

# Innovative Financing Mechanisms to Leverage Ecosystem Based Adaptation (EbA) Finance for Vulnerable Communities

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*Abstract: Climate change accelerates economic loss and results in negative GDP growth. Vulnerable geographies and communities are the most affected by climate change, but they lack the capacity (financial and technical) to withstand and adapt to its effects. In addition to this, the mismanagement of environmental resources for economic development has reduced the natural capacity of the ecosystem to adapt to climate change. In this regard ecosystem-based adaptation (EbA) measures can play a crucial role in building resilience to climate change in vulnerable communities. However, despite its importance, there is a significant shortfall of capital flows to adaptation, and specifically to EbA initiatives. There is a critical need to develop financing strategies which address challenges of traditional means of financing. This paper explores various innovative financing mechanisms and models to leverage adaptation finance and implement EbA measures for vulnerable communities through global case studies. In addition, the study seeks to provide pathways for adaptation finance that can be tailored to the priorities of local communities.*

*Keywords: Climate change, vulnerable communities, ecosystem-based adaptation, EbA, adaptation finance, climate finance*

*JEL Classification: G20, Q54, Q56, Q57*

## 1. Introduction

Vulnerable communities across the globe face the biggest burden of climate change. The latest Intergovernmental Panel on Climate Change (IPCC) report concludes that the poor are disproportionately harmed by the impacts of climate change, including decreased agricultural productivity, effects on human health and food security, destruction of houses and enterprises, and loss of livelihoods (Birkmann, Liwenga, & Pandey, 2022). Further, multi-hazard risks arising from climate change have the potential to push the poor into persistent poverty traps, engendering recurring modalities of poverty, reducing productivity, and heightening income losses. The situation is further exacerbated by the lack of technical or financial capabilities of such vulnerable communities, which is evident from the multiple accounts of devastating impacts of climate change witnessed around the world.

This context triggered the need for the implementation of strong climate adaptation measures to build resilience in vulnerable communities. Stronger housing, the introduction of drought-resistant crops in cropping cycles, diversification of income sources, and improving social safety nets are some examples in the context of building adaptive capacities. Strategies for adaptation require focused capital flows for effective implementation, and to achieve the desired impact. Adaptation finance - one stream of climate finance - aims to help communities reduce the risks they face and the harm they suffer due to climate hazards. Ecosystem based Adaptation (EbA)

finance is a sub-class of adaptation finance aimed at financing measures that harness nature based solutions (NbS) and ecosystem services.

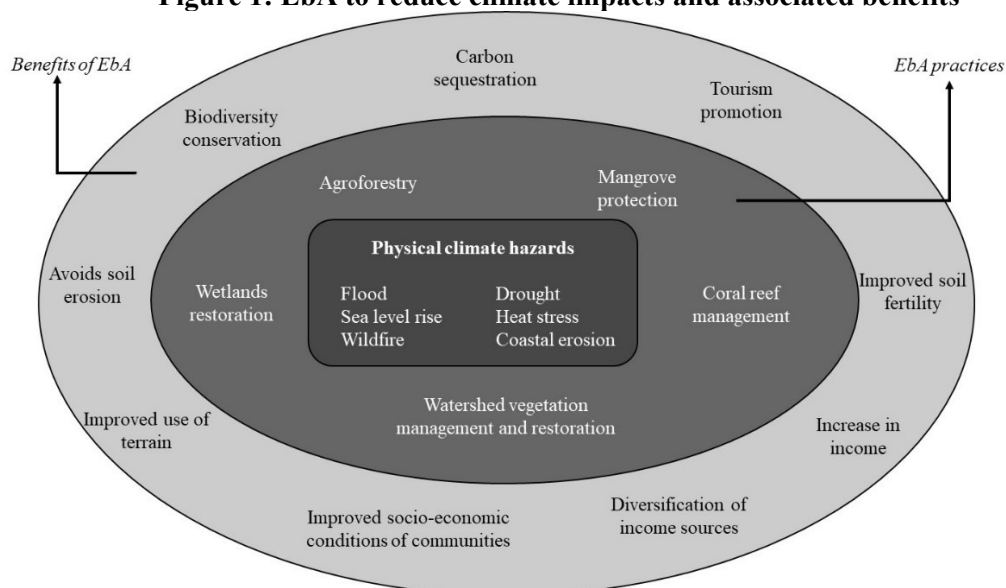
## 2. Climate adaptation – techniques and challenges in financing

Climate adaptation may be initiatives relating to infrastructural and technological initiatives (such as building defenses or early warning systems), institutional initiatives (such as regulations or new insurance schemes), behavioral actions (such as a change in livelihood strategies or migration) and nature related initiatives (such as nature-based solutions or ecosystem-based adaptation). This paper specifically discusses Ecosystem-based Adaptation (EbA) - an inclusive and long-term solution to build climate resilience within vulnerable communities.

