IMPACT OF GREEN BONDS IN AFRICA

RESEARCH REPORT
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The 2024 Climate Finance report by the Climate Policy Initiative (CPI) and Financial Sector Deepening Africa (FSD Africa) estimates that Africa needs USD 190 billion annually to implement its collective Nationally Determined Contributions (NDCs).

Green bonds are a promising instrument that could channel more financing to the continent, but they are not yet used on a large scale.

The types of issuers and issuances in Africa's green bond market are evolving and distinct from other regions such as Europe & Latin America.

Green bond proceeds in Africa fund mostly mixed-use and mitigation projects.

This report documents the evolving green bond market, its impact, and potential pathways to enhance activity and deepen the benefits across Africa. Its objective is to help FSD Africa and other market actors understand the contribution of green bonds to enhancing the growth of capital markets, deepening environmental impact, and supporting social inclusion efforts.

The 2024 Climate Finance report by the Climate Policy Initiative (CPI) and Financial Sector Deepening Africa (FSD Africa) estimates that Africa needs USD 190 billion annually to implement its collective Nationally Determined Contributions (NDCs), the continent's commitment to limiting global warming to 1.5 degrees Celsius, in line with the Paris Agreement.[1] However, Africa's annual climate finance flows are only USD 44 billion, comprising 23% of the USD 190 billion financing needed. The true gap is likely even wider, given that countries may underestimate their financial needs, especially for adaptation.[2] This shortfall underscores the urgency to test, deploy, and scale financing mechanisms to better position Africa to address climate challenges.[3]

<1% global issuances

Africa accounts for less than 1% of global issuances and just ~0.3% of total value

~USD 176 Mn

~USD 113 Mn

As the private sector in Africa has increased its share of issuances, the average deal size has fallen from ~USD 176 Mn (2013-2018) to ~USD 113 Mn (2019-2024).

Green bonds are a promising instrument that could channel more financing to the continent, but they are not yet used on a large scale. Since the European Investment Bank (EIB) launched the first green bond in 2007, followed by the World Bank in 2008, the global green bond market has grown to USD 2.8 trillion, accounting for ~67% of the value of all green, social, sustainability, and sustainability-linked (GSS+) bonds.[4,5] In Africa, the first green bond was launched in 2013 by the African Development Bank (AfDB or the Bank). Since then, the regional market has grown to ~76 issuances[6] from ~40 issuing entities, including multi-laterals, governments, and corporates (banks and businesses).[7] Currently, Africa accounts for less than 1% of global issuances and just ~0.3% of the total value.[8] Over the past decade, green bonds on the continent have grown at a 20% compound annual growth rate (CAGR), a much slower pace compared to Asia Pacific and Latin America, which have grown at 70% and 43%, respectively, over the same period. In short, Africa's green bond market has significant room for growth.

The types of issuers and issuances in Africa's green bond market are evolving and distinct from other regions such as Europe & Latin America. Initially, sovereign and

[1] Climate Policy Initiative and Financial Sector Deepening Africa, Landscape of Climate Finance in Africa, 2024.
[2] Global Centre on Adaptation and Climate Policy Institute, State and Trends in Climate Adaptation Finance 2023, 2023.
[3] World Economic Forum, Climate adaptation and resilience needs more innovative funding, 2024.
[4] Climate Bonds Initiative, State of the Global Market, 2023.
[5] Pension Fund Service, Green Bonds, 2017.
[6] The estimate is based on publicly available data as of the date of this report. This estimate considers multiple tranches of a green bond as a single issuance provided they have the same issue date.
[7] Dalberg analysis, 2024.
[8] Climate Bonds Initiative, Interactive Data Platform, Accessed 2024.

multi-lateral issuers kick-started the green bond market in Africa and were behind nearly all issuance value in the five years following AfDB's first issuance.[9] Once these institutions demonstrated proof of concept, more businesses and banks entered the market and have accounted for over 60% of issuance value over the last five years. This shift is similar to that of Asia, where businesses and banks (primarily in China) account for ~70% of the market; however, it differs from the trajectory in Europe and Latin America, where governments and multi-laterals have maintained over ~63% market share over the past decade.[10] As the private sector in Africa has increased its share of issuances, the average deal size has fallen from ~USD 176 million (2013–2018) to ~USD 113 million (2019–2024).[11]

Green bond proceeds in Africa fund mostly mixed-use and mitigation projects. Over the past decade, mixed-use projects—including climate mitigation and adaptation actions—have accounted for ~63% of issuance value,[12] while mitigation-only projects have accounted for ~30%. However, most of these mixed-use projects focus on mitigation, with most of the funding going to assets with greenhouse gas (GHG) emission reduction targets. Meanwhile, projects purely focused on adaptation and resilience are rare, comprising just 7% of the proceeds.[13] At a sector level, renewable energy from solar and hydroelectric power (HEP) receives the most funding in Africa since these projects tend to be large-scale and long-term, and the cash flows generated by the underlying assets can match a typical repayment schedule—making these projects more commercially viable.[14] In contrast, sectors such as climate-smart agriculture, which have bespoke models, significant real and perceived risks, and less predictable returns, have faced challenges in tapping into the green bond market. In this regard, Africa is similar to Latin America, Asia Pacific, and Europe, where mitigation-focused projects with clear links to reducing GHG emissions, especially in renewable energy, transportation, and buildings (construction), represent ~70% of all issuance volume.[15]

Challenges

While green bonds have grown over the past decade, they are still a niche segment in Africa's capital markets and are constrained by macroeconomic challenges and a resource-intensive issuance process.

Green bonds are subject to the same capital market challenges that affect most African countries. Unstable macroeconomic conditions, such as currency depreciation and high inflation, create uncertainty for potential investors. Moreover, foreign exchange risk deters non-African investors who need prohibitively expensive hedging instruments to protect their investments.[16] Issuers must thus offer a risk premium to attract investors, raising their cost of capital and making green bonds less attractive. Issuers such as North South Power (NSP) and OneWatt Solar in Nigeria and Office National des Chemins de Fer (ONCF) in

While green bonds have grown over the past decade, they are still a niche segment in Africa's capital markets and are constrained by macroeconomic challenges and a resource-intensive issuance process.

[9] Ibid.
[10] Ibid.
[11] Ibid
[12] Mixed use projects tend to have more mitigation-oriented assets, such as solar, given the greater focus on GHG emission reduction.
[13] Dalberg analysis, 2024.
[14] Ibid.
[15] Climate Bonds Initiative, Interactive Data Platform, Accessed 2024.
[16] Stakeholder interviews, 2024.

Green bonds are subject to the same capital market challenges that affect most African countries.

Average Green Bond in Europe

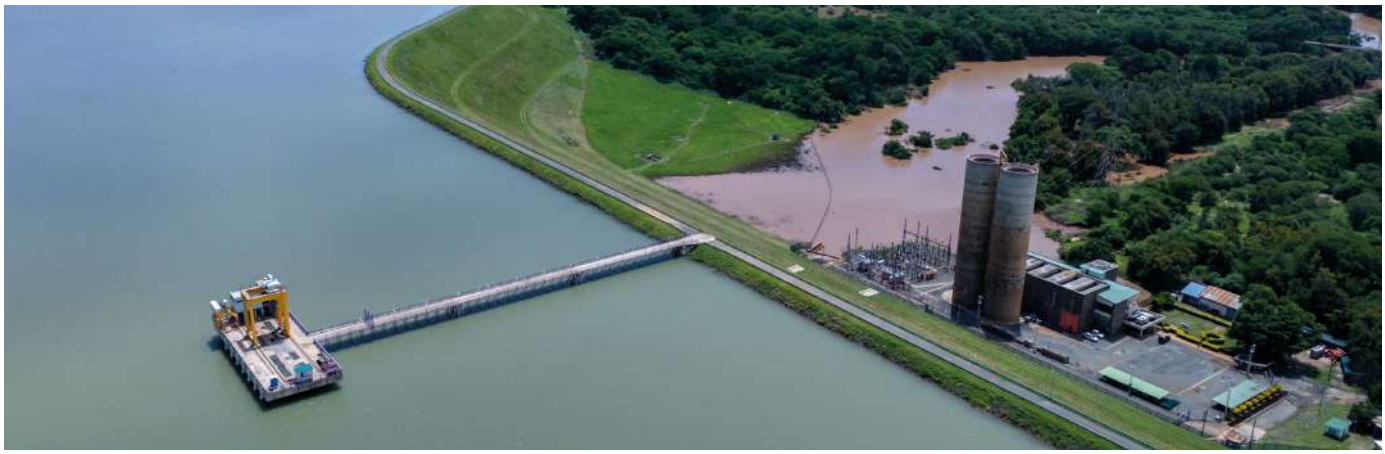
5 times larger than Africa's

Average issuance costs are just ~0.9% of the total deal value compared to ~5% in Africa.

Morocco have demonstrated that these challenges can be overcome—and indeed, their green bonds have been oversubscribed, even amidst unfavourable macroeconomic conditions.[17] Nevertheless, these successes are exceptions rather than the rule.

Further, the issuance process can be very costly for African businesses compared to other markets. The development and issuance of a green bond requires five steps: (i) identification of a green project, (ii) drafting of a green bond framework, (iii) review and certification by third-party verifiers, (iv) the issuance itself, and (v) reporting.[18] Each of these stages is necessary, irrespective of the value of the green bond. In Africa, smaller issuers may incur issuance expenses of up to ~5% of the total bond value.[19,20] Moreover, they may face relatively high verification costs because projects on the continent do not fit neatly into commonly accepted global green bond taxonomies. By comparison, the average green bond in Europe is five times larger than Africa's, and average issuance costs in Europe are just ~0.9% of the total deal value, compared to up to ~5% in Africa. These economics make it extraordinarily difficult for would-be issuers on the continent to participate in the green bond market.

Africa also faces a mismatch between what is needed versus what is most accessible from green bonds—particularly in climate change adaptation. Least developed countries in Africa are among the most vulnerable to climate change, yet the least able to adapt.[21] More specifically, African actors face more challenges in accessing financing for adaptation projects compared to mitigation projects due to limited institutional capacity, cash flow uncertainties, and minimal carbon reduction benefits for investors' portfolios.[22] Hence, prospective issuers need technical and financial support to bring adaptation projects to market.



Research insights

This report proposes a theory of change (ToC) as a conceptual framework for analysis.

This report proposes a theory of change (ToC) as a conceptual framework for analysis. The ToC sets out a vision of a green bond ecosystem in Africa that catalyses impact in the focus areas of capital markets, the environment, and social inclusion. Based on this framework, the report sought to document benefits across the three focus areas and to map pathways to deepen activity and impact.

[17] Dalberg analysis, 2024
[18] IFC, Preparing for Green Bond Issuance, 2023
[19] Climate Bonds Initiative, Certification Fee, 2024
[20] ICMA, Introduction to Green Bonds, 2020
[21] Global Environment Facility, Climate Change Adaptation in Africa, 2018
[22] Global Centre on Adaptation, Green Bonds for Climate Resilience, 2021

The continent's green bond market, while still nascent, has demonstrated incremental progress (i.e., additionality) in mobilising financing and enhancing the environmental impacts and some social co-benefits of projects.

The continent's green bond market, while still nascent, has demonstrated incremental progress (i.e., additionality) in mobilising financing and enhancing the environmental impacts and some social co-benefits of projects. However, without the catalytic support of blended finance and technical assistance (TA), Africa's green bond market will struggle to grow. These high-level insights are summarized below:

Figure 1: Summary of the key insights across capital markets, environment, and social inclusion

Capital Markets	Given market conditions, blended finance solutions are needed for green bonds to work in Africa.	Green bonds have generated USD 9.6Bn of financing but have grown more slowly in Africa than in other regions.	Development of green bonds has shaped guidelines for other thematic instruments	Green bonds create additional value, in terms of investor diversity, capital size and spees of raising capital
Environment	Green bonds requirements enhance the environmental and sustainability design of projects.	Green bonds lead issuers to refine their sustainability commitments and considerations.	Green projects have a range of environmental benefits, including GHG emissions reduction and water savings.	There is an urgent need to fund adaptation projects in Africa, which is more vulnerable to the effects of climate change.
Social Inclusion	Green bonds do not traditionally focus on social inclusion and gender considerations.	Green bonds achieve indirect social inclusion benefits due to interlinkages between environment and social issues.	By design, adaptation projects feature closer linkages to social inclusion than do mitigation projects.	

Impacts on capital markets

Given market conditions in Africa, blended finance solutions—including concessional funding, technical support, and credit enhancements—are needed for green bonds to succeed. The rigorous, costly issuance process makes concessional funding and technical support necessary for issuers to develop investable projects, while challenging macroeconomic environments mean that issuers need credit enhancements to attract investors. Actors such as Financial Sector Deepening (FSD) Africa are cognizant of this and have developed multi-stakeholder programmes to connect issuers to domestic and global capital markets, supporting 23 issuances, which will mobilise USD 1.4 billion of sustainable finance in local currency. Across many issuances, within and outside these programmes, credit guarantees and technical assistance support are the most common forms of blended finance. For example, GuarantCo provided a partial credit guarantee to cover 50% of Acorn's principal and interest, while InfraCredit provided a full and irrevocable cover for NSP.[23] These instruments reduced default risks, leading to 146%[24] and 160%[25] subscription rates for Acorn and NSP's respective issuances. Blended finance solutions are also common in Asia, where the Tropical Landscapes Finance Facility (TLFF), Credit Guarantee Investment Facility (CGIF), and Currency Exchange Fund (TCX) mitigate credit and currency risks for investors.[26] For the market to grow organically, however, stakeholders need to consider how these solutions can work long-term without encouraging dependency.

Green bond issuances have generated USD 9.6 billion of financing for the continent. However, South Africa, Nigeria, Morocco, Egypt, and AfDB account for ~91% of these issuances.[27] The concentration of green bonds in these economies is due to their larger carbon-intensive sectors that attract renewable energy investments, their enabling government directives and policies, and the creditworthiness of municipalities such as the City of Cape Town. Beyond these countries, AfDB works across geographies and, as the premier issuer in Africa, is committed to launching a green bond each year to fund green projects. At a broader capital-market level, green bond issuances have mobilised investments into previously low-activity investment classes. For example, Acorn's issuance and BURN's private placement in Kenya helped to increase investor confidence after the high-profile defaults of corporate bonds issued by institutions such as Chase Bank, Imperial Bank, and Nakumatt Holdings, which went into receivership.

