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OPERATIONALIZING SUSTAINABLE FINANCE FOR ECOSYSTEM-BASED ADAPTATION PROJECTS

A Primer for Banks and Financial Institutions

This primer is a publication of the Asian Institute of Management Gov. Jose B. Fernandez, Jr. Center for Sustainable Finance based on the unpublished paper "A Technical Analysis of Financing Ecosystem-based Adaptation in the Philippines," commissioned by Earth Security, with funding from the International Climate Initiative of the German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety.

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Preface

This primer is a concise version of "A Technical Analysis of Financing Ecosystem-based Adaptation in the Philippines" with a step-by-step guide for bankers to help operationalize the financing of ecosystem-based adaptation (EbA) projects. This report provides an overview of financing EbA projects to help the banking and finance community appreciate the value of ecosystems and their role in mitigating the risks and negative impacts of climate change through EbA, which may result in more resilient businesses and communities. Earth Security commissioned this primer as part of its overall strategy to safeguard and value the earth's ecosystems. The project is funded by the International Climate Initiative of the German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety.

Disclaimer

The analysis and recommendations expressed in this primer are those of the research team and do not reflect the views and opinions of the Asian Institute of Management Gov. Jose B. Fernandez, Jr. Center for Sustainable Finance (AIM JBF Center) or Earth Security or the International Climate Initiative of the German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety. Neither the research team nor the AIM JBF Center nor Earth Security nor the International Climate Initiative of the German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety accepts any responsibility or liability for relying on the content of this primer by any person, organization, or community.

Foreword

The monetary authority of the Philippines, Bangko Sentral ng Pilipinas (BSP), has issued a requirement for banks to offer more sustainable finance products. This provides banks with a clear regulatory signal about the importance to harness the growing flow of capital towards green finance as a tool for sustainable growth and green recovery.

The intensity of each new typhoon season in the Philippines attests to the country's significant exposure to climate change. Banks will have to increasingly consider how they build the resilience of their portfolios by financing climate adaptation, in addition to the main staples of green finance, such as sustainable energy, transport, and infrastructure.

In order to do this, banks must better understand readily available opportunities to finance 'ecosystem-based adaptation' (EbA) projects. This involves using nature and ecosystems to increase the resilience of communities and infrastructure to climate change. EbA makes business sense for banks and their clients.

Think about the coastal protection provided by dense mangroves; how coral reefs reduce the intensity of tidal waves; or the resilience against floods provided by forested hills. Now consider the opportunity to reflect these values in a company's balance sheet, recognizing the cost-effective way of protecting assets, preserving the value of coastal real estate, to name a few benefits.

This primer will help bankers in the Philippines to understand and begin to consider EbA as part of their portfolios and their compliance with BSP directives. Natural assets are still abundant in the Philippines, but the window of opportunity to act will not be there long as environmental degradation continues to reduce the value of natural capital.

Earth Security is delighted to be working closely with the Asian Institute of Management Gov. Jose B. Fernandez, Jr. Center for Sustainable Finance to advance its mission of linking global finance with nature's capital. This primer is one of many ways in which we are supporting the transition of the financial sector to embrace the opportunities of working in partnership with nature. We look forward to your continued involvement.

Alejandro Litovsky
Founder & CEO, Earth Security

Executive Summary

Ecosystem-based adaptation (EbA) is a nature-based solution for addressing the impacts of climate change on people and their environment. Making the economic and financial case for EbA to private sector stakeholders requires evidence that investments in these projects will lead to benefits for companies that are willing to get involved in such an undertaking. There is also a need to demonstrate to financial institutions that developing financing mechanisms for EbA as part of their product portfolios is a good business decision and reflective of the current business environment.

The Bangko Sentral ng Pilipinas (BSP), the monetary authority in the Philippines, issued BSP Circular No. 1085 in 2020, which requires banks to offer sustainable finance products to support economic growth and provide lasting benefits for both clients and society while reducing pressures on the environment. The legislation acts as an opportunity to advocate for banks to make EbA projects eligible for sustainable financing.

Three Philippine banks have published their respective sustainable finance frameworks, which describe the inclusion criteria for eligible projects and describe the processes for managing the portfolio. EbA projects, however, are not explicitly stated in the current sustainable finance frameworks of these banks. Green bonds and green loans that adhere to different international standards are the typical sustainable finance products offered in the Philippines. Interviews with top executives of Philippine commercial and government banks elucidate the different capacities, enabling factors, and barriers for banks to finance EbA projects. Key findings include limited knowledge of EbA and its value to businesses. Banks are willing to finance an EbA project if it can be integrated into the company's cash flow.

The primer presents a theoretical case study for sustainable finance using the Trinity Project, a three-fold EbA approach to rebuilding Hijo Resources Corporation's coastal ecosystem, which aims to plant 20 hectares of mangrove forest, grow 80 hectares of seagrass meadows, and create a fringing artificial coral reef environment. The case presents how the Trinity Project's revenue model can be integrated into the company's cash flow, which can then be used to apply for a sustainability linked loan. The company can also explore a blended finance model with the local government to expand the project to cover public coastal areas as well.

The primer concludes with a step-by-step guide for bankers to help them operationalize the financing of EbA projects in the Philippines.

Operationalizing Sustainable Finance for Ecosystem-based Adaptation Projects: A Primer for Banks and Financial Institutions

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1. Climate Change and Ecosystem-based Adaptation

Ecosystems, communities of organisms that interact with each other and with the physical environment, provide a number of services that improve human wellbeing and contribute to the socioeconomic development of a country.[1] Investments have been made in the last two decades to maintain the equilibrium of these ecosystems and allow communities to better adapt to climate change.[2][3]

Coastal ecosystems are among the world's most productive and diverse environments, but these zones are also some of the most vulnerable areas to climate risk.[4][5] Communities and businesses located along coastlines experience risks such as sea level rise, increased flooding, accelerated erosion and sedimentation, habitat destruction, loss of terrestrial and aquatic biodiversity, and water pollution, further compounded by the prevalence of tropical cyclones and extreme weather events.[6][7][8] Such impacts are more seriously experienced by coastal communities in developing countries in the Asia-Pacific region, like the Philippines, since they have limited access to the resources necessary for resilience.[9]

The United Nations Environment Programme[10] defines EbA as "*an initiative that use biodiversity and ecosystem services as part of an overall adaptation strategy to help people and communities adapt to the negative effects of climate change at local, national, regional and global levels*."

Healthy ecosystems play a vital role in increasing climate change adaptation and building resilience through the delivery of indirect and direct benefits for human wellbeing[10] and creating opportunities for sustainable economic prosperity.[11] Coastal ecosystems such as coral reefs, coastal wetlands, mangroves, salt marshes, and seagrass meadows offer opportunities for EbA.