### 2.1. Overview of Ecosystem-based Adaptation

Ecosystem-based adaptation or ecosystem-based solutions (EbS) focuses on harnessing the potential of natural systems to adapt to the impacts of climate change. A well-designed EbA has an overarching impact to address a range of challenges, apart from creating diverse adaptation benefits. The strategy, predominantly based on harnessing nature-based solutions and ecosystem services, in contrast to hard-infrastructure solutions, creates opportunities for vulnerable communities to adapt to climate change. For instance, communities sustainably leveraging ecosystem services, such as hydrological regulation, soil retention, climate regulation, and the provision of food, building materials, or medicinal plants would generate benefits for themselves and the planet. Every US \$1 invested in EbA initiatives has the potential to provide a 34x return on investment, thereby being an effective mechanism to innovative approaches with cross-cutting benefits (UNEP, FAO, 2021). This is particularly effective in emerging economies that require cost-effective approaches to build climate resilience, which can translate to multiple benefits. EbA solutions have a range of benefits (direct and indirect), which not only address the immediate impacts of climate change, but also offer long-term solutions for conserving and restoring nature and improving health, education and livelihoods of the communities (Figure 1).

**Figure 1: EbA to reduce climate impacts and associated benefits**



Source: Authors' representation based on literature review.

Majority of communities in the Global South have co-existed with nature and ecosystems for millennia. The dependency on local ecosystems for livelihoods is also much larger in these communities due to the absence of technological or financial breakthroughs, which increases the relevance of EbS for these groups. Mirroring this relevance, a recent study revealed that based on the Nationally Determined Contributions (NDCs) submitted to the UNFCCC, there is a disproportionately higher inclusion of EbA in the adaptation plans of the lower income countries (Seddon, et al., 2020). From an economic standpoint, EbA and other adaptation solutions have the potential to reduce the intensity of climate hazards by 26%, representing an economic cost of US \$104 billion by 2030, to significantly cut climate costs in vulnerable countries (IFRC, WWF, 2022). This strengthens the case

for EbA, highlighting the need to introduce, replicate and multiply approaches to integrate ecosystem considerations in project planning and delivery.

In practice, it is important to make promising approaches for sustainable EbA through stakeholder engagement with local communities, integration of long-term considerations in planning, and aligning practices with local tradition and indigenous knowledge during the design stage. Building these key elements into adaptation projects would ensure effective implementation and monitoring of outcomes for the local community and for the system at large.

## **2.2. Challenges for EbA financing within vulnerable communities**

The disproportionate concentration of climate risks in the poorest countries and communities, coupled with the lack of capital and institutional capabilities in these geographies, places ample emphasis on the need for effective capital mobilization at scale. At the same time, mobilizing capital for poor and vulnerable communities is riddled with unique challenges (OECD, 2015), as given below:

- Relevant information on climate information, forecasting data, and socio-economic policies are often inadequately available for vulnerable communities.
- Insufficient stakeholder engagement and limited collaborative efforts result in siloed approaches to adaptation, which limit the scalability and sustainability of interventions.
- Failure to design EbA initiatives and adaptation financing mechanisms based on the local context particularities, with buy-in from affected vulnerable communities results in unsustainable projects.
- A lack of awareness among local communities, of the funding resources and availability is a barrier to raising adaptation finance.
- Good governance in the form of robust policies, legal and regulatory frameworks are essential elements of successful adaptation projects. A limited coherence on these aspects obstructs the finance flows for adaptation activities.
- The inability of vulnerable communities in developing countries to meet safeguards and standards of multilateral funds (including appropriate risk management, monitoring, and evaluation capabilities) hinders attracting adaptation finance.