The process of green bond issuances has also spurred the development of guidelines for other thematic instruments. As the market for green bonds has grown, regulators have seen the potential in other types of sustainable finance instruments. Thus, regulators have applied lessons from green bonds to sharpen sustainable finance frameworks and articulate stronger guidelines for thematic bonds, such as social bonds and sustainable bonds. As of September 2024, ~12 African countries have developed or are developing these guidelines: South Africa, Nigeria, Egypt, Morocco, Kenya, Ghana, Senegal, Cote d'Ivoire, Rwanda, Mauritius, Seychelles, and Tunisia.[28]

[23] FSD Africa, Africa Green Bond Toolkit, 2020
[24] Acorn D-REIT, Annual Report, 2023
[25] InfraCredit, Transitioning to a Low Carbon Economy, Accessed 2024
[26] Climate Bonds Initiative, ASEAN Green Financial Instruments Guide, 2019
[27] Dalberg analysis,2024
[28] Dalberg analysis,2024

Green bonds also have benefits in comparison to other forms of financing, though the nature of this additionality varies based on context. Issuers report four potential types of benefits:

- **Access to more investors:** Issuers report that green bonds enabled them to access a wider pool of investors, particularly local institutional investors and international actors who would otherwise not have provided capital through conventional bonds or other debt instruments.[29]

- **Raising of more capital:** Due to macroeconomic conditions, regulatory constraints, and borrowers' risk profiles, banks place a ceiling on what they will lend, especially for small and medium-sized enterprises (SMEs). Nonetheless, through the green bond market, an issuer such as One Watt Solar received ten times the loan size it would have received from banks.[30] Moreover, issuers such as Acorn have found that successful repayment of larger bond issuances has expanded their financing options in future debt raises.

- **Faster raising of capital:** Green bond issuers such as the City of Cape Town and Acorn noted that the green bond enabled them to access capital faster on markets compared to conventional bonds. For example, it took just two hours for 31 investors to oversubscribe to the City of Cape Town's issuance.[31]

- **Access to technical assistance:** Issuers benefited from access to grant funding for technical capacity for project identification, monitoring, and reporting, which enhanced the capacity of their staff and systems. Critically, this TA was available only for green bonds specifically; issuers noted that it would not be available through other loan instruments such as conventional bonds or bank loans.

Environmental and climate co-benefits

Green bond requirements enhance the environmental and sustainability design of projects. A study from the Organization for Economic Cooperation and Development (OECD) noted that the requirements of green bonds to meet specific criteria and undergo rigorous monitoring to ensure that they meet sustainability goals lead to more profound environmental benefits than projects funded by conventional means, which lack similar oversight.[32] This observation also applies in Africa; the City of Cape Town, for example, noted that to match the taxonomy for water storage, treatment, distribution, and flood defence, it had to completely revamp its portfolio management to improve how it developed and monitored the projects, which led to higher design quality.

Launching green bonds showcases issuers' environmental intentionality and helps them refine their sustainability commitments. Many issuers set environmental targets before their issuance of green bonds. Nonetheless, issuers such as NSP and Acorn noted that green bond design process and reporting requirements influenced them to sharpen baseline environmental targets and increase environmental intentionality across their organizations.[33] Further, the green bond issuances enhanced the reputation of issuers, demonstrating their commitment to climate change and providing a proof of concept for stakeholders interested in environmental, social, and governance (ESG) principles.

Projects funded through green bonds have had a range of environmental benefits across Africa. For example, AfDB's green bond portfolio has achieved continent-wide benefits of ~43.2 million tonnes of GHG emissions avoided, ~1.6 million MWh of renewable energy produced, and 110 million cubic metres of water saved.[34] On a smaller scale, Access Bank's green bond has reduced ~4,032 tonnes of CO2 emissions annually and protected ~900 hectares of land from flooding.[35] At a broader level, while green bonds are still niche segments, in countries such as South Africa, they are helping to raise investment for climate

Access Bank's green bond has **reduced ~4,032 tonnes of CO2 emissions** annually and protected ~900 hectares of land from flooding.

[29] Stakeholder interviews, 2024
[30] Ibid
[31] Johannesburg Stock Exchange, Colour Coded, Accessed 2024
[32] OECD, Mobilising Bond Markets for a Low-Carbon Transition, 2017
[33] Stakeholder interviews, 2024
[34] AfDB, Green Impact Reporting, 2024
[35] Access Bank, Green Bond 2023 – Annual Impact Report, 2023

projects, financing circa 4% of the country's annual NDC investment requirements.[36]

The need for adaptation projects in Africa is acute and urgent. Due to the challenges of bringing adaptation projects to market, the private sector finances only about 3% of the value of adaptation projects.[37] The remainder is left to governments, which may be more willing to prioritize social returns over financial payouts.[38] Nonetheless, there are adaptation projects, such as the City of Cape Town's water infrastructure, the Government of Egypt's early warning systems, and Government of Nigeria's afforestation investment, which have benefits such as water savings, soil and beach restoration, and habitat preservation.[39] The projects present opportunities for private and development sector players to partner with governments and municipalities to combine commercial viability with environmental mandates to deliver a unique project. Examples include the partnership between Access Bank and local municipalities in Nigeria to set up a sea wall in Lagos or NSP's mitigation-oriented collaboration with the Government of Nigeria to power ~8% of the national grid through new renewable energy production.

Social co-benefits

Green bonds primarily mobilise funding for projects or assets with environmental benefits, and do not traditionally focus on social inclusion benefits. Based on the International Capital Market Association's (ICMA) principles and the Climate Bonds Standards, green bonds focus on raising investment for new and existing projects with environmental benefits. As a result, issuers leverage green bonds to meet their environmental targets, and often do not incorporate social inclusion benefits into their green bond design. To address this gap, market actors point to the capacity of other sustainable bonds, including social bonds, sustainability bonds, and sustainability-linked bonds, to mobilise funding for broader social inclusion targets.

Additionally, green bonds do not primarily consider gender provisions. The climate crisis is not 'gender neutral'; women and girls experience the most significant impacts of climate change, which amplifies existing gender inequalities.[40] Under existing definitions and standards, green bonds typically do not include gender criteria in the design process, including in determining how proceeds are allocated and monitoring projects' gendered impacts.[41] This absence represents a critical gap, since environmental and gender impacts are inextricably linked.

While green bonds do not aim for social inclusion and rarely apply a gender lens, they can achieve indirect social inclusion benefits due to the interlinkages between environmental and social inclusion issues. Although indirect in many cases, green projects have resulted in various social inclusion benefits, including (i) access to electricity, (ii) improved income through job creation, (iii) access to low-cost transportation, and (iv) access to water. For example, Acorn's green bond has created ~1,857 jobs, 41% of which (~761) are held by women.[42] In Morocco, ONCF's green bond proceeds financed a wind-powered, affordable train that carries ~4.2 million civilians annually, reducing travel times between Tangier and Casablanca from five hours to just over two and improving access to job opportunities.[43]

By design, adaptation projects typically feature closer linkages to social inclusion than do mitigation projects; green projects funded by sovereign and municipal issuance often explicitly consider social inclusion aspects. Adaptation

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[36] Dalberg analysis, 2024
[37] Global Centre on Adaptation and Climate Policy Institute, State and Trends in Climate Adaptation Finance 2023, 2023
[38] OECD, Challenges in financing adaptation in developing countries, 2023
[39] Global Centre on Adaptation, Green Bonds for Climate Resilience, 2021.
[40] UN Women, Explainer: How gender inequality and climate change are interconnected, 2022
[41] International Institute for Sustainable Development, Integrating Gender Considerations in Green Bonds, 2021
[42] Acorn Holdings, Sustainability Report, 2023
[43] ONCF, ONCF Green Bond Reporting, 2023

Finally, Tanzania's Tanga Urban Water Supply and Sanitation Authority's (UWASA) green bond will **increase water supply** from ~70% to ~95% and improve reliability to 24 hours

projects are often designed to have more direct social benefits, given that the core aims of these projects are to safeguard and build the resilience of vulnerable communities to climate shocks. For example, the City of Cape Town's green-bond-funded projects have created job opportunities in the Strand Sea Wall area—roughly 20 new businesses have been established after new measures were taken to prevent sea damage. Further, once completed, the planned development at Sir Lowry's Pass will improve living conditions by relocating approximately five thousand households to affordable formal housing.[44] Finally, Tanzania's Tanga Urban Water Supply and Sanitation Authority's (UWASA) green bond will increase water supply from ~70% to ~95% capacity in the Tanga City area, and reliably deliver this supply 24 hours a day.[45]

Unfortunately, some large mitigation or adaptation infrastructural projects can have significant inadvertent effects, such as displacement of people and disruption of livelihoods. It is critical to identify, plan, and continually improve solutions to prevent and address these effects.

Recommendations

The report presents potential pathways to enhance Africa's green bond ecosystem based on prevailing market contexts, challenges to green bond issuance, and the impacts that green bonds are able to achieve. This report segments these recommendations into three categories: (i) capacity building, (ii) green bond guidelines, and (iii) financing.

Figure 2: Proposed action points to enhance Africa's green bond ecosystem

Capacity Building:
- Deepen issuers' awareness of and compliance with relevant climate taxonomies and impact measurement frameworks.
- Build the capacity of governments to design and issue green bonds to finance climate master plans.

Financing:
- Connect prospective adaptation project issuers with project preparation facilities (PPF)

Guidelines:
- Incorporate the 'Do no harm' principle as an obligatory clause to mitigate adverse environmental and social effects.
- Require issuers to set up gender provisions so that green bonds have clear social inclusion links.
- Develop an African Sustainable Finance Taxonomy.

[44] Stakeholder interviews, 2024.

[45] FSD Africa, Tanga UWASA issues East Africa's first ever Water Green Bond, 2024.

Table 1: Observed challenges and proposed solution pathways

Recommendation	Challenge	Pathway
Capacity building		
Deepen awareness of taxonomies and reporting standards	• Misunderstanding of guidelines and thresholds leads to additional costs. • Issuers face difficulties in assessing impact, leading to reporting inconsistencies.	• Green bond programmes can enhance awareness of taxonomies and support issuers in complying with thresholds • These programmes can also enhance their reporting capacity in line with the industry-accepted standards
Build the capacity of governments to launch green bonds.	• African governments have defined climate plans and NDCs, but face difficulties accessing the financing to launch projects	• Ecosystem actors can embed advisory units to support identifying projects and designing green bonds • Ecosystem actors can establish cross-learning platforms to enhance knowledge sharing across public agencies
Guidelines		
Incorporate the 'Do no harm' principle.	• Projects funded through green bonds might lead to unintended environmental and social consequences, such as erosion, deforestation, displacement of people, and disruption of livelihoods	• Regulators can mandate that issuers conduct environmental impact assessments and social vulnerability tests to identify and plan for potential adverse effects • Issuers would need to articulate the plan in their frameworks
Require issuers to set up gender provisions so that green bonds have clear social inclusion links.	• Green bonds have limited gender provisions in their design despite women and girls experiencing the greatest impacts of climate change, which amplifies existing gender inequalities .	• For projects with clear social inclusion links, regulators can stipulate that issuers apply a gender lens in articulating objectives, use of proceeds criteria, and key reporting metrics
Develop an African Sustainable Finance Taxonomy	• High verification costs because projects in Africa do not neatly fit into commonly accepted global green bond taxonomies.	• Policymakers in Africa should develop an African sustainable finance taxonomy that will provide guiding principles to govern green bond markets aligned with Africa's sustainable development targets. A harmonised regional taxonomy will provide context-relevant guiding principles and support increased investment into Africa's green bond market
Financing		
Enhance project preparation for adaptation projects	• Many adaptation projects do not access climate finance or commercial loans since they have not assessed, quantified, and articulated the commercial potential of a project's inherent components	• Connect issuers to existing or new project preparation facilities (PPFs) to access financing for pre-investment activities such as feasibility studies, risk assessments, and design, which can define projects' cash flow opportunities

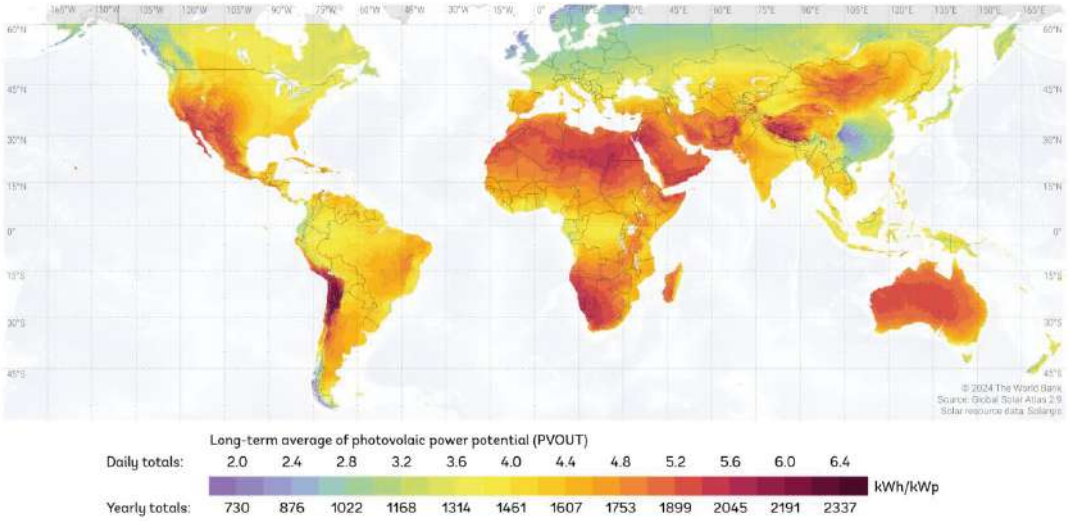
1. Introduction

The climate challenge

The World Meteorological Organization (WMO) states that these effects impact **~110 million people** in Africa, leading to **annual economic losses of ~USD 8.5 billion**, with women and girls 14 times more likely to be affected.

Africa has the technical potential to apply its natural resources to addressing climate-related issues and enhancing socio-economic development. IIncreasing temperatures and rising sea levels, changing precipitation patterns, and extreme weather threaten human health and safety, food and water security, and socio-economic development in Africa. The World Meteorological Organization (WMO) states that these effects impact ~110 million people in Africa, leading to annual economic losses of ~USD 8.5 billion, with women and girls 14 times more likely to be affected.[46,47] These issues deepen existing access challenges such as limited clean energy—only half of the continent's population have direct access to electrification and ~900 million rely on solid biomass fuels that lead to deforestation and indoor air pollution, which claims ~ 500,000 lives annually.[48,49] In contrast, the continent has vast energy potential to meet its demand: 7,900 gigawatts (GWs) of potential solar, 461 GW of potential wind, and 15 GW of potential geothermal energy.[50] Additionally, the region has some of the world's largest freshwater systems, characterised by an extensive distribution and variability of surface waters that play a critical role in preserving biodiversity and nutrient cycles.[51] Governments, development actors, and the private sector could harness this potential into dedicated projects to realize major environmental benefits.

Figure 3: Global photovoltaic potential[52]



Africa's annual climate finance flows stand at only USD 44 billion, which is only 23% of the financing needed.