Examples of EbA interventions include:
- Restoring fragmented or degraded natural areas
- Protecting watersheds
- Restoring floodplains
- Connecting habitats
- Protecting natural infrastructure from ridge to reef

Advantages of EbA over conventional projects include:
- Replicate or restore what nature has already designed
- Protect most of the world's biodiversity corridors
- Cost-effective compared to infrastructure investments
- Accessible and relevant to the context of developing countries
- High benefit-to-cost ratio

Estimates indicate that annual global investment of USD 45 billion in EbA could reap up to USD 5 trillion each year in economic benefits.[12] Effective EbA approaches require a holistic understanding of the different ecological and socioeconomic processes that determine wellbeing and security.[13]

2. Private Sector Gaps in Financing EbA Projects

Estimates indicate that the Philippines needs USD 12 to USD 15 billion to meets its commitments to the Paris Agreement and reduce up to 70% of greenhouse gas emissions by 2030.[14] The role of the private sector has since emerged as the key to addressing the challenges of climate change since dealing with the consequences of climate risks usually rests with private businesses and households.[15] Small and medium-sized enterprises, in particular, are most vulnerable to the impacts of climate change because of limited awareness of climate risks.[16]

Many enterprises have already directed their efforts on exceptional environmental performance as a top-level corporate commitment.[17] Shareholders are increasingly selective in their investment choices, increasing pressure on companies to report on their environmental and social impact.[18][19] The use of independent standards and trackers are being mainstreamed, including the Global Reporting Initiative standards and Institutional Shareholder Services' Environmental and Social Disclosure Quality Score. These track the quality of companies' environmental, social, and governance (ESG)[3] disclosures, allowing potential investors to compare companies across hundreds of factors.

Earth Security mapped out the nature-based projects being implemented by the country's private sector in 2018.[20] Extractive industries, along with infrastructure and utilities, lead the way, covering 59% of the projects. In general, industry-initiated conservation and mitigation projects outnumber adaptation initiatives across most sectors. Only agribusiness corporations tend to concentrate their efforts on adaptation, perhaps due to their dependence on the ecosystem. The implementation of these activities may be integrated as part of the company's environmental management system, outlined in the environmental compliance certificate (ECC) for regulatory compliance, or part of the development of a new product or service.

[3] MSCI (n.d.) defines ESG Investing, a term often used synonymously with sustainable investing, socially responsible investing, mission-related investing, or screening. ESG Investing considers environmental, social and governance factors alongside financial factors in the investment decision-making process.

3. The Role of Banks and Sustainable Finance in Financing EbA in the Philippines

Banks and financial institutions have also committed to support the greening of the private sector by investing in climate-friendly assets and developing sustainable financing products for their clients.[21] The Task Force on Climate-Related Financial Disclosures was established to strengthen the financial system and enable the growth of sustainable finance by developing standards for consistent climate-related financial risk disclosures.[22]

The Bangko Sentral ng Pilipinas (BSP), the monetary authority in the Philippines, joined the Network for Greening the Financial System as part of its initiatives to enhance the role of financial institutions in managing climate-related risks and mobilize funding to spur the transition of the Philippines towards a sustainable economy.[23] The central bank also issued BSP Circular No. 1085 in 2020, which requires banks to offer sustainable finance, defined as "*any form of financial product or service which integrates environmental, social, and governance criteria into business decisions that support economic growth and provide lasting benefit for both clients and society while reducing pressures on the environment*." The concept also includes green finance, which facilitates the flow of investments towards "*green economic activities and climate change mitigation and adaptation projects*."

The BSP Circular provides an opportunity for banks to include EbA projects as eligible projects for sustainable financing. One of the requirements is for banks to develop their respective sustainable finance frameworks that describe the inclusion criteria for which types of projects to finance and/or refinance and provide the guidelines for the selection process for the projects, management of proceeds, and reporting of allocations and impacts. EbA projects can be included in the framework.

3.1 GREEN BONDS

The ASEAN Capital Markets Forum and its corresponding Roadmap for ASEAN sustainable capital markets[24] regulate the development and labelling of the green bond market in the region. Green bonds are used to finance projects with environmental benefits, while social bonds raise funds for projects that improve social outcomes, and sustainability bonds are used to finance projects that have both environmental and social benefits.[25] Issuers often exhibit sustainable business philosophies and high corporate social responsibility practices; green bonds provide financing for these practices in lieu of passing it on to the consumer through premium pricing.[26][27] Green bonds are also attractive to industries where the natural environment is critical to business operations.[28]

There have been 17 green bond issuances in the Philippines since 2016 as listed in Appendix A, with issuances increasing in frequency and in the amount per issue with each succeeding year. Bonds issued by financial institutions fund a broader range of eligible sustainability projects while corporate issuers focus on projects that are within their line of business. Philippine green bonds are commonly issued in PHP if they are to be listed as local bonds, and USD if they are listed in an international exchange. The

growth of green bonds in the Philippines is further legitimized by the BSP's investment of USD 150 million in green bonds as part of its foreign reserves; the Bank for International Settlements launched the green bonds.[29]

3.2 GREEN LOANS

Green loans are the newest sustainable financial instrument, filling in a gap since not all borrowers are appropriate for bonds because participation in the bond market requires sufficient earnings.[30] Green loans are well positioned to serve small and medium enterprises (SMEs) due to their smaller size and earnings. SME borrowing is critical in the development of the green loan market.[21] Green loans, on average, have a 15-year term and their 5.7% risk of default is lower than the 8.5% for conventional loans.[31] Some green loans directly link margins with the corporation's progress on ESG objectives[32] while the pricing of green loans is an attractive feature for firms that hit their sustainability targets.[31] Moreover, the breach of green covenants on the use of the loan proceeds is not an event of default.[33]

In the Philippines, the BSP estimates that banks allocated about 10.6% of their total loan portfolio in 2019 to green projects.[30] More green bonds are issued compared to green loan portfolios. Most banks approve loans for sustainable projects but only a few institutions have specific loan portfolios, which are listed in Appendix B. To spur green lending to smaller firms, the BSP is assessing whether to include lending for green projects as compliance with the Agri-Agra Reform Credit Act of 2009, which

requires banks to earmark 25% of their loanable funds to farmers and fisherfolk.[34] EbA projects are currently not explicitly stated as eligible projects for green loans with borrowers needing to rationalize EbA against acceptable projects, showing how mangroves can build climate resilience, for instance.

4. Key Perspectives from Commercial Banks with Sustainable Finance Frameworks

Interviews were conducted with current and former senior executives of the largest commercial banks in the Philippines and a government financial institution. A video presentation on sustainable finance from another commercial bank was also used. The succeeding summaries are based on the content analysis of these interviews and provide a rationale for developing sustainable finance products.