## **2.3. The current state of EbA financing**

For the past decade, there has been an uptake in the adoption of ecosystem-based approaches. UNEP alone is supporting over 45 EbA projects that aim to restore around 113,000 hectares of ecosystems and benefit 2.5 million people (UNEP, 2022). Despite this uptake, a significant funding gap remains. Finance flows to EbA projects at global level are currently US \$154 billion annually, falling short by over US \$230 billion of the investment required by 2025. Participation from the private sector is also low, with only a small share of 17 percent of the current financing coming from private sources (UNEP, ELD, 2022). Further, there is a vast difference between global adaptation finance flows and capital directed toward climate mitigation initiatives.

Going forward, it is expected that the existing financing gap will widen, given the intensifying climate impacts. Moreover, vulnerable communities face a range of barriers and challenges in accessing adaptation finance, as discussed earlier, including the long tenor of such projects, inadequate attention to local contexts (resulting in the exclusion of vulnerable communities), and the lack of technical capability to monitor and evaluate projects, since private investments are based on project efficiency, risk management, and internal returns. Therefore, there is an urgent need to develop financing strategies that can upscale the quantum of adaptation finance to support vulnerable communities.

## **3. Financial innovations for EbA**

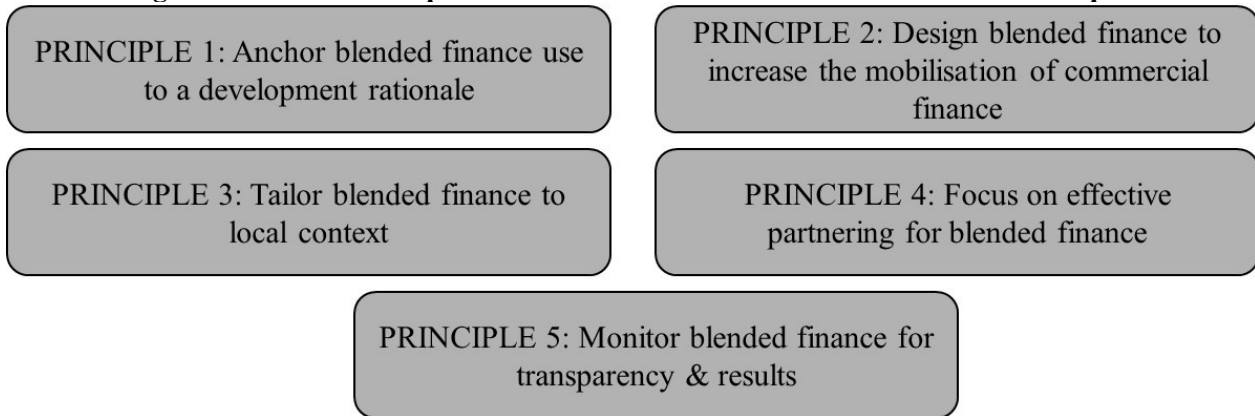
Financing approaches for EbA projects vary through the different phases of the initiatives and are usually covered by public finance from domestic or international sources. Public sources such as national funds can be utilized to maintain consistency in project implementation but are usually insufficient to cover the total costs of the project. Rising pressure on the private sector to be more responsible for its business actions has emerged as an opportunity to diversify both the financing sources as well as the nature of projects for EbA initiatives. While there is a lack of many institutionalized examples for such interventions, especially across different scales, ecosystems, finance volumes, implementation stages, and timescales, the following innovative financing mechanisms have been identified as having the potential to be deployed at different stages and/or levels.

### 3.1 Blended Finance

Blended finance is strategically using development finance and philanthropic funds to mobilize private capital in emerging markets. Blended finance is a structuring approach that applies risk-tolerant capital from public and philanthropic sources for de-risking and attracting additional private capital. Its long-term nature and high risk-bearing capacity, which are essential for EbA initiatives, render it a useful financing mechanism for adaptation projects. However, sustainable forest management, agroforestry, agriculture, and sustainable management of coastal and marine ecosystems currently account for just over 5% of the global blended finance transactions – this indicates the elevated need and opportunity to apply blended finance solutions for EbA (GEF, 2023).

The OECD’s Blended Finance Principles (Figure 2) elucidates the core elements of a blended finance transaction (OECD, 2017). The structure is required to target a developmental need, with one or more sustainable development goals which are contextual to the communities in a particular region. There is a catalytic nature of public or philanthropic capital to raise multiples of private sector capital, which also helps in bringing down the blended cost, given its concessional nature. This makes it more affordable for target beneficiaries. Principle 3 of the OECD Blended Finance Principles specifically addresses the need to tailor transactions to the local context, which is a core tenet of EbA projects.