USD 44 Bn = 23%

Despite this potential, Africa faces a significant financing gap and capacity challenges. The Climate Policy Institute (CPI) estimates that the continent needs USD 190 billion annually to implement its Nationally Determined Contributions (NDCs), the continent's commitment to limiting warming to 1.5 degrees Celsius in line with the Paris Agreement.[53] Nonetheless, Africa's annual climate finance flows stand at only USD 44 billion, which is only 23% of the financing needed. This gap is likely even wider since countries often underestimate their financial needs, especially with adaptation, due to data and methodological inconsistencies. Moreover, challenges such as institutional capacity and scalability concerns usually impede the conversion of Africa's green potential into projects that enhance its socio-economic outcomes.

[46] World Meteorological Organization, State of the Climate in Africa, 2020
[47] Fatema et al, Women's health-related vulnerabilities in natural disasters: a systematic review protocol, BMJ Open, 2019
[48] World Bank, Access to electricity (% of population) - Sub-Saharan Africa, 2022
[49] United Nations Environment Programme, Africa Environment Outlook for Business, 2023
[50] Ibid.
[51] Papa, F., Crétaux, JF., Grippa, M. et al. Water Resources in Africa under Global Change: Monitoring Surface Waters from Space. Surv Geophys 44, 43–93, 2023
[52] World Bank, Photovoltaic Power Potential, 2024
[53] Climate Policy Initiative and Financial Sector Deepening Africa, Landscape of Climate Finance in Africa, 2024

Green Bonds as a solution

Over the past decade, green bonds have emerged as a pathway to channel financing to green projects that can harness this potential. Green bonds are fixed debt instruments issued by corporations (banks and businesses), governments (national and municipalities), and multi-lateral organisations to finance 'green investments' with verifiable, positive environmental impact.[54] Structurally, a green bond would have similar features to a conventional bond, such as a defined repayment period (tenure), specified interest (coupon), and transferability to enable trading on secondary markets. However, the additive features of the green bond include the need to articulate and verify the green projects it funds and to use the proceeds exclusively to finance projects with clear environmental benefits.

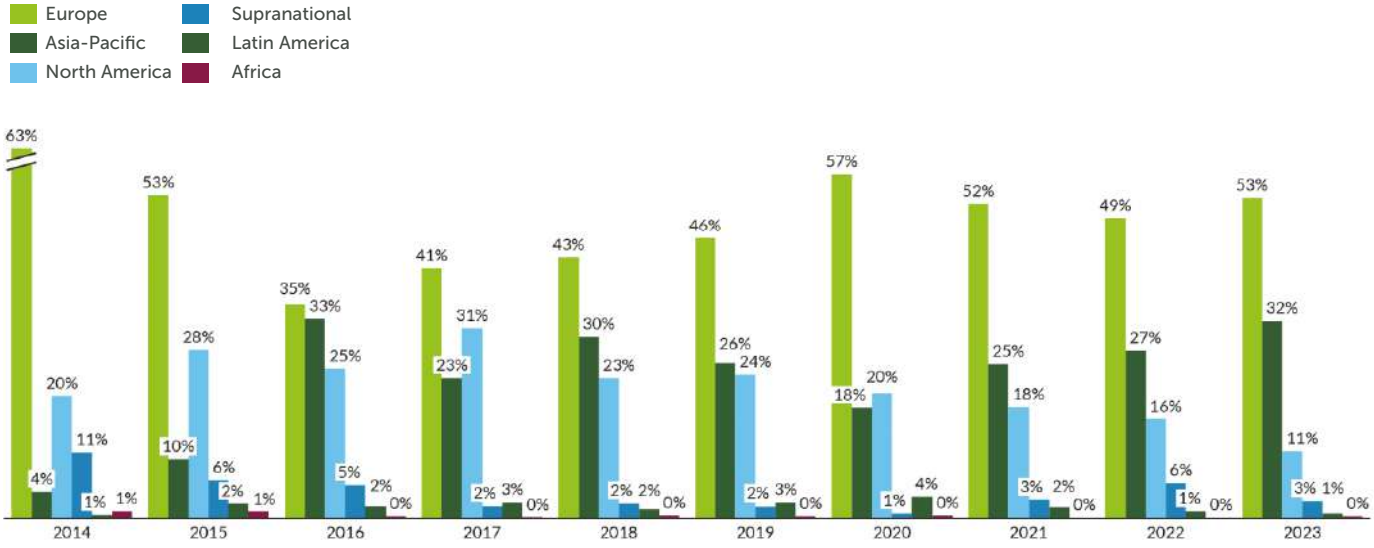
As of 2023, the global green bond market stands at **USD 2.8 Tn**, having registered a compound annual growth (CAGR) of 16% between 2019 and 2023, with the European region generating half the value of all issuances.

As of 2023, the global green bond market stands at USD 2.8 trillion; the market registered a compound annual growth rate (CAGR) of 16% between 2019 and 2023, with the European region generating half the value of all issuances.[55] The European Investment Bank (EIB) launched the first green bond in 2007, channelling the proceeds to renewable energy and energy efficiency projects. Since then, the European market has evolved into the leading issuer; the European Union's (EU) green agenda, which has incentivised the creation of green projects that green bonds can fund, has been a significant driver of this dominance.[56] Investors have welcomed these new issuances in the European market, gradually allocating more of their portfolios to green assets, including green bonds.[57] The Asia-Pacific market is the second largest issuer, representing 16% of total deals and 26% of global market value between 2019 and 2023.[58] This region's market share is driven by China's emergence as a leader, at 14% of total green bond volume and 47% of emerging market volume in 2023.[59,60] As interest rates fall, global green bond issuances will likely increase;[61] the Asia-Pacific market, for example, is expected to grow by 10% in 2024.[62]

Figure 4: Value of green bond deals across regions[63]

Over the past decade, Europe has led the global market in the value of green bond issuances. Since 2020, Asia-Pacific surpassed North America in issuance value, driven by China's growth in the sector

Volume, 2019-2024



[54] FSD Africa, Africa Green Bond Toolkit, 2020
[55] Climate Bonds Initiative, Interactive Data Platform, accessed 2024
[56] Fidante, Insights: Why Europe is the region leading sovereign green bond issuance and what we expect for the last three months of the year, 2023
[57] Ibid
[58] Ibid
[59] Climate Bonds Initiative, Sustainable Debt: Global State of the Market, 2023
[60] IFC, Amundi, Emerging Market Green Bonds, 2024
[61] S&P Global, Global green bond sales to get boost in 2024 as interest rates may fall, 2024
[62] S&P Global Ratings, Sustainability Insights: Asia-Pacific Sustainable Bonds To Step Up Growth In 2024, 2024
[63] Climate Bonds Initiative, Interactive Data Platform, 2024

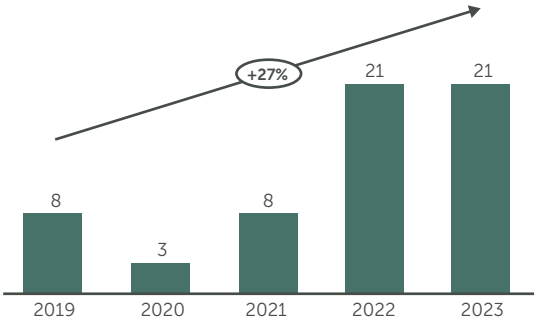
While **green bond issuances in Africa** have gradually increased, the region only contributes **~ 0.3%** to global green bond financing.

While green bond issuances in Africa have gradually increased, the region contributes just ~ 0.3% to global green bond financing. Africa's limited contribution to the global green bond market is due to a confluence of factors, including unstable macroeconomic conditions, limited awareness of green bonds amongst prospective issuers and local investors, a shortage of bankable green projects, and a resource-intensive issuance process that disincentivizes actors. Despite these challenges, the market for green bonds continues to grow. The continent has issued ~76 green bonds since 2013;[64] this growth includes a 41% CAGR in private issuances between 2020 and 2024,[65] driven by financial institutions, and a more diverse project focus, indicating improved investor confidence in green financing as a viable solution.

Figure 5: Growth in the value and volume of green bond issuances in Africa

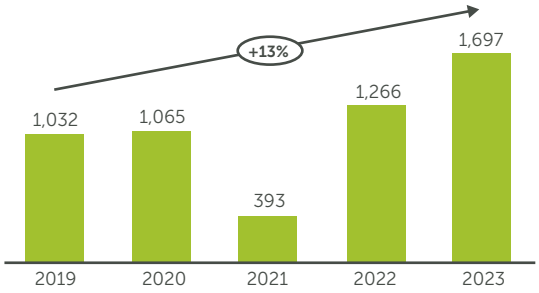
The volume of issuances in Africa has grown steadily, registering a CAGR of 27% between 2019 and 2023

Volume, 2019-2023



The value of green bonds in Africa has also registered growth with a 13% CAGR between 2019 and 2023

Value, USD Millions, 2019-2023



This report documents the evolving green bond market, its impact, and potential pathways to enhance activity and deepen the benefits across Africa. At the onset, FSD Africa sought to examine whether green bonds have an impact across three pathways: (i) capital markets, (ii) environment, and (iii) social inclusion. FSD Africa and Dalberg have drawn on a detailed literature review, stakeholder discussions, and case study research to prepare this report, which details the landscape of the green bond market in Africa and the observed benefits of issuances. This research helps FSD Africa and other market actors understand the contribution of green bonds to enhancing the growth of capital markets, deepening environmental impact, and supporting social inclusion efforts. In addition, the report proposes pathways to drive the development of the green bond market.

Figure 6: Problem question and objectives of this study

Problem question

What are the effects of green bonds in Africa across capital markets, social inclusion and environment?

What this research will investigate

- Assessment of the green bond market in Africa, specifically:
  - The suitability and efficacy of green bonds as a financing instrument in Africa
  - The capital markets benefits of green bond issuance
  - The environmental impacts of green-bond-financed projects
  - The socio-economic impacts of green-bond-financed projects on end users of bond proceeds
- The prospects of green bond investments in Africa

[64] Dalberg analysis, 2024

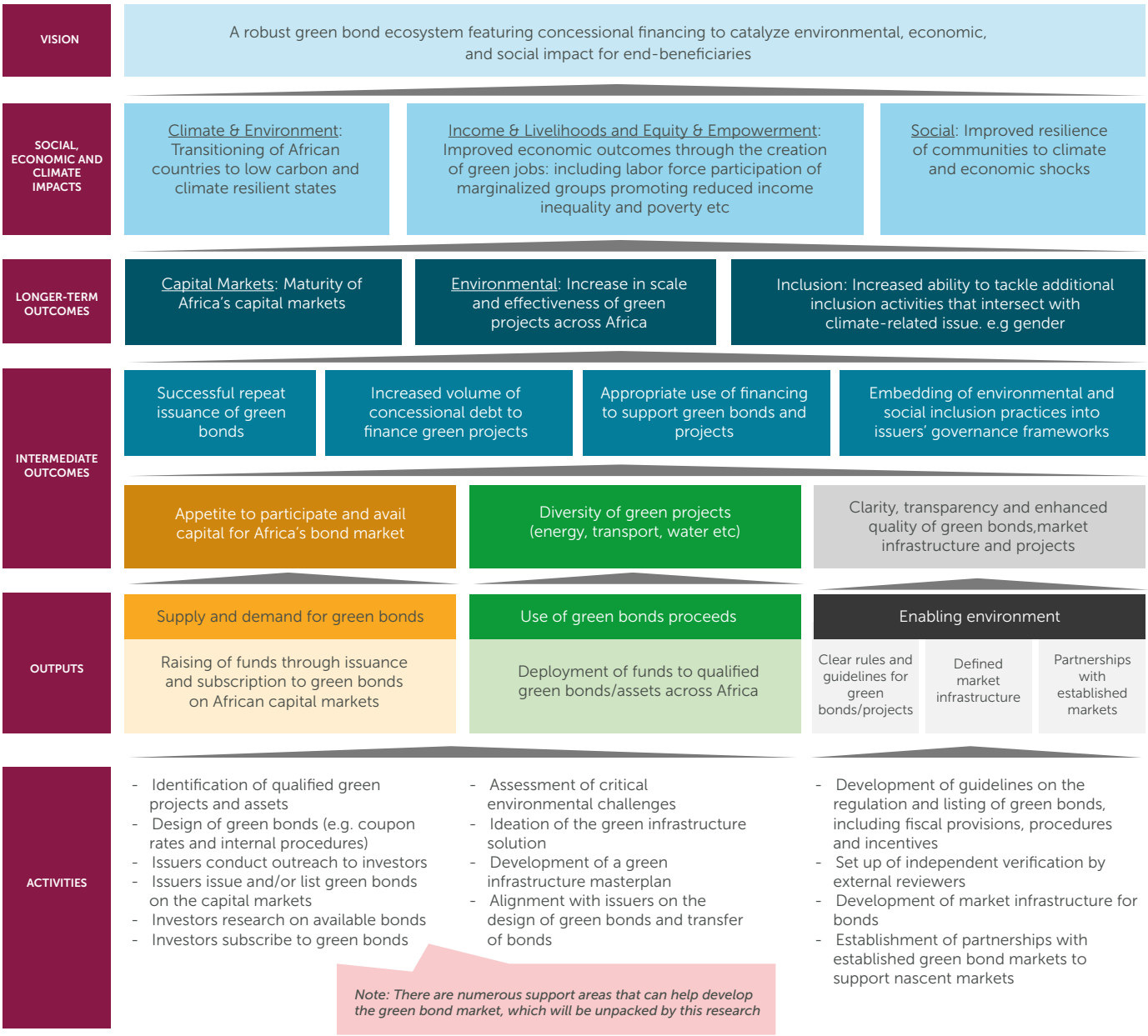
[65] Ibid

2.
Impact of Green Bonds in Africa

2.1 A theory of change for green bonds

The report assessed the impacts of green bonds across three pathways: capital markets, environment, and social inclusion, using a theory of change (ToC) as a conceptual framework. The ToC expresses a vision of a green bond ecosystem in Africa that catalyses impact across capital markets, environment, and social inclusion. This section details the current state, challenges, and benefits of green bonds across the three impact pathways highlighted in the ToC below. The information articulated in this section is a collation of insights from a detailed literature review, stakeholder discussions, and case study visits.

Figure 7: Theory of change for Africa's green bond ecosystem



2.2 Impacts on capital markets

Learning questions and key findings

Key questions –

- What are the impacts of green bonds at the levels of issuer, capital market, and broader economic impact?