- The BSP Circular and the Securities and Exchange Commission sustainability reporting guidelines for publicly listed companies are necessary to scale up ESG investments in the country, ensuring that banks remain profitable, but with a purpose.
- Climate risk is equated to financial risk and incorporating ESG factors in financial products requires a real business proposition, ensures that projects will be technically acceptable, and will run as planned, providing a return on investment for the client, and thereby banks are able to secure repayment [see Table 1]. By investing in these kinds of companies, banks are also able to future proof their own business model.
- The market growth for ESG bond investment is attributed to international institutional investors, making it advantageous to partner with underwriters, arrangers, and syndicate leads who know these ESG investors. The choice of currency for the bond issuance is based on the financing needs of the bank's clients.
- These banks do not incorporate ESG factors or sustainability targets in the pricing of the loans or determination of the bond yield; they do not link ESG factors as criteria for an event of default.
- Publicly reported loan allocation reports track the use of proceeds and measure the percentage of the sustainable finance portfolio against the total portfolio of the bank, and the allotment to each project funding category.
- Developing the Philippine market for sustainable finance is challenging. Banks need to show bigger companies how sustainability can be integrated as a holistic strategy and for SMEs, how sustainable financing can help transform their operations to be more climate resilient.
- Financing EbAs can be part of the sustainable finance framework if the EbA project improves the borrower's bottom line, either through additional cash flow generation or a new revenue stream.

Table 1. Benefits for companies accessing sustainable finance

Environmental Benefits	Social Benefits	Governance Benefits	Profitability Benefits
• Lower greenhouse gas emission • Better waste management • Improved disaster preparation • Generation of clean energy • More efficient energy use • Climate resilience	• Positive impact on the community • Higher local economic growth and increased employment • Helping micro, small, and medium enterprises (MSMEs) become the key drivers of inclusive growth	• Improved project management • Increased equipment reliability and availability • Improved productivity and product quality • Compliance with ECC and other regulatory requirements	• Futureproofing the business • Lower insurance premium • Reduced operating costs and cost of capital • Damage avoidance • Higher efficiency • Lower stranded asset risk • Product innovation and new revenue streams • Improved cash flow • Higher margins • Better ability to repay loans

Source: Research team's summary of key informant interviews

5. The Business Case for Sustainable Finance for Nature

Aside from the environmental and social benefits received from nurturing healthy ecosystems, EbA also has a direct effect on business operations and the corresponding balance sheet and profitability of the business.[35] Thus, it makes business sense for banks to support and finance private sector EbA projects as part of their sustainable finance portfolio. Appendix C identifies several examples of EbA projects implemented by corporations in the Philippines and describes their corresponding benefits. The business benefits of EbAs include generating positive cash flow for the companies and improving their respective bottom lines, which in turn improves the repayment capacity of any debt held by banks. The involvement of the largest groups of companies in the Philippines in EbA projects provides evidence for the business case for nature-based solutions.

Five sets of interviews were conducted with current and former C-level and senior executives of the largest commercial banks in the Philippines. The sixth interview was with a public government development bank. The researcher also used a video presentation on sustainable finance from another commercial bank. The succeeding summaries are based on the content analysis of these interviews.

6. Global Models on Financing EbA Projects

Several banks, insurance companies, and public financial institutions have already developed financing products for nature, which can be evaluated and adapted by the Philippine banking and finance sector as they develop their own sustainable financing frameworks.

6.1 SUSTAINABILITY LINKED LOANS

A sustainability linked loan links the risk rating and corresponding pricing of the loan product to the borrower's performance on identified ESG key performance indicators [see Table 2]. Globally, the sustainability linked loan market has exceeded green loan volumes in 2019, making this model the preferred type of sustainable finance arrangement. BNP Paribas provided a biodiversity linked loan for the Finnish forest company UPM [see Box 1].

Box 1. BNP Paribas and UPM's Biodiversity-Linked Loan[36]

In March 2020, BNP Paribas acted as sustainability coordinator for UPM's, a Finnish forest-based corporation, EUR 750 million revolving credit facility with a tenure of five years, twice extendable for one year. This is the first sustainability linked loan that included biodiversity and climate related key performance indicators (KPIs) as part of its pricing scheme:

- Net positive impact on biodiversity in the company's forests in Finland
- 65% reduction in CO_2 emissions from fuels and purchased electricity between 2015 and 2030

Biodiversity, as one of the KPIs, highlights its role to business performance and the importance of sustainable finance in protecting ecosystems.

Unlike green loans, proceeds of sustainability linked loans can also be used for conventional projects with the interest rate linked to the project's ESG performance or the borrower's enterprise-wide sustainability targets.[37] This means that sustainability linked loans can be used to finance EbA projects alongside conventional ones. Meeting sustainability targets will result in a preferential interest rate while underperformance will result in an increase in pricing.[38]