**Figure 2: OECD Development Assistance Committee Blended Finance Principles**



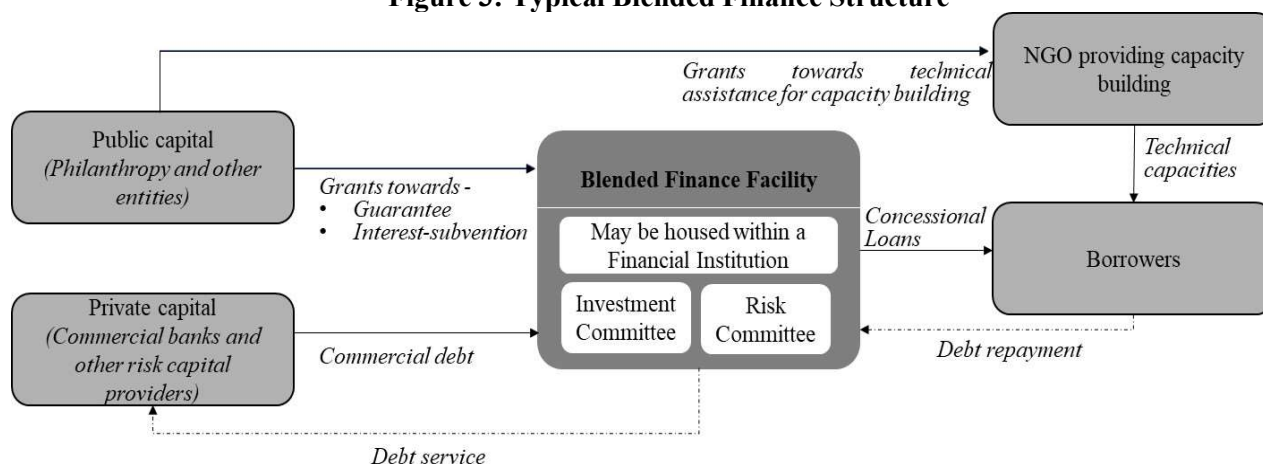
Source: OECD DAC Blended Finance Principles (2017).

Blended finance transactions typically cover the following components which may be tailored depending on the needs of the EbA project:

- **Design and preparation of funds:** The public/grant funding is utilized for the design and preparation of the transaction, supporting proof of the concept, establishing the baseline and monitoring process, and providing the pre-commercial funding required in the initial stages of the investment thesis. This enhances the bankability of the project or enterprise, therefore, attracting more private capital.
- **Technical assistance funds:** A critical challenge in mobilizing private finance for EbA for vulnerable communities is the lack of technical capabilities to deliver on the project mandates. A component of the grant funding usually focuses on technical assistance strategies for key stakeholders such as the local communities. This becomes crucial to the successful implementation and commercial viability of the project.
- **Guarantees:** To de-risk EbA projects, it becomes important for investors to receive a risk guarantee which covers potential losses in full or in part. Typical forms of guarantee include a pari-passu guarantee, a first loss default guarantee, or a fixed percentage of losses that may be covered by the public capital component. This guarantee component is critical to reduce the overall risk of the project and thereby attract more private capital.
- **Concessional finance:** In this strategy, debt or equity is provided at lower than market rates, lowering the overall cost of capital. The interest sub-vented may be covered by philanthropic funds or public capital. In some cases, concessions may be structured based on the achievement of a pre-agreed set of results (results-based financing), which gives assurance to the investors that the intended impacts would be delivered.

Figure 3 demonstrates a simple blended finance structure with various components of public and private capital.

**Figure 3: Typical Blended Finance Structure**



Source: Authors' representation.

Additional layers such as off-takers (to demonstrate market linkages), monitoring and evaluation of ecosystem services, and differentiated guarantee providers may be introduced and tailored based on the individual requirements.