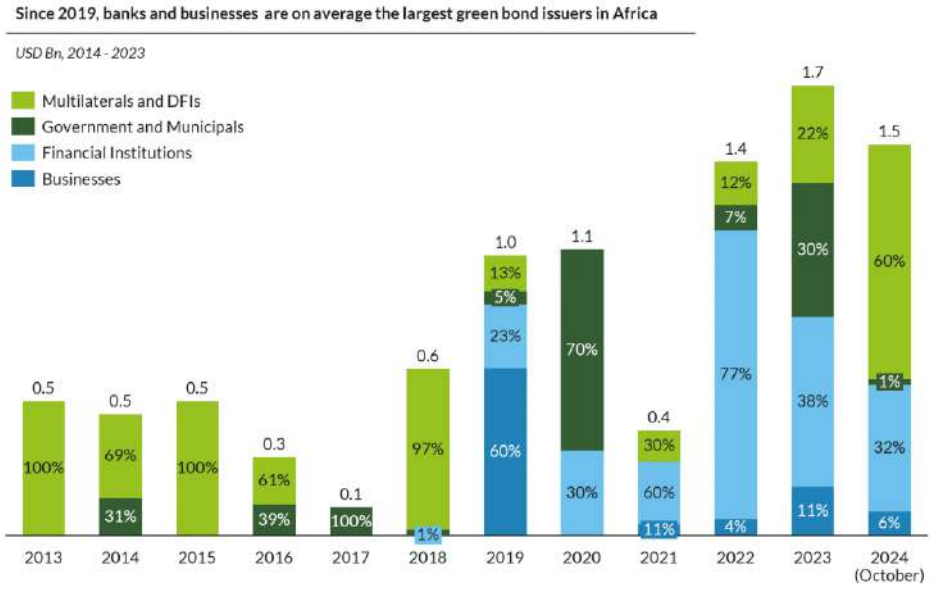
Key findings –

- Africa's green bond market is growing steadily; the region is seen as a viable channel to direct and access green financing due to its adherence to guidelines, presence of bankable projects, and guarantee schemes, which inspire investor confidence.
- Despite this activity, key challenges impact issuers and investors in the market, such as unfavourable macroeconomic conditions, resource-intensive issuance processes, and limited awareness.
- Green bonds create additionality for issuers, depending on market context and catalysing activity in previously dormant markets. These benefits include:
  - **Issuer level**: green bonds provide access to a broader pool of investors, greater capital, and faster debt-raising to finance green projects with verifiable environmental impacts.
  - **Capital market level**: sovereign issuances have provided a proof of concept through sovereign green bonds, incentivizing private sector players to issue green bonds, thus growing the market. Further, past issuances and growing interest are prompting regulators to launch guidelines on thematic bonds.

2.2.1 Current State

The volume and value of issuances in Africa's green bond market have steadily increased in recent years, establishing the market as a viable platform for green financing. The African green bond market registered the second-largest five-year CAGR of 14% from 2019–2023, trailing the Asia-Pacific market (22%) and outpacing the European market (11%).[66] To date, Africa has raised ~USD 9.6 billion through ~76 green bond issuances from ~40 issuers. The issuers include governments and municipals, bi/multi-lateral development financiers, financial institutions (FIs), and businesses. The typology of these issuers has evolved in Africa; between 2013 (the year of the first green bond issuance by an African entity) and 2018, governments and multi-lateral financiers represented nearly 100% of the value of all issuances on average;[67] however, between 2019 and 2024, issuances by FIs and businesses have grown to ~60% of the market value. Notably, the average value of issuances has decreased from ~USD 176 million (2013–2018) to ~USD 113 million (2019-2024) as businesses with lower ticket sizes enter the market.

Figure 8: Value of green bonds by issuer type



[66] Climate Bonds Initiative, Interactive Data Platform, 2024; Dalberg analysis, 2024

[67] Dalberg analysis, 2024

The key to this growth in issuances is adherence to global guidelines and the development of local rules, improving confidence among issuers and investors. Africa's green bond issuances align with ICMA's Green Bond Principles, a set of voluntary guidelines that articulate (i) the use of proceeds, (ii) the process for project selection and evaluation, (iii) the management of proceeds, and (iv) reporting.[68] Moreover, a subset of Africa's green bonds follow the Climate Bond's Standards and Certification Scheme, a set of rigorous, science-based criteria that ensures alignment with the Paris Climate Agreement. Alignment with these initiatives reduces information asymmetries in the market and limits suspicions of greenwashing, attracting investors to participate in these offerings. Additionally, local players in markets such as Nigeria[69] and Kenya[70] have collaborated to develop local green bond rules and guidelines to provide the market with clarity on the design, issuance, and listing of green bonds.

Africa's green bond ecosystem also benefits from additive partnership initiatives that inspire the development of market structures and support local issuances. These partnership initiatives with experienced actors help to provide the necessary interventions to grow the market. For example, AfDB and the Global Green Bond Initiative signed a collaboration agreement to provide technical assistance to support issuers and enhance market infrastructure to attract up to USD 20 billion in green financing.[71]

"The Nigeria Green Bond Programme supported an SME—OneWatt Solar—in accessing a seven-year NGN 3 billion green bond loan, which inspired the entry of other SMEs to the country's green bond market."
- Market actor

To date, FSD Africa has supported 23 issuances which will mobilise USD 1.4 billion of sustainable finance in local currency. FSD Africa has provided support through multiple pathways, including facilitating the development of green bond markets, influencing the establishment of guidelines, creating a pool of licensed verifiers to support issuances, connecting prospective issuers to guarantors, and supporting issuers in identifying green projects. This multi-stakeholder support structure has resulted in 23 issuances in Kenya, Mauritius, Morocco, Nigeria, Rwanda, and Tanzania. FSD Africa has also partnered with actors such as the CBI, the Kenya Bankers Association (KBA), FMDQ Group, the Nairobi Securities Exchange (NSE), and others to set up initiatives such as the Kenya Green Bond Programme and the Nigeria Green Bond Programme. These initiatives aim to enhance countries' access to domestic and international capital markets to finance green projects and assets.[72]

"Ecosystem actors did not believe a mid-sized company like ours could engage the green bond market and gain sizeable financing. Most actors thought that the green bond market was the preserve of multi-lateral banks and governments. However, FSD Africa believed in our vision and theory of change in renewables and introduced us to guarantors while providing technical assistance."
- Market actor

[68] International Capital Market Association, Green Bond Principles, 2021
[69] Securities and Exchange Commission Nigeria, New Rule and Sundry Amendments to the Rules and Regulations of the Commission, 2018
[70] Climate Bonds Initiative, Kenya Bankers Association, Nairobi Securities Exchange,
[71] African Development Bank, Global Green Bond Initiative joins with African Development Bank to strengthen green bond markets in Africa, 2023
[72] FSD Africa, Nigeria Green Bond Programme, accessed December 2024.

Figure 9: Examples of green bond issuances supported by FSD Africa

2.2.2 Challenges

Despite this activity, significant market entry barriers impede medium-sized businesses with valid green projects from accessing the green bond market. Small to mid-sized enterprises represent 90% of businesses and employ 60% of workers in Africa, essentially forming the backbone of the economy. All issuers, including businesses, undergo five steps in issuance and reporting on a green bond: (i) identification of a green project, (ii) drafting of a green bond framework, (iii) review and certification by third-party verifiers, (iv) the issuance itself, and (v) reporting.[73] This process could cost between USD 250,000 to USD 1 million, representing ~5–25% of a mid-sized business's annual turnover.[74,75,76] These costs do not include capacity training and system upgrades needed to enhance environmental data monitoring. In addition, the limited cost advantage in Africa that green bonds provide over conventional bonds—also called the 'greenium' (see the box below)—means that issuers cannot set a lower coupon rate to compensate for these expenses. These factors prevent many businesses with viable green projects from accessing the green bond market without significant cost assistance.

Figure 10: Explanation of greeniums in developed markets[77,78,79]

Insight box

A **green premium or a 'greenium'** is the extra cost that investors are willing to pay for green bonds compared to conventional bonds. This concept is based on the premise that investors value green projects and are **willing to accept a lower return (interest rate).**

A notable greenium emerged in green bond markets after 2019 (twelve years after the first global issuance) when, on average, US dollar- and Euro-denominated green corporate bonds offered a slight borrowing cost advantage to the issuer of about eight basis points compared to conventional bonds. This means that the issuers could afford to offer a bond at an interest rate, on average, eight basis points lower than conventional bonds while maintaining the investor interest. Overall, greeniums are evenly distributed to large, investment-grade issuers within the banking sector and developed economies.

Africa has a distinctive instance of greenium through AfDB's four-year EUR 500 million green bond launched in 2024, where the entity achieved a greenium of two basis points above the Euro Midswaps benchmark for this bond. The greenium resulted from strong investor interest in AfDB due to its strong AAA credit rating and history of financing impactful green projects.

"We would like to share the benefits of our green projects with the world. However, in addition to the limited knowledge on green bonds, we view that issuing one might be too costly for businesses without the grants or technical assistance."
- SME in Nigeria

[73] IFC, Preparing for Green Bond Issuance, 2023
[74] Climate Bonds Initiative, Certification Fee, 2024
[75] NSE, The Kenya Green Bond Market – Issuer's Guide, 2019
[76] ICMA, Introduction to Green Bonds, 2020
[77] Caramichael, John and Andreas Rapp, "The Green Corporate Bond Issuance Premium," International Finance Discussion Papers, 2022
[78] UNDP, Identifying the 'greenium', 2022
[79] AfDB, African Development Bank launches inaugural EUR 500 million 2.875% short 4-year Green Benchmark due March 2028, 2024

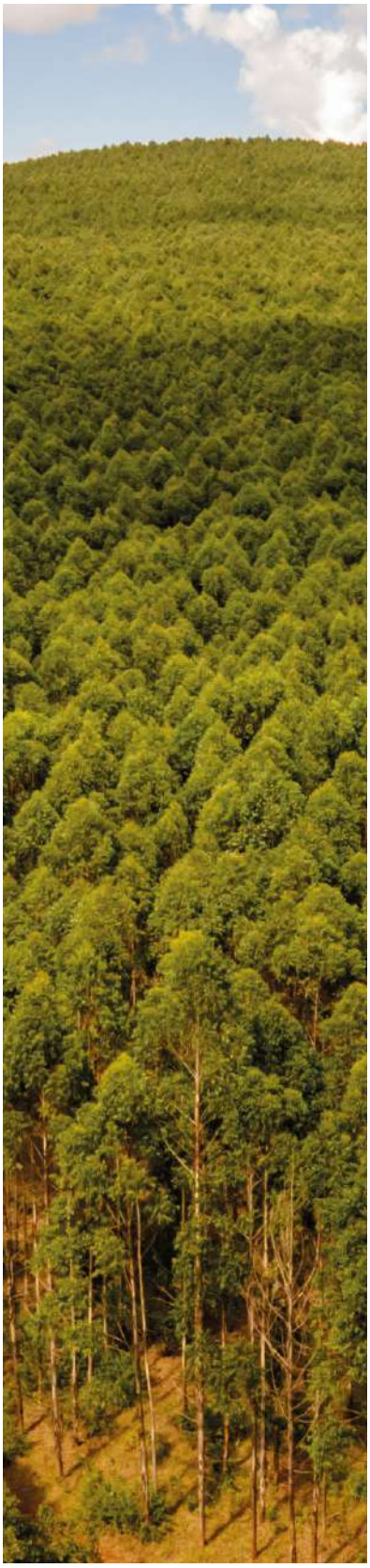
Furthermore, a country's macroeconomic conditions impact issuers and the marketability of their green bonds; as such, issuers in Africa launch a green bond only when they are confident of at least some degree of investor interest. High-interest-rate regimes compel issuers to raise coupon rates, increasing the issuer's cost of debt and its overall cost of capital. This discourages issuers from floating green bonds. On the demand side, currency volatility often raises foreign exchange risk for foreign investors who need prohibitively expensive hedging instruments to preserve the value of investments. This risk dampens foreign investors' demand for African green bonds listed in local currency. All these factors mean that, at times, investors drive the development of green bonds in Africa— prospective issuers may design bonds only if there is a set of investors willing to invest under the prevailing economic circumstances or development actors committed to supporting the issuance process.[80,81]

This macroeconomic context and the bond issuance currency often determine the investor mix—local vs foreign—in Africa's green bond market.

Foreign investors are usually keen on loans denominated in hard currency, but are willing to provide capital in scenarios where the environmental benefits are evident despite the macroeconomic risks. Foreign investors, such as development finance institutions (DFIs) and fund managers, often invest in USD-, EUR-, and GBP-dominated bonds traded on overseas exchanges.[82] This preference is primarily due to lower risk and limited associated costs, i.e., no currency hedging is needed. Nonetheless, foreign investors do sometimes provide capital despite the macroeconomic risks. For example, in 2022, as global-wide inflationary pressure impacted Morocco's economy, and the public debt-to-GDP ratio doubled from 2.1% to 4.2%, as the government borrowed to provide food and fuel subsidies.[83] These factors negatively impacted liquidity, as investors preferred to invest in the USA following an increase in Federal Reserve interest rates, affecting the green bond issuance of ONCF, Morocco's national railway operator. The European Bank for Reconstruction and Development (EBRD), the bond's sole international investor, saw the environmental value of the climate-friendly electrified rail transport and supported ONCF with book building,[84] as well as an anchor investment of EUR 19.2 million (20% of total issuance).[85]

Meanwhile, local investors primarily focus on issuers' credibility and financial stability rather than the green label. Local pension funds and insurance companies, often the largest institutional investors in some African countries, historically prioritise the prospective return on their investments before considering the environmental benefits of their portfolios.[86] This focus stems from their core mandate of investing in assets that preserve their capital, limited appreciation of the long-term environmental benefits that might require them to accept a reduction in the coupon rate, the absence of clear investment policies on green investments, and restrictive regulatory requirements constraining investment in green bonds.

These local players most likely participate in local-currency-denominated green bonds. Despite these legacy issues, a pool of local institutional investors in Africa often opt for local-currency-denominated green bonds, provided the issuer organisation has solid fundamentals or is guaranteed.[87] This option enables them to limit the costs and risks of currency exchange that would lower returns and potentially threaten the capital of their members.