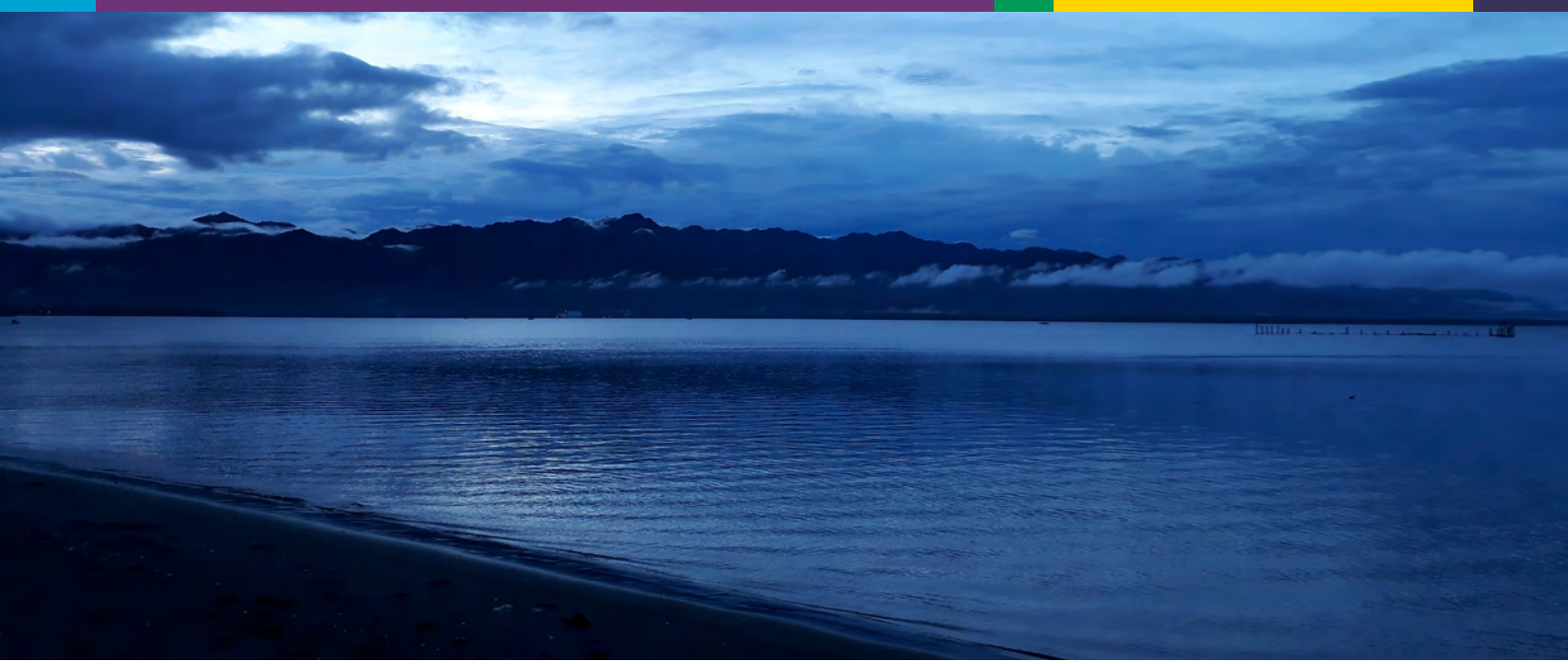


Table 2. Other examples of sustainability linked loans

Borrower	Industry	Bank	Amount	Tenure	Use of Proceeds	KPIs
Gold Coast Airport (Australia)	Infrastructure	Commonwealth Bank	AUD 75 million	5 years	Capital expenditures	Carbon emissions
Seaspan Corporation (Hong Kong)	Shipping	Société Générale and BNP Paribas	USD 600 million	6 years	Revolving credit facility	Carbon emissions, alignment to Poseidon Principles
Swire Pacific (Hong Kong)	Conglomerate	DBS Bank	HKD 2 billion	5 years	Revolving credit facility	Energy consumption, water usage, diversity, inclusion
Westfarmers (Australia)	Agribusiness	Commonwealth Bank	AUD 400 million	3 years	No data	Indigenous people employment, carbon emissions
Wilmar International Limited (Singapore)	Agribusiness	United Overseas Bank	USD 200 million	2 years	Advance the company's sustainability agenda	Corporate governance, carbon emissions, land use, community relations, supply chain practices
Vattenfall	Energy	15 banks	EUR 2 billion	3 years	Revolving credit facility	Carbon emissions

Source: Research team's desk review of corporate press releases

The Asia Pacific Loan Market Association[39] identifies several common key performance indicators that can be used to measure sustainability performance across several categories. These are summarized in Table 3.

Table 3. Examples of key performance indicators for sustainability linked loans[37]

KPI Category	Metrics
Energy Efficiency	Improvements in the energy efficiency rating of buildings or equipment
Greenhouse Gas Emissions	Reductions in equivalent greenhouse gas emissions in the production of goods
Renewable Energy	Proportion of renewable energy to fossil fuels used or generated
Water Consumption	Reduction in water consumption
Affordable Housing	Increases in the number of affordable housing units developed by the borrower
Sustainable Sourcing	Improvement in the of use verifiable sustainable procurement criteria
Circular Economy	Reduction of waste through recycling or used of recycled materials
Sustainable Farming and Food	Sourcing or producing food products that have ecolabels or certifications
Biodiversity	Improvements in conservation and protection of biodiversity
Global ESG Assessment	Improvements in the borrower's ESG rating and/ or obtaining a recognized ESG certification

6.2 PARAMETRIC INSURANCE

Parametric insurance protects an individual or organizational policyholder against the occurrence of a specific event, with payouts based on the magnitude of the event.[40] Initially conceived for insuring against disasters such as earthquakes and typhoons, parametric insurance is now being used to finance EbA as well. Afirme Seguros Grupo Financiero SA de CV launched the first parametric insurance product for repairing hurricane damage to coral reefs and beaches of Quintana Roo, Mexico with the policy purchased by the Mexican government and a USD 3.8 million payout for wind speeds above 100 knots.[41] AXA is also using parametric insurance for mangroves in the Caribbean. Net present value calculations for 30 years using a 4% discount rate show that mangrove restoration in most of the coastlines in the Caribbean results in benefit-to-cost ratios greater than 15, indicating a good investment opportunity, while payout is triggered by a natural event that damages mangrove forests, as measured by wind speed.[42]

6.3 PRIVATE FINANCING MECHANISMS FOR CORAL REEFS

Securing the long-term future of coral reefs and other ocean resources requires public-private financing mechanisms.[43][44] Through the Global Fund for Coral Reefs, BNP Paribas is involved with a consortium in raising and investing USD 500 million over the next 10 years to finance projects and businesses that reduce negative impacts on marine environments. The Fund aims to bridge the financing gap by bringing in a combination of grant money from multilateral organizations, concessional loans, and private investment from banks and their clients.[45] HSBC, alongside the Queensland Government of Australia, became the first buyers of Reef Credits to help meet the AUD 4 billion investment needed to meet water quality targets in marine ecosystems. The scheme incentivizes actors to implement

water quality improvements, providing farmers an opportunity to monetize the shift to sustainable agricultural practices. One reef credit is equivalent to one kilogram less of a pollutant, which can then be considered as one contribution to meeting a buyer's ESG KPIs.[46]

6.4 SOVEREIGN AND MUNICIPAL GREEN BONDS

Sovereign green bonds are issued by national governments in either the domestic or foreign currency to raise money for financing the government's sustainability initiatives such as energy efficiency, green transport, protection of the natural environment, and conservation of biodiversity.[47] European countries lead the way with the first sovereign green bonds issued by the Netherlands, France, Sweden, and Germany. Twenty-four national governments have issued sovereign green bonds totaling USD 111 billion, as of March 2021.[48] On a more local scale, green municipal bonds are fixed-income financial instruments used by local governments to finance public projects with well-defined environmental benefits such as infrastructure or nature-based solutions.[49] Banks can also finance EbA projects implemented by cities and municipalities through issuances of green municipal bonds. The growth in green municipal bond issuances is ascribed to local governments mobilizing climate-related investments to transition cities into low-carbon (or net zero carbon for the more ambitious) economies, and support solutions that help communities adapt to the effects of climate change. The Arizona wildfire bond and Miami forever bond are examples of green municipal bonds.[50][51]

6.5 CENTRAL BANK SUPPORT

Central banks have a key role in developing monetary and oversight policies that support financial institutions in operationalizing sustainable finance.[52] As an example, the Monetary Authority of Singapore has established a grant facility to support sustainability linked loans by providing grants to borrowers to validate sustainability linked loans and help banks defray the cost of developing sustainable finance frameworks.[53] In 2020, ASEAN central banks established a regional agenda to support sustainable banking through the ASEAN Sustainable Banking Principles.[52]

6.6 APPLICABILITY TO THE PHILIPPINE CONTEXT

Sustainability linked loans present the most potential for transferability in the Philippines as a good entry-point into sustainable finance. Loan proceeds can be used for both green and conventional projects as long as ESG factors are included in the credit risk rating. A sustainability linked loan is easier to implement since some companies and industries are already required by regulation to submit impact analyses. Linking sustainability to loan pricing allows companies to assess their own operations and find ways to improve on their ESG performance. Government banks can also offer sustainability linked loans when lending to local government units (LGUs) for their projects because considering sustainability performance as part of the loan conditions will benefit constituents and make local executives more prudent in the use of public funds.

7. Case Study: The Trinity Project of Hijo Resources Corporation[4,5]

71 ABOUT THE COMPANY

Hijo Resources Corporation (HRC or Hijo) is a Davao-based diversified corporation with business interests in leisure and tourism, agribusiness, property development, and port operations. The company is based in a 760-hectare property in Tagum City, Davao del Norte.