### 3.2 GSS Bonds

Bonds, also referred to as fixed-income instruments, are used by governments, financial institutions, and companies to raise money in the form of borrowings. Bonds modified to serve the purpose of climate action, such as climate bonds, green bonds, blue bonds, sustainability bonds, and sustainability-linked bonds, can be utilized to fund EbA initiatives. Green bonds have thus far predominantly focused on greenhouse gas mitigation, rather than build adaptive capacities or resilience. However, given the increasing relevance of building resilience, the GSS (Green, Social, and Sustainability) bond markets are well placed to focus on issuances financing adaptation. Such bonds can be issued by any type of institution such as banks, corporates, governments, or international organizations. Similar to the 'green' certification of these bonds being done by independent verifiers such as the Climate Bonds Initiative, it is important to establish robust resilience criteria across sectors, basis which such bonds may be issued to fund adaptation and EbA projects.

To leverage bonds for financing EbA projects, a suitable framework needs to be developed, which may be based on the following International Capital Market Association (ICMA) principles (ICMA, 2021):

- **Use of proceeds:** This identifies the list of projects which are eligible to be financed through the issuance of a green bond. In the case of EbA projects, the umbrella criteria will need to be climate change adaptation initiatives, with specifications related to ecosystem-based activities and approaches.
- **Process for project evaluation and selection:** The issuer needs to communicate the adaptation objectives of the projects, the process for determining the eligibility of the projects, and the process for evaluating the environmental and social risks of the projects.
- **Management of proceeds:** The net proceeds of the bond need to be tracked by the issuer in a formal internal process linked to the issuer's lending and investment operations for eligible EbA projects. Additionally, during the tenor of the bond, it is recommended that the net proceeds are periodically adjusted to reflect the allocations made to eligible EbA projects.
- **Reporting:** The information about the use of proceeds needs to be updated at regular intervals. The annual disclosures would include information about the selected EbA projects, allotted funds, and expected impact. The periodic iterations of the disclosure reports need to include the progress on each of these components.

In addition, specifically for adaptation purposes, catastrophe bonds are also gaining popularity. Catastrophe bonds are high-yield bonds that aim to provide financial protection against climate and disaster risks. The substantial capability of EbA approaches to reduce climate risks makes it a compelling case for insurance schemes to provide a convincing link for investment into EbA.

### 3.3 Carbon credits

With the increasing scrutiny of the carbon footprints of enterprises, offsetting emissions has become a popular strategy to comply with global standards and expectations. EbA approaches can capitalize on this market by the sale of carbon credits, as many prominent EbA mechanisms such as reforestation, sustainable forest management, and sustainable agriculture are inherently carbon friendly. In the long term, these solutions serve as carbon sinks and can be effectively tapped as a means of financing.

A carbon credit is a tradable certificate or permit that represents one tonne of CO<sub>2</sub>-equivalent emission reduced, avoided, or sequestered through technology and nature-based solutions (Belianska, et al., 2022). The proceeds from these sales can be channelled back to the EbA projects for upscaling and broad-scaling. However, this is applicable only after the project is well underway, and therefore, alternative financing mechanisms need to be used during the project development and implementation phase. While the Clean Development Mechanism (CDM) by the UNFCCC provides an opportunity for developing countries to earn certified emission reduction (CER) credits for their emission-reduction projects, which can then be sold to industrialized countries to meet a part of their emission reduction targets under the Kyoto Protocol (UNFCCC, 2022), the development of voluntary carbon markets has helped in decentralized mechanisms to buy and sell carbon credits.

The Taskforce on Scaling the Voluntary Carbon Market is led by the private sector and aims to scale voluntary carbon markets. In its report released in January 2021, the Taskforce has suggested that up to two-thirds of the carbon markets could be made up of NbS (Nature based Solutions) by 2030 (TSVCM, 2021). This opens up a substantive funding avenue for NbS. However, the report warns that carbon markets should only support ecologically and socially responsible nature-based interventions and not be used as a replacement for decarbonisation pathways. Further, enhancing reporting requirements and regulatory reforms to address the demand-side constraints are imperative to enhance this market and make carbon credits a more viable financing solution.

### 3.4 Payments for ecosystem services (PES)

Ecosystem services are defined as “the direct and indirect contributions of ecosystems to human well-being” (Earthwise Aware, 2023). Water purification, regulation of water cycling, biodiversity, maintenance of soil fertility, and the regulation of the local climate are categorised as ecosystem services, while food, fuel, and fibre are considered to be ecosystem goods (Wamsler, et al., 2016). These goods and services are often by-products of EbA projects and can be leveraged to raise financing for project operations. PES programs are increasingly popular, especially in developing countries, as they are voluntary and incentive based, rather than being coercive.