[80] Ibid
[81] Dalberg analysis, 2024
[82] Dalberg analysis,2024
[83] BNP Paribas, Morocco – Risks Under Control, 2024
[84] European Bank for Reconstruction and Development, ONCF Green Bond, 2022
[85] European Bank for Reconstruction and Development, EBRD invests in first green infrastructure bond in Morocco, 2022
[86] Stakeholder interviews: Nigeria, 2024
[87] Ibid

"Because the green bond space is new, the yield on a green bond has to compete with that of a government bond. The rating of the issuer must also be strong. We consult with fellow administrators to ask about the rating of the issuing companies before investing."
- Pension Fund Administrator

"We hope that in the next review of the pension act, the regulator will include a provision for green bonds. This will give us some leeway to invest in the class."
- Pension Fund Administrator

Overall, there are few repeat issuances of green bonds in the African capital markets, which limits activity. A dominant banking industry and an undeveloped capital market result in issuers in some markets opting to obtain loans from banks, provided interest rates are not prohibitive, instead of capital markets.[88] Additionally, in cases where actors seek to engage capital markets, local investors would first opt for government bonds due to competitive interest rates and favourable incentives such as tax cuts, which crowd out private issuers. The Severity of Crowding Out (SOCO) index captures this phenomenon; a neutral score is 0.5, while African countries such as Kenya and Ghana are at 0.7 as the level of public debt has increased in the past decade.[89] These factors, which indicate a nascent market, and the accompanying rigorous design and reporting requirements of green bonds, have contributed to limiting repeat issuances to just six across the continent—by AfDB, Access Bank Nigeria, The Federal Government of Nigeria, Nedbank, GrowthPoint Properties, and NSP.[90] Given the limited activity on the secondary markets, investors trade off liquidity against the potential environmental benefits of green bonds. As a result, investors may demand higher coupon rates to compensate for limited liquidity, eliminating greeniums in the market.[91]

[88] Stakeholder interviews, 2024
[89] European Investment Bank, Is crowding out of private sector credit inhibiting Africa's growth? 2022
[90] Dalberg analysis, 2024
[91] Ibid

Figure 11: Sample of successful green bond repeat issuances in Africa[92,93,94,95,96,97,98]

	First Issuance		Second Issuance		
	Issue amount	Subscription rate	Issue amount	Subscription rate	Objective of second issuance
NORTH SOUTH POWER	• NGN 8.5Billion (USD 27.8 Million)	• 160%	• NGN 6.3 Billion (USD 16.6 Million)	• 115%	• The Series II bond aims to finance their solar power plant to produce an initial 20MW
NEDBANK	• ZAR 1.66Billion (USD 116 Million)	• 3.28x oversubscribed	• ZAR 1 Billion (USD 68 Million)	• >4x oversubscribed	• The proceeds were used to finance renewable energy projects in the solar and wind sectors
FEDERAL GOVERNMENT OF NIGERIA	• NGN 10.7Billion (USD 29.7 Million)	• 101%	• NGN 15.0 Billion (USD 41.5 Million)	• 220%	• The green bond proceeds were used for various projects, including afforestation, irrigation, and rail mass transit.
access Bank	• NGN 15Billion (USD 41.8 Million)	• 100%	• USD 50 Million	• Undisclosed	• The proceeds refinanced new and existing green projects across its portfolios

2.2.3 Existing solutions in response to the challenges

Due to the high cost of entry and unstable macroeconomic conditions, most of Africa's green bond issuances have a blended finance element. Blended finance uses catalytic capital from public or philanthropic sources to increase private sector investment in sustainable development.[99] Many issuers within the green bond context in Africa incorporate technical assistance grants or credit guarantees.[100]

Technical assistance (TA) grant funding is critical to reducing issuance costs in green bond markets. The issuance and monitoring of green bonds are costlier than conventional bonds. Additionally, many prospective issuers lack knowledge of the identification process of green projects, green bond principles and certification standards, verification, and monitoring.[101] Therefore, TA is needed to build issuers' capacity and limit the cost burden of paying external consultants and verifiers. Development actors across Africa have developed several TA initiatives to enhance the growth of the green bond market. Examples include (i) the International Finance Corporation's (IFC) Green Bond Technical Assistance Program (GB-TAP),[102] (ii) the Green Climate Fund's Green and Resilience Debt Platform,[103] and (iii) the FSD Africa's Green Bond Support Programmes, among others.[104,105]

Credit guarantees often play a crucial role in market entry, particularly for first-time green bond issuers and in relatively new markets, by increasing investor confidence. Credit enhancement from private guarantors such as InfraCredit and GuarantCo, or from government agencies with high credit ratings (often AAA), such as Morocco's Tamwilcom, increase investor appetite by wholly or partially eliminating default risk.[106] These guarantees help to reduce doubt investors may have in a first-time issuer's financial viability and creditworthiness based on that issuer's limited experience in bond markets. For example, during NSP's first green bond issuance, the privatisation of Nigeria's power grid through the concession of government assets was relatively new.[107] Thus, investors remained sceptical about the firm's financial viability and management capacity. InfraCredit's guarantee on NSP's Series 1 green bond instilled confidence in NSP's business model and internal capabilities, contributing to the 60% oversubscription.[108] Without the guarantee, NSP would have launched a more costly green bond with a higher coupon rate to convince investors.[109] Due to the confidence instilled in the first issuances and NSP meeting its repayment obligations, it successfully launched its second green bond without guarantee, achieving a 15% oversubscription rate, signalling a greater market belief in its business model and green projects.[110]

[92] InfraCredit, Transitioning to a Low Carbon Economy, accessed 2024
[93] Climate Bonds Initiative, Nedbank Limited issues first private sector Climate Bonds Certified green bond in South Africa: A first for the Private Sector in South Africa, 2019
[94] Nedbank Group, South Africa's first commercial bank green bond: JSE Annual ESG Investor Showcase, 2019
[95] Climate Bonds Initiative, Nedbank, accessed 2024
[96] Focus (The World Federation of Exchanges), Nigeria's green bonds are a key step in our sustainable finance agenda, 2021
[97] Access Bank, Green Bond 2023: Annual Impact Report, 2023
[98] North South Power, Company Profile, Accessed 2024
[99] Convergence Finance, Blended Finance, Accessed 2024
[100] Dalberg analysis, 2024
[101] Dalberg analysis, 2024
[102] International Finance Corporation, Green Bond Technical Assistance Program, 2024
[103] Green Climate Fund, New platform to boost environmental impact financing in Africa, 2023
[104] Green Bond Programme Kenya, About, 2020
[105] FSD Africa, Nigeria Green Bond Programme, 2023
[106] Ibid
[107] Stakeholder interviews, 2024
[108] Ibid
[109] Stakeholder interviews, 2024
[110] North South Power, Company Profile, accessed 2024

"The credit enhancement from InfraCredit was critical in successfully issuing our Series I bond. This success enhanced market confidence, and in addition to fulfilling our credit obligations, we successfully launched a 15% oversubscribed Series II without a guarantee."
- Issuer

"Currency swaps through TCX are common in the Asian markets, where investors compete to invest in local currency bonds."
– Expert

Beyond blended finance, issuers have leveraged put options to enhance the liquidity of green bonds , attracting investors and adding cost flexibility. Given the nascency of the African green bond ecosystem, activity in the secondary markets is minimal. Nonetheless, options can encourage investor interest by providing a redemption option to investors. For example, Access Bank's second green bond, launched in 2022, initially offered a coupon rate of 5.5%.[111] This bond provided a put option, allowing investors to sell and receive the invested principal. Those who do not exercise their option end up with a higher coupon rate of 7.25% in the last three years to maturity.[112] This option gives investors flexibility and creates liquidity by inducing a pseudo-secondary market. Moreover, this option enabled Access Bank to achieve attractive pricing with a blended average cost of funding below fair value.[113]

[111] Access Bank, Green Bond 2023 – Impact Report, 2023
[112] Ibid
[113] Ibid

2.2.4 Benefits

This section examines the benefits of green bonds at two levels: (i) issuer and (ii) ecosystem

Issuer-level

The issuance of green bonds in Africa has led to financial additionality for issuers. These avenues include:

- **Resource mobilisation:**
  - **Investor access** – Green bonds enable issuers to mobilise financing from private financiers, local and international who would typically not invest in bond instruments or lend to the issuer.
  - **Speed** – Green bonds enable issuers to mobilise financing from financiers faster than conventional loan provisions.
  - **Volume** – Green bonds have enabled issuers to mobilise significant sums of financing they would otherwise not receive through other loan instruments.
- **Technical assistance**: Green bonds provide issuers access to technical assistance and information sharing that is unavailable through other loan instruments.

Africa's issuers state that green bonds have enabled them to access a more diverse pool of investors and greater financing volumes at a faster pace than conventional debt instruments. Issuers note that green bonds have provided access to a broader pool of investors, particularly local institutional actors such as pensions and international investors.[114] The investor base includes DFIs with environmental investment mandates that would not have provided capital through conventional bonds.[115] This access is useful for issuers in markets with constrained liquidity and has the added benefit of driving credibility and allowing for easier book building.[116] Furthermore, the green bond market has allowed issuers on the continent to access a higher volume of capital—ten to twenty times the value of bank loans—and to consistently achieve oversubscriptions.[117] This volume, coupled with a faster pace of mobilising financing than other loans, allows issuers to effectively implement their green projects and realise environmental and economic benefits.[118]

"Within two hours, investors oversubscribed our green bond by four times. This green bond financing also enabled us to cut the design and approval process from five years to 18 months. The financing enables us to run things concurrently."
- Issuer

"At the time of issuance, there was a liquidity crisis due to the changes in interest rates. The green label enabled us to access financing from EBRD."
- Issuer

[114] Stakeholder interviews, 2024
[115] Ibid
[116] European Bank for Reconstruction and Development, ONCF Green Bond, 2022
[117] Ibid
[118] Ibid

Green bonds enable issuers to develop a credit history and demonstrate creditworthiness, providing access to additional green financing. As issuers meet their bond obligations, they build a credit profile which allows them to access financing from banks and other financial institutions. For example, Acorn accessed a KES 6.7 billion (USD 43 million) loan from Absa Bank[119] and USD 180 million as long-term concessional financing from the U.S. Development Finance Corporation (DFC).[120] The concessional financing from the U.S. DFC will also unlock funding of USD 380 million arranged by Stanbic Bank Kenya and USD 315 million from Kenyan capital markets, for a total blended funding of USD 700 million over 18 years.[121] This access was driven by Acorn successfully issuing its green bond, implementing its green projects, and continuing timely repayments.[122]

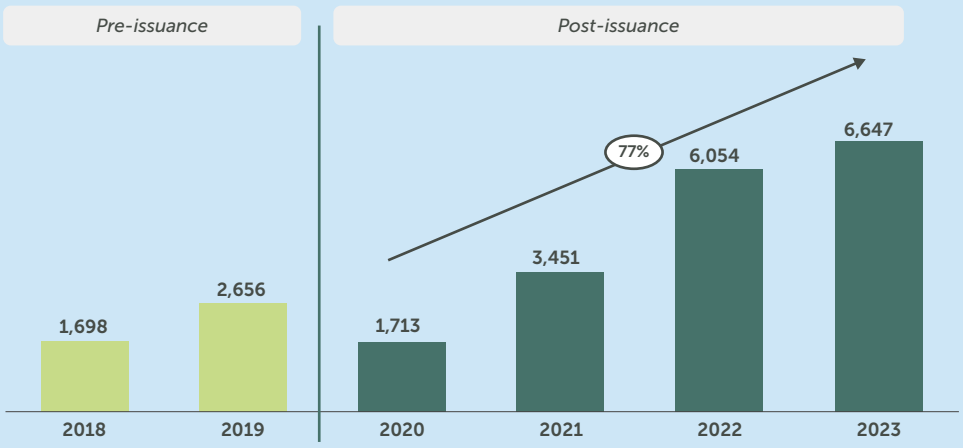
Issuers consider technical assistance essential to green bond design and issuance, citing higher costs and limited technical knowledge as critical deterrents to green bond issuance.[123] Notably, interviewed issuers share that the green label was instrumental in allowing them to access technical assistance—including capacity building and grant funding from organisations such as FSD Africa to cover the costs of design, verification, issuance, and listing—and enable the transition of their green bond from conceptualisation to market.[124]

Green bond issuances have enabled issuers and their end-beneficiaries to grow their customer base and associated revenues. While impact often varies and is localised, green bonds unlock financing that allows issuers to scale their operations, providing ample revenue sources through increased asset and customer bases.[125] For example, Acorn's green bond helped them to fund eight properties and grow their total bed capacity by 6,900.[126] At an average occupancy of 87% across its operational properties,[127] these additional beds offer Acorn a solid revenue base, allowing its rental income to grow at a CAGR of 77% between 2020 and 2023.[128] Where issuers are not profit-seeking entities, e.g., a government entity with a social mandate, green bonds benefit end-beneficiaries. For example, the City of Cape Town financed flood adaptation, allowing new businesses to enter the Strand area.[129]

Figure 12: Illustration of Acorn's rental income pre- and post-green bond issuance

Acorn's rental income significantly increased after the green bond issuance

KES, 000's, 2018 - 2023



[119] Acorn D-REIT, Annual Report, 2023
[120] Acorn Holdings, Acorn Holdings Secures USD 180 Million (KES 23.6 Billion) in Funding from the U.S. Development Finance Corporation for Affordable Student Housing, 2024
[121] Acorn I-REIT, Semi-annual report and unaudited interim financial statements for the half year period ended 30 June 2024,2024
[122] Dalberg analysis, 2024
[123] Stakeholder interviews, 2024
[124] Stakeholder interviews, 2024
[125] Dalberg analysis,2024
[126] Acorn D-REIT, Annual Report, 2023
[127] Acorn I-REIT, Semi-annual report and unaudited interim financial statements for the half year period ended 30 June 2024, 2024
[128] Ibid
[129] Stakeholder interviews, 2024
[130] Bank for International Settlements, Sovereign Green Bonds: a catalyst for sustainable debt market development, 2024

Ecosystem benefits

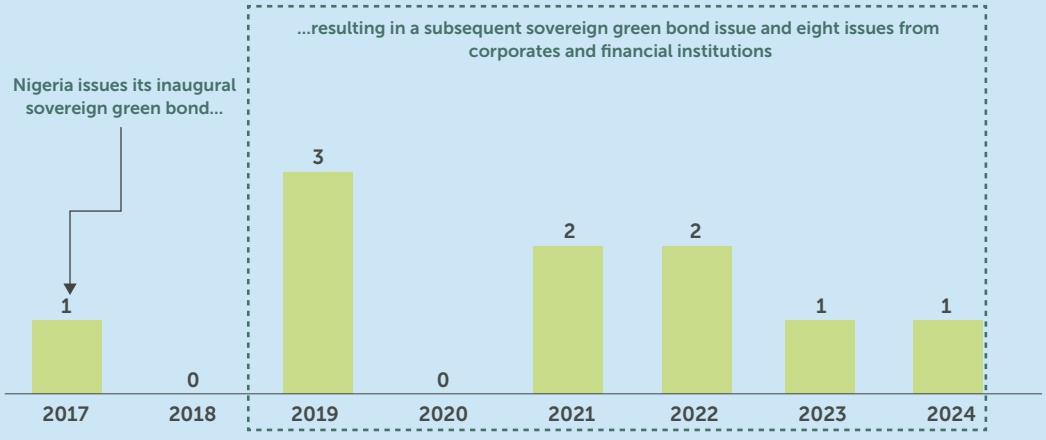
Sovereign green bonds have contributed to the growth of capital markets by catalysing the issuance of green bonds by private players. Often, sovereign issuances of green bonds provide a demonstration effect, raising awareness and stimulating investor appetite, opening the opportunity for local issuers.[130] Further, these sovereign issuances signal a strong commitment by the government to green policies, growing the appetite for firms to seek more green financing.[131] For example, the Federal Government of Nigeria issued its first green bond in 2017, paving the way for entry into the market by North South Power and Access Bank in 2019. Subsequent corporate issuances have created one of Africa's largest green bond markets by value.[132]

The process of green bond issuances has also spurred the development of guidelines for other thematic instruments. As the market for green bonds has grown, regulators have seen the potential in other types of sustainable finance instruments. Regulators have leveraged the lessons from green bonds to sharpen sustainable finance frameworks and articulate stronger guidelines for thematic bonds, such as social bonds and sustainable bonds. As of September 2024, 12 African countries have developed or are drafting these guidelines: South Africa, Nigeria, Egypt, Morocco, Kenya, Ghana, Senegal, Cote d'Ivoire, Rwanda, Mauritius, Seychelles, and Tunisia.[133]

Figure 13: Nigeria's green bond market

Nigeria's sovereign green bond issuance provided a proof of concept for entry into the market by private players

Volume, 2017 - 2024



[131] Ibid
[132] Dalberg analysis, 2024
[133] Dalberg analysis, 2024

2.3 Impacts on the Environment

Learning questions and key findings

Key questions –

- What are the positive and negative environmental impacts of these projects to date?