7.2 CHALLENGE AND OPPORTUNITY

Hijo's property spans 60% of Tagum's coastlines and contains a large lowland river basin. Deforestation in the upland watershed areas have offloaded sediment onto the intertidal and subtidal zones. Siltation has wiped out the rich marine ecosystem, including mangroves, sea grasses, and corals. Salt water has begun to intrude into the water table, threatening the coconut plantation, and the 60-hectare primary rainforest within Hijo's property. The coastline has retreated by over 100 meters, with Hijo losing one hectare of land each year or a total loss of roughly 20 hectares so far. This translates to millions of pesos in lost property value plus equivalent losses in productive asset utilization from the 20 hectares each year.

[4] This section is written using the format developed by the European Investment Bank (n.d.). Investing in Nature: Financing Conservation and Nature-Based Solutions.
[5] The theoretical case is based on the Hijo Resources Corporation management case (unpublished) written by Maria Angela G. Zafra, Wilfred S. Manuela Jr., Manuel J. de Vera, and Angelina G. Golamco of the Asian Institute of Management, which was commissioned by Earth Security in 2018–2019 and funded by the International Climate Initiative of the German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety.

7.3 ECOSYSTEM-BASED ADAPTATION SOLUTION

The Trinity Project is a three-fold approach to rebuilding HRC's coastal ecosystem. Carried out in four phases covering four kilometers of Hijo's coastline in Tagum City, Davao del Norte, the Trinity Project aims to plant 20 hectares of mangrove forest, grow 80 hectares of seagrass meadows, and create a fringing artificial coral reef environment (see Figure 1). The total rehabilitated area is estimated to cover around 120 hectares of intertidal and subtidal zones. The boundaries of the project reach from the southern side of the Madaum River down to the northern side of the Libuganon River.

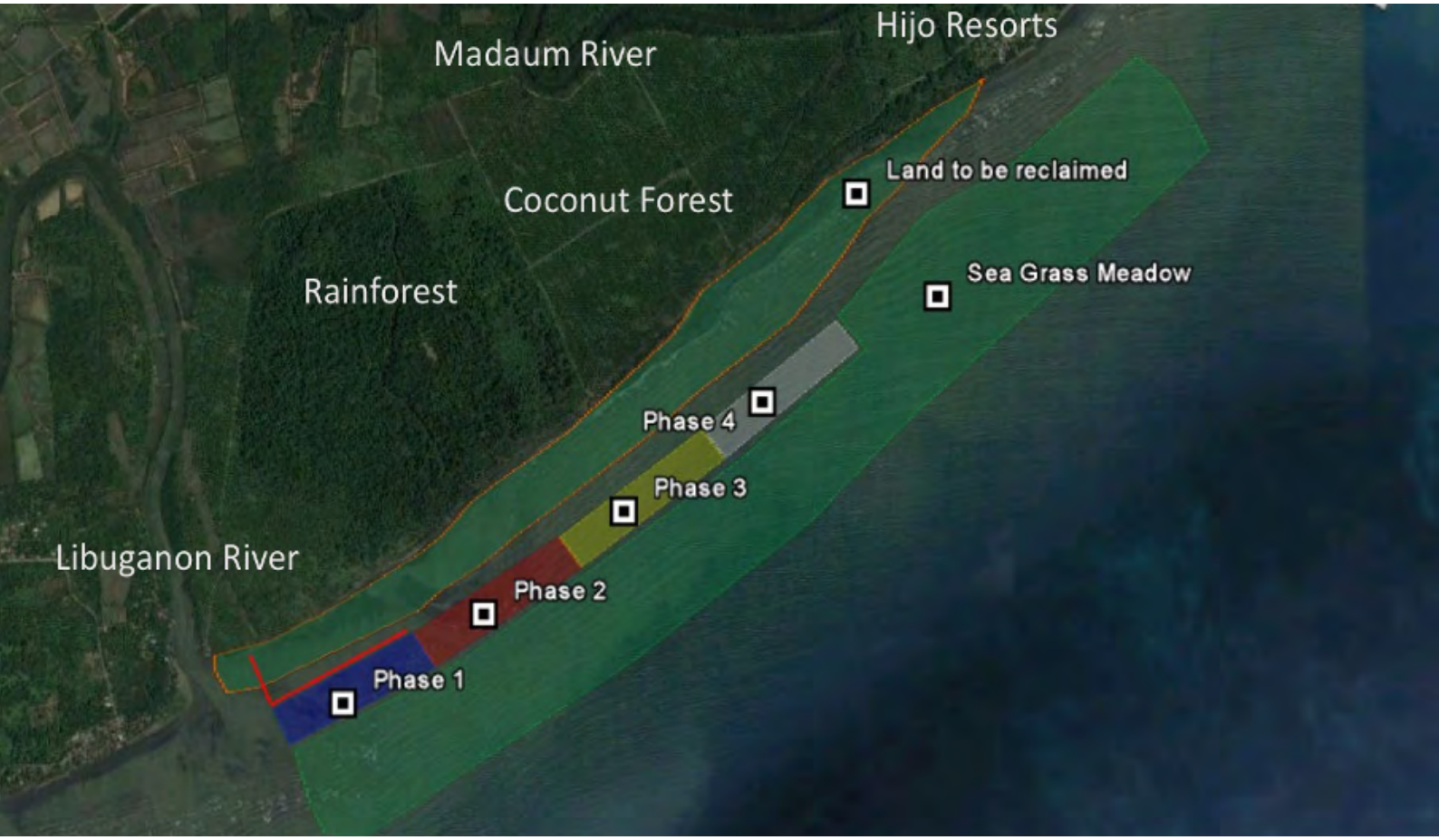


Figure 1. Trinity Project Site Map

Source: Harry D. Morris, Hijo Resources Corporation

7.4 INVESTMENTS

The implementation of the Trinity Project was carried out over four phases with each phase covering roughly one kilometer of coastline. Each stage of the project was estimated to cost between PHP 2.5 million and PHP 3.5 million, including materials, wages, and professional fees. These are summarized in Table 4.

Table 4. Cost structure for the Trinity Project

Materials or Inputs	Cost of Materials	Cost of Labor	Other Costs
Concrete bommies (for the artificial coral reefs)	PHP 13,000 to PHP 15,000 per bommie	PHP 5,000 labor per bommie	
Mangrove seedlings (for the mangrove nursery)	PHP 108,000 for 100,000 seedlings per year (PHP 1.08 per seedling)	PHP 408,000 per year to maintain the mangrove nursery; no cost for volunteer planting in the coastal sites	
Bamboo slats (for the bamboo barriers)	PHP 652,000 for the bamboo barrier for Phase 1 (out of 4 phases)[6]	PHP 1,451,000 for Phase 1 (out of 4)[6]	PHP 210,300 contingency fund for replacement of damaged bamboo slats that make up the bamboo barrier
Sea grass (for the sea grass meadows)	No cost since sea grasses are taken from existing donor sites	Not accounted for	

Source: Hijo Resources Corporation management case (unpublished) written by Maria Angela G. Zafra, Wilfred S. Manuela Jr., Manuel J. de Vera, and Angelina G. Golamco of the Asian Institute of Management, Philippines.