Similar to other incentive-based mechanisms, Payment for Ecosystem Services (PES) compensate individuals or communities for undertaking actions that increase the provision of ecosystem services, with users paying for the services. This mechanism is therefore based on the ‘user pays’ concept. Various factors influence the structure of PES schemes, including the form of incentive or payment; the services provided; the providers, the implementers, and the intermediaries; whether incentives are provided for individuals or communities; eligibility criteria for participation; and the method of funding payments (Jack, Kousky, & Sims, 2008). Challenges for successful implementation include insecure land tenures and the often-high project transaction costs associated with PES schemes.

The following steps are crucial to implementing a successful PES strategy (Forest Trends, The Katoomba Group, and UNEP, 2008):

- Identifying ecosystem service prospects and potential buyers: This includes defining and measuring the ecosystem services and identifying the marketable value of the service. The step is followed by the identification of the potential buyers and the determination of the sales strategy (individual/community).
- Assessing institutional and technical capacity: The legal, policy, and land ownership context of the ecosystem services need to be assessed along with the market regulations, landscape, and gaps for PES. In addition to this, complementary and support services and organizations also need to be identified.
- Structuring agreements: The business plan for the PES model is designed with a focus on reducing transaction costs. Payment and contract types can then be made context specific to the EbA project.
- Implementing PES agreement: The PES management, evaluation and monitoring plans are crucial to ensure that a successful agreement can continue to be carried out successfully.

### 3.5 Microfinance

Microfinance encompasses financial services offered to individuals from lower socio-economic backgrounds, which range from savings accounts, checking accounts and fund transfers to microinsurance and microcredit. Microfinance institutions (MFIs) cater to some of the most vulnerable communities (Bhavsar, 2022) and are a good entry point to promote EbA approaches in vulnerable communities. Capacity building and product development for EbA are some of the areas where MFIs can facilitate to promote the uptake of EbA practices. In addition to providing access to vulnerable communities through their service offerings, MFIs have the know-how and information networks required to track a large number of small transactions. This is especially pertinent in the context of EbA, which requires the financing of multiple interventions that involve the modification or adjustment of existing practices. Inadequate screening, monitoring and enforcement capacities of poor communities make access to formal finance a challenge. Microfinance circumvents this challenge through innovations such as group lending, smaller loan ticket sizes, frequent repayments, the establishment of compulsory savings accounts by borrowers, and takes advantage of peer monitoring and joint liability, which makes the model a success (Agrawala & Carraro, 2010).

While contextualizing microfinance for adaptation, it is essential to consider the additional stress and risks imposed by climate change on the livelihoods of the poor, especially physical climate hazards. Therefore, structuring repayment schedules to account for the reliance on seasonal occupations and the uncertainties introduced by climate change is imperative, which can include facilities for flexible repayments or reduced interest rates. These adjustments would enable microfinance to be a powerful tool for EbA financing.

## 4. Case Studies

This section enumerates select case studies which have demonstrated use of innovative financing mechanisms to fund successful and impactful EbA projects. The case studies chosen in this paper focus on different geographies and financing instruments to highlight the context and relevance of these mechanisms.

### 4.1. Case Study 1: Microfinance to finance EbA in Columbia and Peru

**Context:** The South American countries Columbia and Peru are agrarian economies, which are also biodiversity hotspots. Climate change has resulted in an increased frequency of extreme weather events in the region, resulting in a decline in agricultural yield and impacting the livelihood of vulnerable populations in both countries. As microfinance had proven to be an efficient instrument in improving the living standards of marginalized communities and promoting financial inclusion of the poor in these countries, in 2012, The International Climate Initiative's Microfinance for Ecosystem-based Adaptation (MEbA) project was implemented by UNEP and the project was funded by BMU (GIZ, 2018). The project was not only aimed to address the climate related challenges, but also do so in line with EbA approaches, to develop and democratize EbA for the local communities.

**Objective:** The objectives of the project included increasing awareness regarding the impacts of climate change and the opportunities presented by EbA; training the staff on climate change and conservation; managing climate-related agricultural risks; developing micro-loans and services for EbA; and fostering technical partnerships to enhance EbA capabilities.

**Target group:** The farmers targeted in this project were characterized by high vulnerability to climate change due to low income (approximately US \$500/year), inadequate access to social or financial services, lack of access to diversified income sources, low technical capabilities, and small holdings (between 1 and 10 hectares).