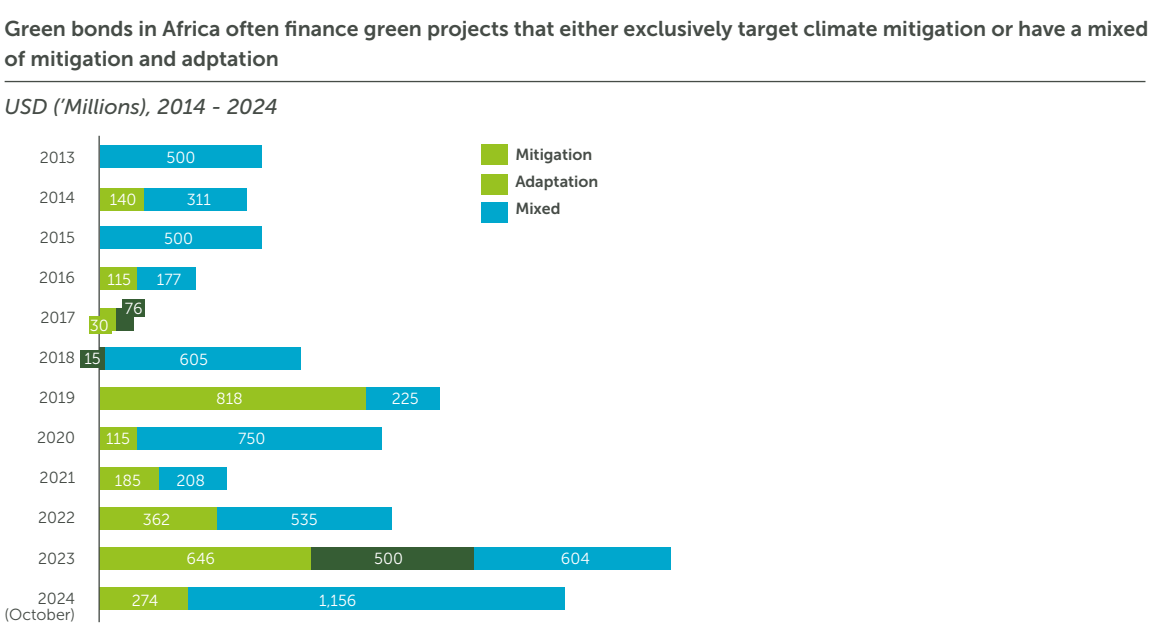
Key findings –

- The green projects funded through green bonds have notable impacts, including reduced GHG emissions, water savings, and improved waste management. Over time, there is still a critical need for more bankable green projects to support the continent in meeting its climate resilience targets.
- The majority of green bonds focus on mitigation projects due to their clear return. Yet, Africa, the continent most vulnerable to climate change, requires an estimated USD 579 billion to meet its adaptation financing goals by 2030.
- While nascent, the green label can provide an alternative financing source for African governments to meet the investment requirements of their Nationally Determined Contributions.
- Notably, there is a need to harmonise impact reporting to allow for easy aggregation and comparability of the impact of green projects in Africa.

2.3.1 Current State

Over the past decade, green bonds have emerged as a pathway to finance green projects with verifiable environmental benefits. Critically, mitigation projects receive the most financing. Between 2013 and 2018, on average, ~ 80% of all green bond value in Africa was dedicated to funding projects with a mix of climate mitigation and adaptation goals. Governments and DFIs floated large green bonds to cover diverse projects in line with their broad climate ambitions.[134] As more private sector players have entered the market, mitigation projects have grown from an average of ~20% of green bond value between 2013 and 2018 to ~40% between 2019 and 2024.[135] This growth in the proportion of mitigation projects is due to their having clear and often measurable greenhouse gas reduction targets, which align with many investors' ambitions.

Figure 14: Climate mitigation and adaptation mix of Africa's green bonds[136]



[134] Climate Bonds Initiative, Interactive Data Platform, accessed 2024; Dalberg analysis, 2024.
[135] Ibid.
[136] Climate Bonds Initiative, Interactive Data Platform, Accessed 2024; and Dalberg Analysis, 2024.

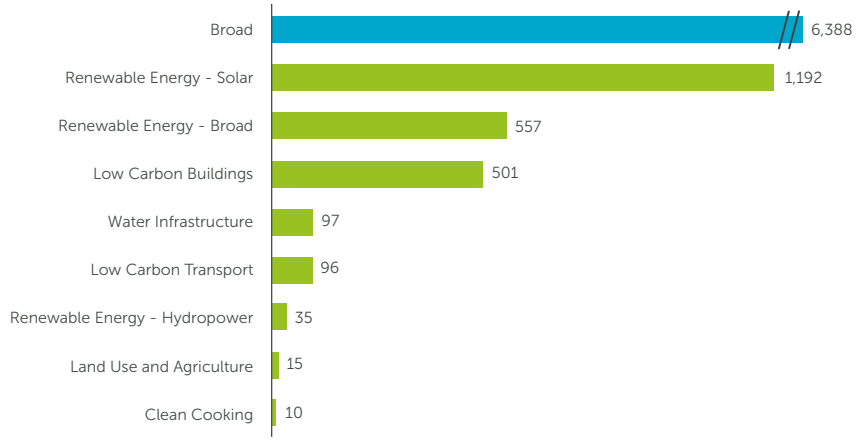
Renewable energy, buildings, and transport are the most dominant sectors in issuance value. Projects exclusively featuring renewable energy (including solar and hydroelectric projects), buildings, and transport have received the most financing— roughly 30% of the total value of green bonds since 2013.[137] These projects tend to be larger, scalable, and long-term in nature, which enhances their commercial viability. In contrast, sectors such as smart agriculture have bespoke business models and irregular and often unpredictable returns, makes them more challenging to convert into green bonds.[138]

"Green bonds are anchored on bankable green projects. Therefore. the renewable energy sector has the most issuances worldwide given that it has defined business models and a long-term nature that matches the 7-to-15-year horizon of bond issuances."
- Expert

Figure 15: Allocation of green bond financing by sectors in Africa[139]

Renewable energy is by far the largest recipient of green bond financing in Africa, and indication of its commercial viability to issuers and investors

USD ('Millions), 2013 - 2024



2.3.2 Challenges

"Most green projects are small and modular—USD 1.5 million or less. We had to invest in these projects and prove to our board that this could become a USD 180 million market."
- Guarantor

With size as the dominant constraint, prospective issuers face challenges in developing bankable green projects that can access financing from green bond issuances. Market actors state that green projects on the continent are often small and modular, and that investment is typically required to scale these projects and develop a proof of concept.[140] Coupled with relatively large minimum ticket size requirements for bonds on African capital markets—e.g., a minimum of USD 2.8 million in Kenya[141] —prospective issuers often cannot leverage green bonds as a viable funding source for their green projects.

[137] Ibid.
[138] Stakeholder interviews, 2024.
[139] Dalberg analysis, 2024
[140] Stakeholder interviews, 2024
[141] Business Daily, Tough CMA terms for bond issuers, 2024.

Given the different resource and energy mix, green bond issuers in Africa have challenges matching global taxonomies, complicating the process of accessing certifications and extending the time to market, which produces additional financial complications. The CBI developed the Climate Bonds Taxonomy, which helps issuers, investors, governments, and municipalities understand the critical investments needed to deliver a low-carbon economy.[142] Critically, this taxonomy focuses on the issuers articulating how 'green' they are today. However, due to capacity limitations and, sometimes, unique resources that are incompatible with the guidelines, African issuers face challenges in understanding the taxonomy and matching their green assets to the set thresholds. Therefore, many issuers incur additional costs in engaging external parties to contextualise and articulate their assets' contextualised 'greenness'; this lengthens the time to market. For example, Bank Windhoek identified bush encroachment as a project that would deliver climate adaptation benefits.[143] However, the bank had to obtain external technical assistance to verify the 'greenness' of the project type and the financial benefit. Overall, this challenge has led practitioners to call for the design of a harmonised African-based taxonomy that recognises the continent's needs while maintaining global standards.[144] Other continents have developed region-specific taxonomies, such as the Association of Southeast Asian Nations (ASEAN) Green Bond Standards in 2018.[145]

"You have to debate your case on why a certain asset is 'green' enough to receive certification, and we had to rely on external certification for our green assets to be certified. Small-sized prospective issuers lack the capacity or finances to get through this; hence, they are disincentivised."
- Issuer

While most African issuers use the proceeds from green bonds appropriately, questions remain about the accuracy of reporting and the use of standard impact measurement metrics across bond issuances globally. The Green Bond Principles emphasise the need for reporting to ensure transparency and accountability regarding the allocation of proceeds, the methodologies used, and the environmental benefits realised.[146] An analysis of the use of proceeds for African green bonds indicates that issuers primarily use them for the purposes indicated at issuance.[147] Nonetheless, investors and market actors often question the rigour and accuracy of reporting, particularly for self-reported green bonds in Africa and globally. While issuers have reputational incentives to use proceeds appropriately, the absence of direct legal covenants results in investors often having limited legal recourse in the event of inappropriate use of proceeds and potential 'greenwashing.'[148] Finally, practitioners note that while impact reporting standards exist, such as ICMA's Harmonised Impact Reporting Framework, issuers often find them challenging to adopt.[149] Hence, issuers use a wide range of metrics globally, leading to challenges and a lack of clarity when aggregating or comparing projects across issuers.[150]

Finally, while limited in number and sector-dependent, some green bonds have led to adverse environmental impacts globally. Market actors raise concerns about the adverse environmental effects of green bonds, particularly around negative biodiversity impacts and end-of-life management.[151] For example, a European issuer in the pulp industry issued green bonds that focus on the 'sustainable forest management' of forests that are identified as those certified under the Forest Stewardship Council (FSCTM) and the Programme for the Endorsement of Forest Certification (PEFCTM).[152] Nonetheless, the carbon captured by trees is released at harvest and transformed into products that are often burned, incinerated, or landfilled after three years, releasing emissions back into the environment.[153,154] Further, such projects result in human displacement from managed forest areas, deforestation of new land by displaced people, negative impacts on water availability and quality, and biodiversity concerns due to fertiliser and pesticide use.[155] These adverse effects underline the need for issuers to conduct holistic environmental assessments to mitigate or avoid these outcomes.

[142] Climate Bonds Initiative, Climate Bonds Taxonomy, 2023
[143] Climate and Development Knowledge Network, Enhancing green bond issuances in developing economies, 2022
[144] Stakeholder interviews, 2024
[145] Climate Bonds Initiative, Green Bonds – State of the Market, 2018
[146] The International Capital Markets Association, Green Bond Principles: Voluntary Process Guidelines for Issuing Green Bonds, 2021
[147] Dalberg analysis, 2024
[148] Baker McKenzie, Critical challenges facing the green bond market, 2019
[149] ICMA, Harmonized Framework for Impact Reporting, 2022
[150] Climate Bonds Initiative, Post-issuance reporting in the green bond market, 2021
[151] Stakeholder interviews, 2024
[152] Environmental Paper Network, Industrial Tree Plantations and Green Bonds: The Green Bond Series, 2021
[153] Ibid
[154] Ibid
[155] Ibid

2.3.3 Existing solutions in response to the challenges

Collaborating with local and global market actors and leveraging the Green Bond Principles, regulators and exchanges across the continent have developed green bond guidelines and regulations to act as reference points for issuers and other market actors (see the table below).[156] These documents provide general information on green bonds and guidance on the design and issuance of green bonds. At a regional level, FSD Africa and the Climate Bonds Initiative worked together to develop the 'Africa Green Bonds Toolkit' to provide the capital markets in the region with guidance on issuing green bonds that align with international best practices and standards.[157] Multi-lateral development banks and development finance institutions also developed a harmonised impact reporting framework for green bonds.[158] This framework provides core principles, recommendations, and indicators for the energy efficiency and renewable energy sectors as a reference for issuers as they develop their reporting.[159]

Table 2: Green bond guidelines, taxonomies, and regulations[160,161, 162,163,164,165]

Market actor	Country	Regulation or guideline	Year of release	Collaborators or Funders
Moroccan Capital Market's Authority (AMMC)	Morocco	Green Bonds Guidelines	2016	International Finance Corporation (IFC)
Securities and Exchange Commission (SEC) Nigeria	Nigeria	New Rule and Sundry Amendments to The Rules and Regulations of The Commission	2018	FMDQ
Capital Markets Authority (CMA)	Kenya	Policy Guidance Note on Green Bonds	2019	FSD Africa
Nairobi Securities Exchange (NSE)	Kenya	The Kenya Green Bond Market: Issuers Guide	2019	Green Bonds Programme Kenya
Climate Bonds Initiative (CBI)	Regional	Africa Green Bond Toolkit	2020	FSD Africa
National Treasury of South Africa	South Africa	South African Green Finance Taxonomy	2022	IFC, Sida, Swiss Confederation: State Secretariat for Economic Affairs SECO, Carbon Trust, National Business Initiative

[156] Ibid
[157] FSD Africa, Climate Bonds Initiative, Africa Green Bond Toolkit, 2020
[158] AfDB, AFD, ADB, EBRD, EIB, IADB, The World Bank, IFC, KfW, FMO, NIB, Green Bonds: Working Towards a Harmonized Framework for Impact Reporting, 2015
[159] ICMA, Harmonized Framework for Impact Reporting, 2022
[160] AMMC, Green Bond Guidelines, 2016
[161] Capital Markets Authority, Policy Guidance Note on Green Bonds, 2019
[162] Nairobi Securities Exchange, The Kenya Green Bond Market: Issuers Guide, 2019
[163] The Securities and Exchange Commission Nigeria, New Rule and Sundry Amendments to the Rules and Regulations of the Commission, 2018
[164] Climate Bonds Initiative, Africa Green Bond Toolkit, 2020
[165] National Treasury Republic South Africa, South African Green Finance Taxonomy, 2022

Green bond issuers are keen on limiting environmental waste and incorporating key efficiency principles into their designs. Recognising the potential for adverse environmental impacts, green bond issuers actively embed risk mitigation mechanisms into their green projects. These mechanisms include conducting environmental impact assessments to identify and mitigate potential negative consequences of their projects and actively limiting adverse environmental impacts as part of their environmental targets.[166] For example, Acorn seeks to relieve the environmental impact of municipal waste management by achieving a 90% waste diversion rate by 2030 on overall waste generated. Across its portfolio of green buildings, Acorn diverted 40 metric tonnes of waste from landfills in 2022, achieving a waste diversion rate of 78% in 2023 (up from 75% in 2022.)[167]

2.3.4 Benefits

This section will report the benefits at two levels: (i) issuer and (ii) ecosystem.