The information is based on the interview with Harry D. Morris, Hijo Resources Corporation.

Financing came solely from HRC, which had invested PHP 5.9 million in the project, including a budget of PHP 3.4 million for 2018. The annual budget for EbA was entirely from Hijo's office of the president. No loans have been taken and the project has yet to receive any external grant funding.

7.5 INITIAL RESULTS

Implementation of the first phase of the Trinity Project has resulted in the return of different fish species, growth of corals, and spread of sea grass meadows. Transplanted corals doubled in size in two years. Biodiversity count increased from eight to over 35 species of reef fish within 1,800 square meters. Over 6,000 square meters of seagrass have been cultivated and 2,100 mangroves have been planted to cover 4,000 square meters. In the long run, HRC and the Trinity Project hope that their continuous efforts in the Davao Gulf will create a thriving marine ecosystem with visible increase in biodiversity, as well as establish an ecotourism hotspot, and provide a sustainable aquaculture environment.

[6] The length and coverage of each phase slightly differs from each other.

7.6 PROPOSED FINANCING MODEL

Bank Finance

With Phase 1 as a proof of concept and viability of the Trinity Project, HRC can apply for a bank loan to finance the remaining three phases of the EbA. A sustainability linked loan covers the capital and operating expenditure for the project and at the same time link the financing terms to biodiversity and ESG-related KPIs, which allows Hijo to expand its operations in a more sustainable way.

Guide for EbA Financing

Banks focus on a borrower's debt repayment capacity as demonstrated by a projected cash flow statement. Borrowers such as HRC can approach banks by preparing a monthly projected cash flow statement that will highlight the new revenue streams generated by the EbA project, including the potential savings in future expenses. Table 5 shows an example of a modified projected cash flow statement that highlights the new revenue streams as a result of the rehabilitation of HRC's coastal and marine ecosystems and cost savings from reduced flood damage and reduced clean-up costs.

Table 5. Sample cash flow with inclusion of EbA benefits

Cash Flow	Amount
Sources of Cash	
Regular revenues	xx,xxx
New revenue streams	
Ecotourism	xx,xxx
Enhanced fish catch	xx,xxx
Total Sources of Cash	xxx,xxx
Uses of Cash	
Regular expenses	xx,xxx
Repayment of debt	
Flood damage before savings	xx,xxx
Cost savings from reduced flood damage	(xx,xxx)
Clean-up expenses before savings	xx,xxx
Cost savings from reduced clean-up	(xx,xxx)
Total Uses of Cash	xxx,xxx
Net Cash Flow	**xxx,xxx**

Source: Research team's analysis

The approach shows what would be the projected net flood damage and clean-up expenses after deducting the future cost savings as a result of the EbA initiatives. The projected cash flow statement will influence the amount of the loan to be granted and the timing of the loan disbursements. It is important to provide a detailed description of the assumptions supporting each item in the projected cash flow statements. A former banker in the Philippines with 20 years commercial lending experience confirmed that the modified cash flow model will enhance understanding of the benefits and costs of EbA projects.

For sustainability linked loans, the loan application should be supported by KPIs. A more environmentally responsible borrower results in better debt repayment capacity and a future-proof loan portfolio for the bank. Table 6 shows some KPIs that are specific to Hijo's EbA project:

Table 6. Possible sustainability linked loan KPIs for the Trinity Project

SLL KPI Categories	KPI Descriptions
Biodiversity KPIs	• Biodiversity count in the bommies (fish and corals) • Hectares of seagrass meadows • Number of mangroves planted and survival rate of mangroves
Asset Protection and Damage Avoidance KPIs	• Land loss due to erosion (baseline of one hectare per year) • Coconut plantation yield (prevention of saltwater intrusion) • Siltation in port area (inches)
Revenue Generation KPIs	• Number of mangrove tours, snorkeling tours, SCUBA dive trips • Fish catch on new aquaculture venture • Revenue generated from these activities

Source: Research team's analysis

Blended Finance

Typically, blended finance is used to attract private finance to projects that have been initially funded through public funds or grants. The reverse applies to HRC, with private funding as the catalyst to attracting complementary local public investment on coastal areas outside Hijo's property lines. The city government of Tagum and the provincial government of Davao del Norte created local climate change action plans that are complementary to Hijo's Trinity Project. The local government unit can protect the remaining coastline of the area by extending the project outside Hijo's property boundaries. Climate action that addresses environmental issues and protects the watershed in upland areas prevents upland erosion and the subsequent siltation and sedimentation of rivers and catch basins. Public project financing can be accessed by preparing a proposal for the People's Survival Fund or the local government of Tagum can borrow from government banks to finance coastal protection and rehabilitation. Government financial institutions can also utilize the sustainability linked loan model in lending to local governments to ensure that public funds result in favorable sustainability outcomes, with KPIs linked to the future borrowing capability of the local government of Tagum.

Revenue Model

The Trinity Project protects company assets, with mangroves acting as a natural barrier against extreme weather, preventing further erosion and land loss, and aid in sand banking or land recovery. Mangroves protect the primary forest and safeguard the agricultural yields of the coconut plantation by preventing saltwater intrusion. Siltation from upland areas to the port area can be minimized, resulting in damage avoidance for cargo ships, thereby generating positive cash flow for the company.

The primary value of Hijo is the land itself. Assuming the higher end of the required investment range at PHP 3.5 million per phase, the Trinity Project requires a total investment of PHP 14 million. Maintenance cost will be minimum once the mangroves are grown. Corals and seagrasses can thrive

as long as they are not disturbed, and the immediate environment is kept healthy. A quick search on online property market MyProperty.ph on 26 February 2021 resulted in a similar coastal property within the Davao Gulf region being sold at PHP 70 million per hectare. Just preventing one hectare of property loss from erosion would result in benefits that would outweigh the initial investment, with an estimated benefit-to-cost ratio of 5:1. The benefit-to-cost ratio for HRC does not include additional revenue sources, which will further increase the benefit-to-cost ratio. Hijo's estimated benefit-to-cost ratio compares favorably with the mangrove planting project in Vietnam [see Box 2].

Box 2. Mangrove Planting Project in Vietnam[54]

A study on planting mangroves in Tam Giang lagoon in Vietnam cost USD 38,000 representing seedlings, planting, and equipment. Total benefits were estimated at USD 86,000 from reduced flood damage, increased fish harvest, and ecotourism. The resulting benefit-to-cost ratio was 2.3:1.

Ecosystem-based adaptation contributes to a more pristine natural environment, making it more attractive to Hijo's resort guests and residential lot buyers. New revenue streams can also be generated through aquaculture and operating tours and leisure activities within the EbA project sites, such as mangrove boardwalks, snorkeling, and diving in the transplanted coral sites.