**Financing mechanism:** The approach of the project involved integrating climate risk considerations in credit methodologies for MFIs. In addition to this, farmers were also presented with options to reduce climate risks, improve income diversification and undertake an ecosystem-centric approach to farming. As MFIs were already offering products to the agriculture sector, MEbA products were embedded within existing product lines of the MFIs, as given below:

- Working capital loans: These were used to finance working capital needs such as seeds and fertilizers amongst others. The repayment schedule for these loans was scheduled based on the harvesting season. Under this scheme, the measures contributing to EbA included organic fertilizers, crops diversification, and integrated pest and nutrition management.
- Fixed asset loans (medium-term): These were utilized to finance fixed assets such as equipment and machinery. The loans were provided based on varied economic activities and thus their repayment

schedules were spread across several seasons. EbA measures included in this mechanism were rainwater reservoirs, aquaculture, solar dehydrators, and sustainable management of nutrients, soils, and pests.

- Community loans (short-medium term): These loans were used for community investments such as seed banks, terraces, fog catchers, and sustainable forest management.

**Impact:** 20 EbA products were offered by MFIs, resulting in the disbursement of over 11,000 EbA-specified micro-loans, amounting to approximately US \$15 million of private investment towards sustainable adaptation alternatives. In addition, 7,000 small farmers received training on EbA practices under the program.

#### **4.2. Case study 2: Blended Funding to finance EbA by The HAF Tree Nursery, Morocco**

**Context:** Erratic weather conditions and unsustainable agricultural practices have a significant impact on rural Moroccan communities. Climate change impacts in the region include rising sea levels, storm surges, reduced precipitation, an increase in drought, and coastal flooding. Considering that 42 percent of the population of the country resides in rural areas with a high dependency on the agriculture and fisheries sector, the need for adaptation is urgent (IFAD, 2008). Given the livelihood reliance on ecosystem services, the US-Moroccan NGO, the High Atlas Foundation (HAF) has implemented the tree nursery projects that align with EbA, as a suitable adaptation approach (GIZ, 2018).

**Target group:** The project targeted the agrarian rural communities of Morocco most affected by climate change. It also focused on indigenous communities to ensure inclusion and provide them with the necessary capacities to secure their livelihoods.

**Objective:** The community-based projects aimed to plant fruit-bearing trees in order to reduce deforestation, diversify land use, generate income for communities, and support the inclusion of vulnerable groups in society.

**Financing mechanism:** The financing route for this project was a blend of public-private partnerships (PPP), ecosystem services, and carbon markets. The NGO received funding from governmental organizations, donors, and crowdfunding routes. In addition to this, there was income generated by carbon credits, by partnering with those who required these credits to offset their climate impacts.

- PPP: The upfront capital needed for the projects was obtained through public sources such as grants from governments and inter-governmental organizations. This was used for initial project plans and investment in machinery. The public capital was supported by philanthropic capital in the form of donations and crowd-funding activities to support ongoing operations. The most prominent private player in this financing mechanism was Ecosia, a Germany-based social business, aiming to plant 1 billion trees. The revenue for this business (a search engine) is generated via advertisements, and close to 80 percent of the surplus income from ad revenues was used to support reforestation projects.
- Ecosystem services: To enhance the complete value chain, HAF utilized the grant funds to create an organic agriculture system and to acquire the necessary biological certifications for its products. The increasing demand for organic goods globally was mirrored in Morocco thus creating a market for the ecosystem goods produced in the nursery projects. The profits from the sale of the ecosystem services were utilized by the community at their discretion either for general development purposes or reinvested in the nurseries.
- Carbon markets: The nurseries developed through the EbA project serve as carbon sinks. Though the process of acquiring the certification for carbon credits and tracking and monitoring the system is challenging, HAF has secured a potential buyer for its first batch of carbon credits. Upon successful implementation of the carbon credit system, an ongoing stable source of finance will be established to sustain the project.

**Impact:** Since the start of its implementation in 2006 the HAF project has grown to now manage 11 organic fruit tree nurseries in 7 provinces in Morocco with a total capacity of 2.44 million seeds. The program has had significant impacts across its individual nursery initiatives. The projects are community-based, targeting vulnerable populations and providing them with livelihood sources and meaningful work. The programs have cross-cutting impacts across agriculture, youth, women's empowerment, water, culture and capacity building, keeping inclusivity and participatory approaches at the center of interventions. On the financing side, the blended approach to raising capital has proved to be apt for EbA approaches used by HAF, addressing the requirements of investment and operational costs being complemented by each funding source.