Issuer-level

The green bond reporting requirements often urge issuers to sharpen their commitments and practices. Green bond issuers on the continent often have defined environmental practices, policies, and strategies, and are able to leverage green bond financing to meet their green agendas.[168] These track records of environmental and sustainable practices can inspire investor confidence in issuers. And while these practices have in many cases preceded green bond issuance, green bond reporting requirements are helping issuers sharpen environmental practices and catalyse an organisation-wide commitment to sustainability.[169]

"Once you start to report, departments see the reports and want to improve their ESG performance."
~Issuer

[166] Stakeholder interviews, 2024; Dalberg analysis, 2024
[167] Acorn Holdings, Sustainability Report, 2023
[168] Dalberg analysis, 2024
[169] Stakeholder interviews: Kenya, 2024

In terms of impact, issuers and investors are starting to meet their climate reduction targets as the nascent market evolves. An analysis of environmental benefits shows that issuers are making progress towards meeting their broader climate commitments through reduced greenhouse gas emissions, energy savings, reduced carbon intensity, and improved flood defence. Further, experts indicate that while the impact is relatively small, at this early stage, the set-up of this 'green infrastructure' is essential for the future as the globe transitions to net zero.[170] The environmental impacts that issuers are able to achieve enable investors with ESG aspirations or requirements to meet their climate goals and maintain the 'greenness' of their portfolios. Market actors report that while progress is being made, and is important, green bonds can do much more to address long-standing environmental challenges at a municipal level.[171]

"There is an early impact through NSP and One Watt Solar, which provide renewable energy. Nigeria needs more funding to transition from fossil fuels to clean energy. Further, flooding is now a problem in the normally dry Northern states, signalling a need for a blue bond."[172]
- Market actor

Figure 16: Sample environmental impacts for issuers

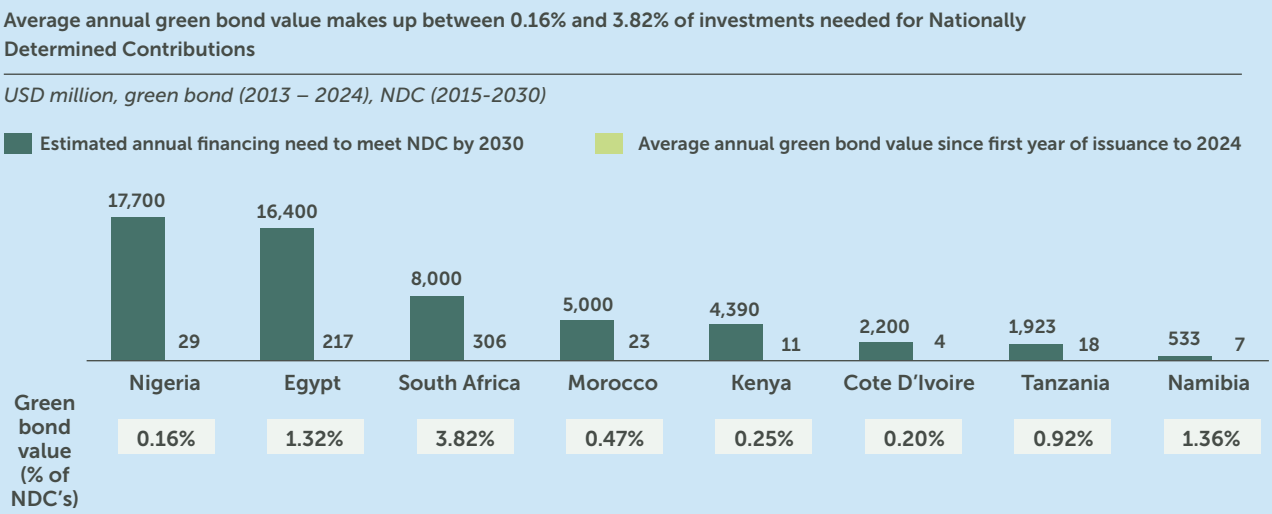
	Sector	Year of issuance	Environmental goal	Impact achieved
acorn	Low Carbon Residential Buildings	2019	Mitigation	**Based on EDGE Level 1 criteria:** Water Efficiency: **Water savings of atleast 30% across 4 properties** Energy Efficiency: **Energy savings of atleast 20% across 4 properties** Embodied Energy in materials: **30-43% embodied energy savings across 4 properties**
NORTH SOUTH POWER	Renewable energy - Hydroelectric	2019	Mitigation	**GHG Emissions avoided:** 01/03/2019 to 31/12/2019: **958,343 tCO_2e** 01/01/2020 to 31/07/2019: **520,716 tCO_2e** **Renewable Generation:** 01/03/2019 to 31/12/2019: **2,314,837 MWh** 01/01/2020 to 31/07/2019: **1,257,769 MWh**
CEC RENEWABLES LIMITED A MEMBER OF THE CEC GROUP OF COMPANIES	Renewable energy - Solar	2023	Mitigation	**Riverside Solar Plant:** Actual Annual Generation: **46.6MWh** Estimated CO2 emissions avoided: **22,630 tonnes** **Itimpi Solar Plant** Actual Annual Generation: **126MWh** Estimated CO2 emissions avoided: **44,000 tonnes**
access Bank	Broad	2019	Broad - Mitigation and Adaptation	GHG emissions: **730 tCO_2e per year** Installed energy capacity: **0.92MW** Renewable energy generation: **1,531 MWh per year** **900 hectares** of land protected from flooding **400,000** residents protected against flooding

[170] Stakeholder interviews: South Africa, 2024
[171] Stakeholder interviews: Nigeria, 2024
[172] Blue bonds are financing instruments that raise funds for investments such as reduction in ocean plastic pollution, marine ecosystem restoration, sustainable shipping, eco-friendly tourism, and offshore renewable energy.

Ecosystem level

While marginal, investment in green bonds is helping to drive support to meet the USD 277 billion funding need for national climate mitigation and adaptation efforts. Most African governments anticipate significant climate mitigation and adaptation financing from donor funding. However, the nascent green bond market provides an alternative source for countries by sourcing investment from climate-focused, often international investors.

Figure 17: Average annual green bond value vs investment required to meet Nationally Determined Contributions



2.4 Impact on social inclusion

Learning questions and key findings

Key questions –

- What are the positive and negative social inclusion benefits of green bonds in Africa?

Key findings –

- Green bonds do not traditionally focus on social inclusion or gender considerations.
- Green bonds often have indirect social inclusion benefits due to environmental issues being inextricably linked to social inclusion issues.
- Notably, adaptation projects by design feature closer linkages to social inclusion than do mitigation projects; green projects from sovereign and municipal bond issuance often consider social inclusion aspects.
- The most significant social benefits of the projects include the creation of job opportunities, enhanced living conditions for marginalized communities, and the development of inclusive space for community members.
- Conversely, while limited, the negative social impacts of green projects include the displacement of people, particularly for large-scale infrastructural assets.

Green bonds do not traditionally focus on social inclusion or gender considerations; rather, they primarily mobilise funding for projects or assets with environmental benefits. Based on ICMA's principles and the Climate Bonds Standards, green bonds are focused solely on raising investment for new and existing projects with environmental benefits. As a result, issuers leverage green bonds to meet their environmental targets, and often do not directly incorporate social inclusion benefits into their green bond design. Moreover, these bonds do not intentionally include gender considerations despite climate change impacting women and girls disproportionately. To address this gap, market actors point to other bonds, including social bonds, sustainability bonds, and sustainability-linked bonds, to mobilise funding for broader social inclusion targets (see the figure below).

Figure 18: ICMA's social, sustainability, and sustainability-linked bond definitions[173,174,175]

Social Bonds	"Social Bonds are any type of bond instrument where the proceeds, or an equivalent amount, will be exclusively applied to finance or re-finance in part or in full new and/or existing eligible social projects… and which are aligned with the four core components of the social bond principles (SBP)"
Sustainability Bonds	"Sustainability Bonds are any type of bond instrument where the proceeds or an equivalent amount will be exclusively applied to finance or re-finance a combination of both green and social Projects. Sustainability bonds align with the four core components of both the GBP and SBP; the former is especially relevant to underlying green projects, the latter to underlying social projects"
Sustainability-Linked Bonds	"Sustainability-linked bonds (SLBs) are any type of bond instrument for which the financial and/or structural characteristics can vary depending on whether or not the issuer achieves predefined sustainability/ESG objectives. In that sense, issuers are thereby committing explicitly (including in the bond documentation) to future improvements in sustainability outcome(s) within a predefined timeline"

While green bonds do not aim to achieve social inclusion goals, they often have indirect social inclusion benefits due to the interlinkages between environmental and social inclusion issues. Although indirect in many cases, green projects have resulted in various social inclusion benefits, including (i) access to electricity, (ii) improved income through job creation, (iii) access to low-cost transportation and (iv) access to water. For example, Acorn's green bond has created 1,857 jobs; 41% of directly-created jobs are held by women.[176] In Morocco, ONCF's green bond has provided affordable transportation for civilians; reduced travel times; and improved access to jobs, healthcare, and education.[177] By constructing flood defence using green bond proceeds, residents of Cape Town cite an improved quality of life due to new businesses, new jobs, and healthier living with limited sewerage disposal.[178]

"The quality of life in the Strand area [Cape Town] is better due to new businesses, jobs, and healthier living with limited sewerage disposal. Additionally, the sea wall has maintained property value given the maintenance of the area and its growth as a popular tourist attraction"
~ Residents Association

[173] The International Capital Markets Association, Social Bond Principles: Voluntary Process Guidelines for Issuing Social Bonds, 2021
[174] The International Capital Markets Association, Sustainability Bond Principles: Voluntary Process Guidelines for Issuing Sustainability Bonds, 2021
[175] The International Capital Markets Association, Sustainability-Linked Bond Principles: Voluntary Process Guidelines, 2024
[176] Acorn Holdings, Sustainability Report, 2023
[177] ONCF, ONCF Green Bond Reporting, 2023
[178] Stakeholder interviews,2024
[179] Stakeholder interviews: Nigeria, 2024.

Green bonds have also led to localised job creation and income growth. Green bonds have increased average income by creating jobs for end-beneficiaries of green projects. While often localised to project implementation areas, market actors note that increases in average income have resulted in downstream economic benefits for local communities by enabling the projects' employees to support local businesses.[179]

Table 3: Sample of jobs created by green bonds in Africa

Issuer	Location	Green bond value (USD)	Cumulative number of jobs
Acorn	Kenya	55 million	~1,857
North South Power	Nigeria	27 million	~549
African Development Bank	Multi-country	3,800 million	~ 2,962,948[180]
Copperbelt Energy Corporation Renewables	Zambia	54 million	~1,900

To better address social inclusion challenges, practitioners highlight the need to embed social inclusion considerations in green bond design. Given that environmental and social inclusion issues are often inextricably linked, practitioners are underscoring the need to embed social inclusion considerations into green bonds, creating "Green+" bonds to support social impacts in the future.[181] This approach is based on the idea that green projects often have social implications, and as such, green bonds should include social co-benefits. These practitioners point out that "Green+" bonds would help urgent public and private green projects to achieve their targets while also providing a basis for a just and inclusive green transition.[182] However, other players express concern that multiple labels could confuse players in the thematic bonds market, dampening its growth. These players emphasise the importance of a globally agreed-upon labelling system for sustainable bonds.[183]

Additionally, working with the government on adaptation efforts increases the likelihood of enhancing social inclusion benefits. As governments have a social mandate to safeguard and improve communities' living conditions and resilience to shocks; their projects typically feature aspects of social inclusion. By leveraging the reach and mandate of public initiatives in the project design, implementing partners have a higher probability of achieving the social inclusion goals at a considerable scale.

"The mandate of local government is equitable access to services. As such, social considerations are at the core of public agencies' projects."
- Issuer

[180] These figures represent the total number of jobs across AfDB's green bond portfolio.
[181] Impact Investing Institute, LSE, Grantham Research Institute on Climate Change and Environment, The Green+ Bond: How EU Sovereign and Corporate Issuers Could Deliver Green Bonds With Social Co-Benefits, 2021
[182] Ibid
[183] Stakeholder interviews: Kenya, 2024

3. Case Studies

This section details case studies of green bond issuances from select African entities. The report compares each green bond to the causal links developed in the theory of change; each case study provides practical insight into (i) the capital market, (ii) the environment, and (iii) social inclusion benefits. The selection of these case studies follows a three-stage approach and criteria that sought to capture diversity in project focus, geography, bond stage, deal structure, and issuer and investor typology.[184] Figure 19 below illustrates the three-stage approach and criteria.

Figure 19: Case study selection approach

1 Identify different types of bond issuers

Map projects based on their common characteristics to ensure the case studies capture a wide range of lessons/insights and impact pathways. The common characteristics to consider include:
- Type of issuer (e.g private, public, etc)
- Types of investors
- End-user beneficiaries

2 Identify long-list of green bond issues in Africa

Develop a long list of bonds issues in Africa, capturing details on:
- Issuer
- Country
- Year
- Subscription rate
- Focus area
- Partnership and collaboration

3 Prioritize projects based on criteria from FSDA's mandate

Select case studies based on fit with the objectives of FSD Africa. The dimensions to consider include:
- Project focus area/scope
- Geography
- Progress/stage of bond
- Deal structure
- Issuer typology
- Investor typology
- Existing relationship with Dalberg/FSDA

This report profiles green bond issuances from the following corporate, multi-lateral, and government entities: (i) North South Power Company, (ii) Acorn Holdings, (iii) the City of Cape Town, and (iv) the African Development Bank Group.

The report assesses green bonds from each entity, applying ratings to causal links across different levels of the theory of change. These ratings are based on the strength of evidence from desk research, stakeholder interviews, and focus group discussions supporting each causal link.[185] The ratings applied to the causal links determine the overall rating assigned to each impact pathway. Notably, the individual case studies focus on areas for which there is strong evidence.

Figure 20: Summary of the rating matrix

1 Define rating criteria

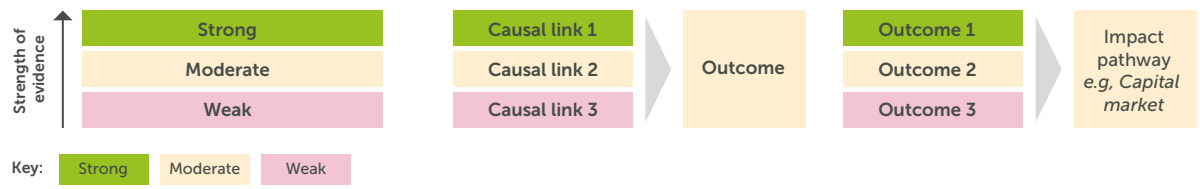
- Define rating criteria that score causal links based on their strength of evidence

2 Apply rating criteria to causal links and outcomes

- Apply the rating to each causal link, with the most common rating across the causal links informing the score for each level of the Theory of Change (ToC)

3 Rate impact pathways

- Assign a rating to each impact pathway based on the most common ratings of the underlying levels of the ToC



The subsequent section examines green bonds issued by each entity to look for insights within the focus areas of capital markets, the environment, and social inclusion.