8. Conclusions

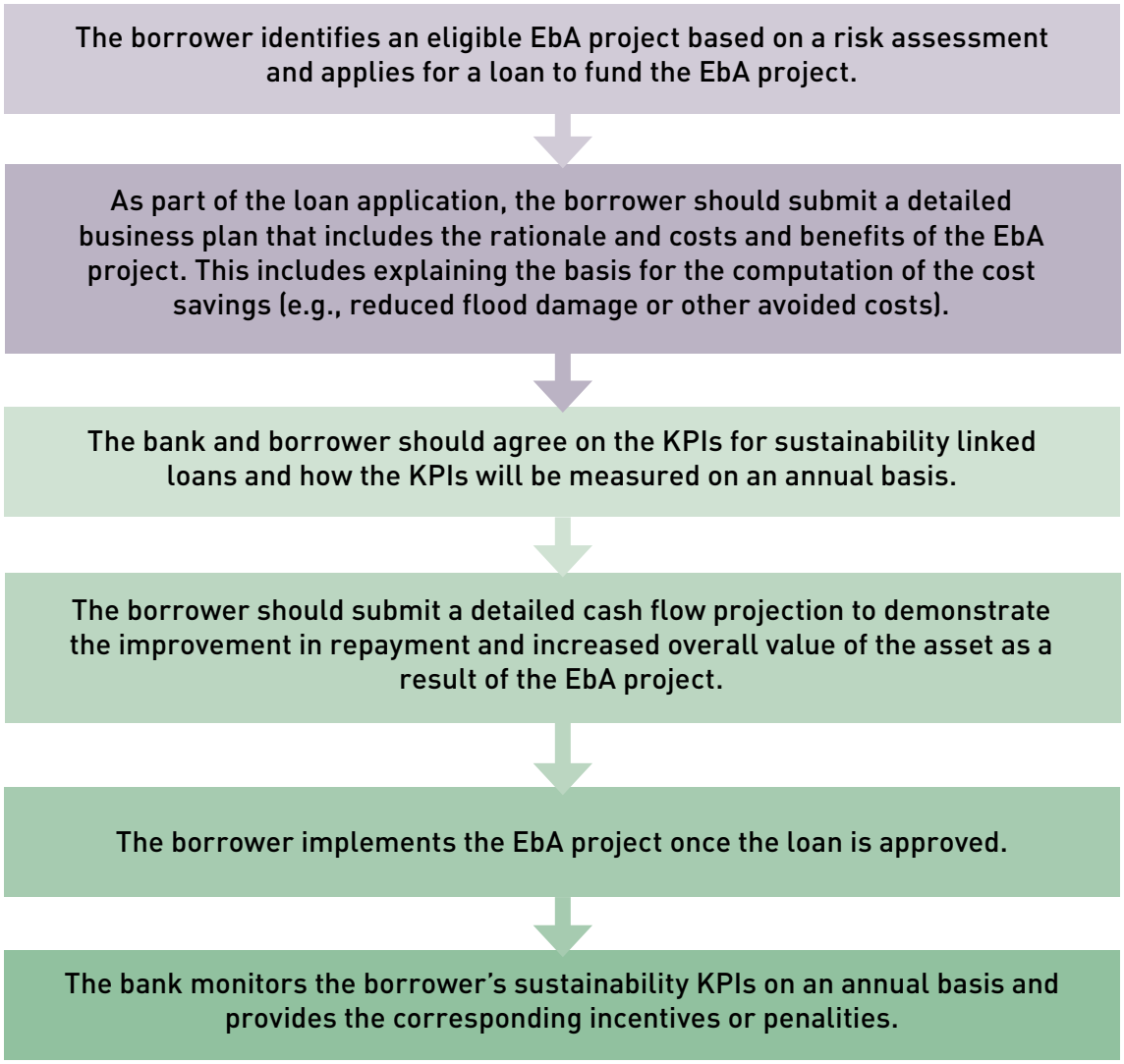
Nature is the most fundamental form of capital, yet the health of ecosystems is being threatened by exploitative anthropogenic behavior. Ecosystem-based adaptation is one of the nature-based solutions that integrates climate change adaptation with socioeconomic benefits. Engaging the private sector in investing for business resiliency by transforming their business operations to include environmental, social, and governance indicators requires financing.

Sustainable finance, which considers environmental, social, and governance factors in investment decisions on sustainable projects, is one of the mechanisms for narrowing the financing gaps for EbAs. Sustainable finance is relatively new in the Philippines, with only a few commercial banks and government financial institutions currently issuing green bonds and green loans. However, the landscape is about to change as government regulation has made it mandatory for Philippine banks to develop their respective sustainable finance frameworks and allocate a portion of their total portfolio to projects that are eligible under these frameworks.

9. Step-by-Step Guide

Sustainability linked loans present the most potential for adoption by the banking and finance sector in the country. Philippine banks will most likely be receptive to adopt this model because this is already a trend with commercial banks internationally. Sustainability linked loans can also be adopted by government banks for development loans, which cities and municipalities can use to finance public projects.

The following is a step-by-step guide for bankers to help them operationalize their sustainable finance product portfolios that include EbA projects.



APPENDIX A: Green Bonds Issued by Philippine Banks and Corporations

Issuer	Issuer Type	Name of Bond	Year Issued	Amount	Term Year	Projects Financed
AP Renewables Inc / Aboitiz Equity Venture	Non-financial corporate	Climate Bond	2016	PHP 10.7 billion	2026	Rehabilitation of the Tiwi-Makban geothermal facility
International Finance Corporation	Multilateral organization	Mabuhay Bond	2018	USD 90 million	2033	Energy Development Corporation's capital expenditure program
China Banking Corporation	Financial corporate	Green Bond	2018	USD 150 million	-	Renewable energy, green buildings, energy efficiency, water conservation projects of the IFC (sole investor)
Banco de Oro Unibank	Financial corporate	Green Bond	2018	USD 150 million	-	Energy, buildings, waste management projects of the IFC (sole investor)
Bank of the Philippine Islands	Financial corporate	ASEAN Green Bond	2019	USD 300 million	2024	Renewable energy, energy efficiency, sustainable water and wastewater management, pollution prevention and control, green buildings.
Bank of the Philippine Islands	Financial corporate	Green Bond	2019	CHF 100 million	2021	Environmental projects through its Green Finance Framework
Rizal Commercial Banking Corporation	Financial corporate	ASEAN Green Bond	2019	PHP 15 billion	2020	Renewable energy, buildings, transport, and waste related project. Under the transport category, freight rail infrastructure is eligible only if not dedicated to the transport of fossil fuels.
Rizal Commercial Banking Corporation	Financial corporate	ASEAN Sustainability Bond	2019	PHP 8 billion	2021	Renewable energy, green buildings, clean transportation, energy efficiency, pollution prevention and control, sustainable water management, environmentally sustainable management of living natural resources and land use, affordable basic infrastructure, access to essential services, employment generation, affordable housing and socioeconomic advancement and empowerment