### 4.3. Case study 3: Sovereign blue bond to support EbA, Seychelles

**Context:** Similar to other small islands, Seychelles faces climate change hazards such as erratic rainfall patterns leading to flooding and landslides; increase in sea temperature; changes in the acidity of the ocean, increase in the frequency and intensity of storms and suchlike. The vulnerability of the communities in the country is exacerbated by the heavy dependence on fisheries and the tourism sectors for livelihoods (The World Bank, 2022). However, transitioning to sustainable fisheries can be a significant cost for a small island state like Seychelles. Given the decline in marine resources and the vulnerability of local communities, the Republic of Seychelles launched an innovative instrument - a sovereign blue bond with the World Bank and Global Environment Facility in 2018.

**Target group:** The main beneficiaries of the project were community members whose livelihoods depend on marine resources and the ocean. Among them are artisanal and semi-industrial fishermen, operators in the tourism and seafood value chain, including aquaculture, and national and local institutions engaged in the management of marine resources, including fishermen's associations and government agencies.

**Objective:** The bond sought to increase Seychelles' resistance to climate change and conserve marine resources by promoting sustainable fisheries through proper control and management. The primary approach for the projects financed involved wetland and forest restoration.

**Financing mechanism:** The blue bond which aimed to improve the management and conservation of marine areas and strengthen the seafood value chains in Seychelles, has the following structure:

- The ceiling value for the bond is US \$15 million with a maturity period of 10 years. A partial guarantee is provided by the World Bank amounting to US \$5 million. A concessional loan worth US \$5 million is provided by the Global Environment Facility which will partially subsidize the payment of the bond coupons. These instruments also serve as an example of blended finance, where international public finance serves as the credit enhancement instrument. This allows for a reduction in the price of the bond by partially de-risking the investment of private investors, as well as reducing the effective interest rates by subsidizing the coupon.
- Given the considerably small volume of the bond it was placed with three international impact investors - Calvert Impact Capital, Nuveen, and Prudential.
- The funds raised by the blue bond were used to capitalize the Blue Grants Fund (US \$3 million) and the Blue Investment Fund (US \$12 million), which provide financing for relevant projects in marine and ocean-related activities, including EbA projects. The Seychelles Conservation and Climate Adaptation Trust (SeyCCAT) and the Development Bank of Seychelles (DBS) administer funds from the Blue Grants Fund and the Blue Investment Fund respectively.

**Impact:** The blue bond raised US \$15 million from international investors. This highlighted the potential for developing countries to mobilize private capital for adaptation activities. Specifically on adaptation, the bond aimed to strengthen the country's resilience to climate change impacts by expanding marine protected areas to 30% of their Exclusive Economic Zone and promoting sustainable fisheries using an ecosystem-based approach.

## 5. Conclusion

The scoping review in this paper presents key insights and best practices regarding EbA financing mechanisms that have been successful in other geographies. It is critical to tailor the interventions and the related financing to suit the local context, for the success of such adaptation projects. Designing and/or implementing EbA projects in silos is not sustainable, much less up scaled. A value chain approach that builds on the network of businesses and donors willing to invest, is the way forward. This can create an extensive network of potential funding sources that can be capitalized to scale projects and interventions. MFIs, technical partners, and government outreach programs need to work together to develop technical capacity, including the ability to view adaptation as a long-term process, requiring several planned EbA investments.

Reconciling public and private finance is therefore important to achieve the varied needs, investments, and operation costs of EbA projects. While public funding may be adequate during the project's conception and execution phases, in the long run, attracting private sector capital is essential to ensure sustainability. Governments, DFIs, or multilateral agencies committing to the availability of financing, both towards de-risking, as well as providing concessional capital can be an effective means to give private investors the confidence and comfort to invest in long-gestation adaptation sectors. In essence, as traditional forms of financing may not necessarily work due to the unique characteristics of EbA projects, innovating financial products and structures,

having a collaborative approach, and involving various stakeholders like Governments, DFIs, and financial institutions are crucial to enhance capital flows to long-term adaptation initiatives.

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