-nature swaps raise concerns about the additionality, permanence, monitoring, and enforceability of the conservation commitment. Additionality refers to the extent to which conservation efforts, either organized or in operation, would have occurred without the debt-for-nature swaps exchange, while permanence refers to the extent to which the benefits of the conservation commitment hold over time.

The problems of monitoring and enforceability are the converse of the most-cited criticism of debt-for-nature swaps: which indicates the interference with debtor country sovereignty.

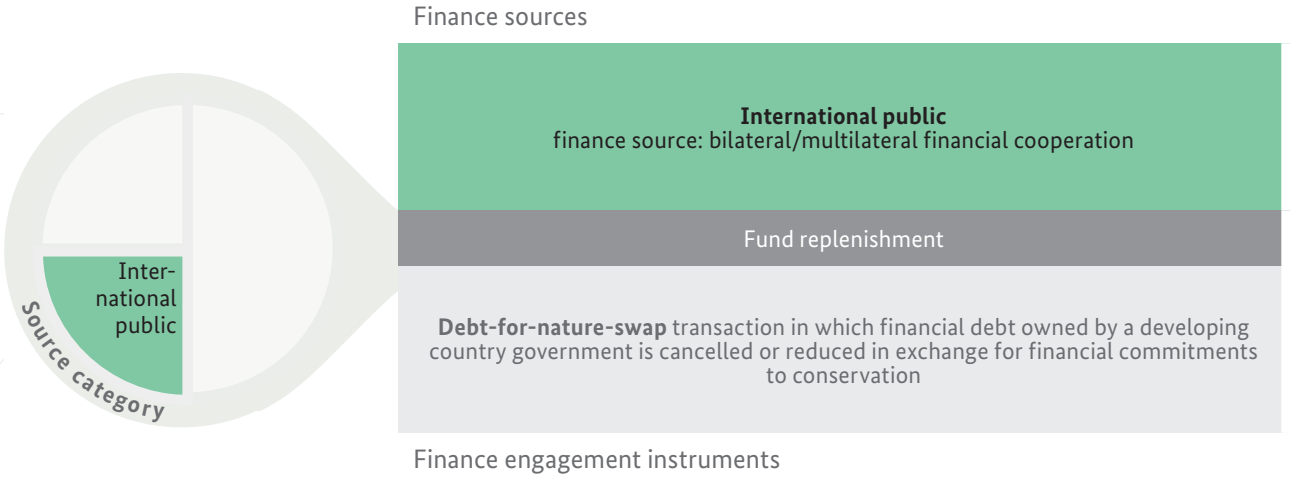
The value of the debt under debt-for-nature agreements surpassed USD 2.6 billion between 19852015 and resulted in transfers of circa USD 1.2 billion to conservation projects worldwide. Out of which, 77 percent of these transactions (USD 2 billion in value) were completed in the 1990s. Despite a downward trend in the number and value of transactions from the 2000s, a renewed interest in DFNS has emerged in recent years, particularly in connection to global pledges on climate finance. Furthermore, the emergence of a strong climate finance agenda has suggested the potential return of 'debt for climate' swaps. The likelihood of new deals is also dependent on political developments in creditor countries that have traditionally entered debt-for-nature agreements along with the use of this instrument by new creditors/donors, including from emerging markets.

Globally, the donor landscape is largely dominated by the USA, which alone was responsible for over a half of the debt being swapped under bilateralDNS (53 percent) and a third of the revenue streams for conservation (36 percent). Switzerland (16 percent) and Germany (13 percent) follow. Other countries such as Belgium, Finland, France, Italy, Netherlands, Norway and Sweden contributed, with values between 1-3 percent. 39 countries benefited from these transactions, half of which are in Latin America and the Caribbean region.

How are debt-for-nature swaps relevant for EbA?

Debt-for-nature swaps present a creative conservation financing strategy and can stipulate innovative mechanisms for enhancing conservation efforts while simultaneously alleviating debtor

Figure 17 Visualization of finance approach: discussion, carbon insetting



countries' need for hard currency. DFNS has the unique ability to provide a source of funding which facilitates the implementation of conservation programmes with long time horizons and has influenced the way that conservation organizations, donors and governments in developed and developing countries approach the topic of financing adaptation to climate change through conservation.

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