Issuer	Issuer Type	Name of Bond	Year Issued	Amount	Term Year	Projects Financed
Development Bank of the Philippines	Financial state-owned	ASEAN Sustainability Bond	2019	PHP 18.125 billion	2021	Projects in line with the Sustainable Development Goals
AC Energy Finance international Limited	Non-financial corporate	Green Bond	2019	USD 225 million	2024	Investments in new greenfield projects onshore and in Vietnam as well as the acquisition of additional stakes in renewable energy projects in the Philippines.
AC Energy Finance International Limited	Non-financial corporate	Green Bond	2019	USD 75 million	2024	Investments in new greenfield projects onshore and in Vietnam as well as the acquisition of additional stakes in renewable energy projects in the Philippines.
AC Energy Finance International Limited	Non-financial corporate	Green Bond	2020	USD 60 million	2024	Investments in new greenfield projects onshore and in Vietnam as well as the acquisition of additional stakes in renewable energy projects in the Philippines.
AC Energy Finance International Limited	Non-financial corporate	Green Bond	2020	USD 110 million	2029	Finance eligible green projects in accordance with AC Energy's green bond framework
AC Energy Finance International Limited	Non-financial corporate	Perpetual Green Bond	2020	USD 400 million	-	Renewable energy expansion across the Asia Pacific region to include the Philippines, Indonesia, Vietnam, Myanmar, India, and Australia, among others.
Arthaland Corporation	Non-financial corporate	ASEAN Green Bond	2020	PHP 3 billion	2025	Finance portfolio of projects related to green developments
Manila Water Company Inc.	Non-financial corporate	Sustainability Bond	2020	USD 500 million USD	2025	Sustainable water and wastewater management, terrestrial and aquatic biodiversity conservation, and affordable basic infrastructure.
Bank of the Philippine Islands	Financial corporate	Social Bond	2020	PHP 21.5 billion	2022	Restart and sustain micro, small, and medium enterprises amid challenges arising from the COVID-19 pandemic.

Source: Research team's compilation from desk review of financial news articles and bank disclosure documents.

APPENDIX B: Green Loans in the Philippines

Funding Organization	Financing Scheme	Types of Projects Financed	Portfolio Size
State-Owned Banks			
Development Bank of the Philippines	Green Financing Program	Cleaner production, waste minimization, resource conservation, energy efficiency, pollution prevention and control, incorporating climate change adaptation and mitigation and disaster risk- reduction measures,	PHP 21.87 billion
Development Bank of the Philippines	Sustainable Agribusiness Financing Project	Projects necessary for agribusiness MSME survival; not exclusively for green projects	PHP 3.2 billion as of Nov. 2018
Private Banks			
Banco de Oro Unibank	Sustainable Energy Finance Project	Renewable energy financing; energy efficiency financing; replacing or upgrading old equipment or changing process technologies with newer ones	15% of total loan portfolio as of Feb. 2020
Banco de Oro Unibank	Relending JICA's green facility	Renewable energy	USD 50 million
Bank of the Philippine Islands	Sustainable Energy Finance Project	Energy efficiency and renewable energy loans to develop alternative energy solutions throughout the islands.	PHP 130 billion
Bank of the Philippine Islands	Sustainable Development Finance Program	Renewable energy, energy efficiency, climate resilience, agriculture, and other projects in line with the SDGs	10% of total loan portfolio as of Aug. 2019, 20% target in 2020
Rizal Commercial Banking Corporation	Loans from the proceeds of Green and Sustainable Bonds	Renewable energy, energy efficiency, clean transportation, and sustainable water management.	PHP 29.8 billion, 10% of total loan portfolio as of Feb. 2020

Source: Research team's compilation from desk review of financial news articles and bank disclosure documents.

APPENDIX C: Examples of EbA Projects Implemented by Philippine Corporations

Company	EbA Project	Business Benefit	Environmental Benefit	Social Benefit
Ayala Land, Inc.	Integrating forests into the masterplans of estates, including Lio Estate in El Nido, Palawan.	*Carbon Sequestration:* Carbon neutrality in all commercial properties by 2022. *Revenue Generation:* Inclusion into the Dow Jones Sustainability Index will benefit stock price. Lio's award as the World's First Sea Turtle Friendly Tourism Certification will increase property values and attract more clients. Additional income stream through eco-forest trail.	Building site resilience to recover quickly from environmental stresses.	Nine livelihood programs in the El Nido site. Social Return on Investment: economic value created for beneficiaries is 26 times more than the cost.
CAVITEX Infrastructure Corporation; Metro Pacific Investment Corporation	Rehabilitating the mangrove forest along the coastline of Manila-Cavite Express Way (CAVITEX) and the Las Piñas-Parañaque Critical Habitat and Ecotourism Area.	*Asset Protection and Cost Avoidance:* Flood mitigation in the coastal expressway and protection of the against storm surges. *Alignment to Corporate Strategy:* Achievement of MPIC's goal of providing safe and efficient road transportation.	Protection of marine habitat and bird sanctuary.	Community-based ecotourism
First Gen Corporation	Nationwide greening program	*Carbon Sequestration:* Displacement of over 380,000 tons of CO2 as part of the Company's zero-carbon generation goal.	Vegetation absorbs close to five times the company's emissions. Preservation of native tree species	Agro-forestry livelihood programs for community.
First Philippine Holdings	Protection of natural, reforestation and development of green spaces	*Asset Protection and Cost Avoidance:* Climate change is covered by the enterprise risk management program. FPH Board recognizes sustainability as a fiduciary concern.	Protection of public forests	Alternative livelihood to forest dwelling communities
Manila Water	Watershed protection and rehabilitation	*Asset Protection and Cost Avoidance:* Ensure water supply sustainability and mitigate risks associated with the quality and quantity of water available for the concession.	Prevent soil erosion which affects the turbidity of raw water.	-

Company	EbA Project	Business Benefit	Environmental Benefit	Social Benefit
Pilipinas Shell Petroleum Corporation	Carbon sink management program with 83,000 seedlings of endemic and indigenous tree species	*Regulatory Compliance:* Stipulation for issuance of ECC *Carbon Sequestration:* Contribution to Shell's Net Carbon Footprint targets and inclusion into the performance share awards of employees.	Mitigation of greenhouse gas emissions	Livelihood and employment for planting and maintaining the forest.
San Miguel Corporation	Planting a total of 190,000 mangroves in 76 hectares of shoreline in Bulacan and Central Luzon.	*Asset Protection and Cost Avoidance:* Flood mitigation for the P700 billion airport that SMC will be building.	Prevention of erosion and maintaining marine ecosystem.	Mud crab production within the mangroves as sustainable livelihood program for the community.
SM Prime Development	Preservation of more than 10,000 mangrove trees within the Hamilo Coast estate in Batangas	*Revenue Generation:* Increase the value of the development and economic activity through added tourism activities.	Enables a pristine coastal environment and protection of marine habitat	Employment for community

Source: Research team's compilation from various news articles, press releases, and annual reports.

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