[184] Our criteria for case study selection is elaborated on in great detail in the annex of this document.

[185] The rating matrix is elaborated on in great detail in the annex of this document.

3.1 North South Power Company Limited

North South Power (NSP) is a renewable electricity generation company that provides, on average, roughly 8% of Nigeria's on-grid power, constituting ~30% of the country's hydroelectric power (HEP).[186,187] NSP was established in 2012 and has a concession from the Federal Government of Nigeria for two renewable energy assets. These assets include a 30-year concession on the Shiroro Hydroelectric Power Station (600MW) and a 25-year concession on the Guara Hydroelectric Power Station (30MW). As of late 2024, the Shiroro Hydroelectric Power Station is NSP's only operational asset; the Guara Hydroelectric Power Station is set to commence power generation in 2025.[188] NSP is also developing the Shiroro Solar Power Station, a 300MW solar facility co-located with the Shiroro Hydroelectric Power Station.[189] NSP currently provides power to more than ten million people and aims to grow its generation to 10% of Nigeria's on-grid power.[190]

To date, NSP has launched two green bonds, NGN 8.5 billion Series I green bond in 2019 and NGN 6.235 billion Series II green bond in 2021. This report focused on NSP's first issuance, given its unique position as Nigeria's first corporate green bond and longest-tenured corporate bond at the time of issuance. This first issuance enabled NSP to access Nigeria's domestic capital markets for the first time and raise a 15-year financing instrument as part of its NGN 50 billion debt issuance program.[191]

For the first issuance, NSP's strong financial performance and InfraCredit's guarantee were central to crowding in sufficient capital, enabling NSP to refinance existing debt and expand power generation capacity. The privatisation of Nigeria's power grid by concession was relatively new, and investors remained sceptical about the sector's financial viability and management capacities. InfraCredit's full guarantee and NSP's consistent financial performance reduced the credit risk, driving investor confidence and leading to a 60% oversubscription of the green bond, with pension fund administrators as anchor investors. Moreover, NSP's green bond had a coupon rate of 15.60%, priced at only 70 basis points higher than a comparable sovereign bond. NSP recognises that they would likely have had to offer a higher coupon rate without the guarantee. Ultimately, NSP used the proceeds to rehabilitate overhead cranes, refinance existing debt, expand capacity by acquiring the 30MW Guara plant concession, establish a minimum reserve account, and pay bond issuance costs.

North South Power (NSP) is a renewable electricity generation company that provides, on average, roughly 8% of Nigeria's on-grid power, constituting ~30% of the country's hydroelectric power (HEP)

To date, NSP has launched two green bonds, NGN 8.5 billion Series I green bond in 2019 and NGN 6.235 billion Series II green bond in 2021

For the first issuance, NSP's strong financial performance and InfraCredit's guarantee were central to crowding in sufficient capital, enabling NSP to refinance existing debt and expand power generation capacity.

[186] North South Power Company Limited, Company Profile, accessed 2024
[187] Nigeria Electrical Regulatory Commission, Annual Reports and Accounts, 2023
[188] Ibid
[189] North South Power Company Limited, Shiroro Solar Power Project Company, Accessed 2024
[190] Ibid
[191] InfraCredit, Transitioning to a Low Carbon Economy, Accessed 2024

Figure 22: The structure of NSP's Series 1 green bond[192]

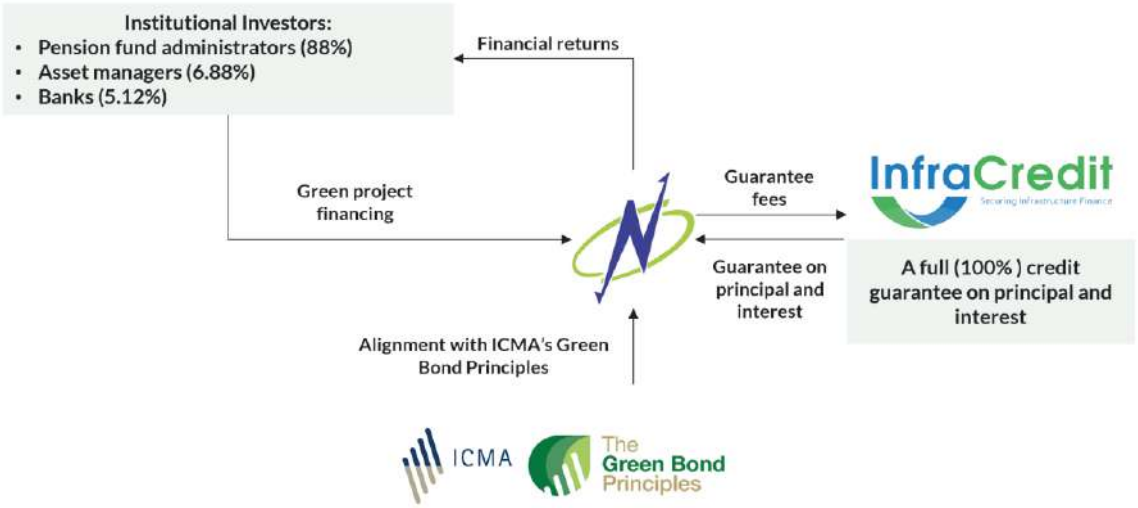


Table 4: Summary of the insights of the NSP's Series I green bond across the three impact pathways

Capital Markets	Environment	Social Inclusion
• NSP's Series I green bond, solid fundamentals, and InfraCredit's prior guarantee drove the successful issuance of its Series II green bond, increasing activity levels in Nigeria's green bond market. • The Series I green bond proceeds enabled NSP to retain and grow its workforce.	• NSP filed for a change in its use of proceeds but broadly channelled financing in line with their green bond framework. • NSP embedded sustainability considerations throughout the organisation; issuing green bonds led to sharpening environmental targets. • NSP registered notable environmental impact from its green project, reducing GHG emissions and generating more renewable energy.	• NSP's Series I green bond led to indirect social inclusion benefits, including providing medical services through hospitals and health centres, scholarships for students in primary school, and access to renewable energy.

Key availability and strength of evidence: Strong | Moderate | Weak

Impacts on Capital market

NSP's Series I green bond, solid fundamentals, and InfraCredit's prior guarantee drove the successful issuance of its Series II green bond, increasing activity levels in Nigeria's green bond market.[193] InfraCredit's Series I green bond guarantee, solid company fundamentals and timely coupon repayment built NSP's creditworthiness status, driving investor confidence and leading to the oversubscription of its Series II green bond by 15%. The NGN 6.235 billion Series II green bond aimed to finance Phase I (15MW) of NSP's 300MW Shiroro Solar energy project, co-located with the Shiroro Hydroelectric Power Station. This re-issuance enhanced the activity levels of the country's bond market, which has witnessed successful repeat issuances—the Federal Government of Nigeria issued its second sovereign green bond in 2019 and Access Bank issued its second green bond in 2022.[194]

[192] Note: This diagram highlights the key entities involved in NSP's Series I issuance. For the Series II issuance, FSD Africa in partnership with the Climate Bonds Initiative and FMDQ Group provided technical support for the green bond pre-issuance verification.

[193] Stakeholder interviews, 2024.

[194] Access Bank, Green Bond 2023: Annual Impact Report, 2023

> *"We did not need to go through any credit enhancement for our Series 2 bond. Investors now have confidence in North South Power."*
> *- Issuer*

The Series I green bond proceeds enabled NSP to optimise its capital structure through access to long-term financing. Issuing the Series I green bond in NGN enabled NSP to refinance its USD debt, matching the currency of its liabilities to that of its revenues.[195] As a result of the reduced debt burden, NSP has been able to grow its workforce to 315 full-time staff in 2023, 10% of which are women.[196] Further, NSP added 234 contract employees, 5% are women. At a country level, Nigeria's green economy can create between 60,000 to 240,000 green jobs by 2030.[197]

Impacts on the Environment

NSP filed for a change in its use of proceeds but broadly channelled the financing from the issuance in line with their green bond framework. Based on a second-party opinion by TUV NORD, NSP utilised the proceeds from its green bond appropriately in line with its framework, and the use of proceeds matrix articulated under the Green Bond Principles.[198] Notably, NSP filed for a change in the use of proceeds from rehabilitating one of the turbines at Shiroro to acquiring the Guara Hydroelectric Power Station and rehabilitating cranes at Shiroro.[199] This shift allowed NSP to increase its generation capacity by bringing the Guara Hydroelectric Power Station online in 2025.[200]

> *"We issued the green bond to refinance the loan for the Shiroro plant. We also wanted to overhaul a turbine, but we changed the use of proceeds to acquire the 30MW Guara plant and rehabilitate our cranes."*
> *- Issuer*

[195] Stakeholder interviews, 2024
[196] North South Power, Snapshot of E&S Impact Metrics, 2023
[197] FSD Africa, Shortlist, Forecasting Green Jobs in Africa, 2024
[198] Stakeholder interviews, 2024
[199] Stakeholder interviews, 2024
[200] Ibid
[201] Ibid
[202] Ibid

NSP had embedded sustainability considerations throughout the organisation, while issuing green bonds has led to sharpening environmental targets. Before issuing its first green bond, NSP had a defined Environmental and Social Policy (2017) and a Sustainability Management Plan (2017).[201] NSP states that it had also aligned with the International Hydropower Association Guidelines. These and other practices—including environmental and social risk assessments, ideological source and water management, afforestation, and biodiversity conservation practices—underline NSP's environmental focus, which preceded its green bond issuances. Nonetheless, NSP's green bond issuance enabled the enterprise to sharpen its environmental reporting and drive sustainability consciousness in its investment decisions.[202]

NSP has also self-reported environmental impacts from its green project, including reductions in GHG emissions and generation of more renewable energy between 2021 and 2023. As NSP's sole operational asset, the Shiroro HEP Station has realized a sustained environmental impact for NSP. Between 2019 and 2024 year to date (YTD), NSP recorded avoiding the production of ~6 million tonnes of carbon dioxide equivalent (tCO2e) emissions.[203] During the same period, NSP recorded producing ~14.6 million MWh of renewable energy.

Impacts on Social inclusion

North South Power's Series 1 green bond led to indirect social inclusion benefits. NSP's green bond enabled it to refinance its USD facility, matching the currency of its revenues with that of its liabilities.[204] NSP reports that this reduced the cost of debt[205] and freed up funding for social inclusion activities through its foundation. Since 2019, The NSP Foundation has channelled ~ NGN 730 million (USD 450 million) to these activities.[206] This investment has yielded notable social inclusion outcomes, such as providing medical services to about 88,000 patients through local hospitals and health centres and sponsorships for students in primary school.

This access to financing has also enabled NSP to grow its business, offer employment, and enhance the living conditions of many citizens.[207] NSP prioritizes offering employment opportunities to local community members to ensure that they benefit from the company's activities. Notably, access to renewable energy allows diversification of livelihoods away from vulnerable activities, building communities' resilience to adverse events. While available information does not show NSP's direct impact, NSP partly contributes to this and other benefits by supplying about 8% of Nigeria's electricity.

[203] North South Power, Snapshot of E&S Impact Metrics, 2023; Dalberg analysis, 2024
[204] Stakeholder interviews, 2024
[205] North South Power Company Limited, Company Profile, Accessed 2024
[206] Stakeholder interviews, 2024
[207] Ibid
[208] Acorn Holdings, About Acorn: Overview, accessed 2024.
[209] Acorn Holdings, Sustainability Report, 2023.
[210] Ibid.

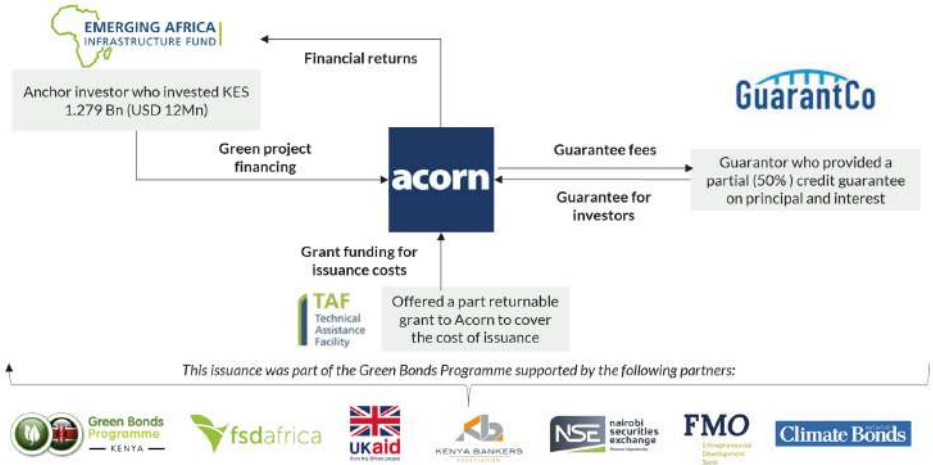
3.2 Acorn Holdings

Acorn Holdings Limited (AHL – "Acorn") is a vertically integrated developer, operator, and asset manager of green purpose-built student accommodation (PBSA) properties in Nairobi, Kenya. Acorn's investment model is based on holding assets in real estate investment trusts (REITs), allowing it to aggregate its own capital with third-party investors. The company holds 20 properties in its portfolio—11 are currently in operation and nine are at different stages of development. These properties offer PBSA to university students under the Qwetu and Qejani brands, with a total capacity of over 18,000 beds; as of October 2024, 7,212 beds are in operation.[208]

The buildings in Acorn's portfolio have achieved IFC EDGE certification (Level 1).[209] The IFC EDGE certification requires buildings to achieve 20% or more energy savings in energy, water, and embodied energy in materials. Acorn achieves at least 20% savings across the three areas in all its properties.[210] More recently, Acorn has achieved EDGE Advanced certification of above 40% in savings in energy after introducing renewable energy in all its properties, accounting for ~28% of total building-level energy demand.

Acorn launched a KES 5 billion (~ USD 39 million) five-year 12.25% green bond in 2019 to fund the development of its portfolio of green buildings. Driven by a deliberate sustainability agenda anchored in its sustainable business strategy, Acorn issued East Africa's debut green bond in 2019.[211] GuarantCo, a leading guarantor, provided a 50% partial credit guarantee, and the Technical Assistance Facility offered a partly returnable grant to cover the costs associated with bond issuance.[212] This guarantee and Acorn's solid business model contributed to a 46% oversubscription in the second drawdown.[213] Ultimately, Acorn used the proceeds to develop eight green buildings, adding about 7,000 PBSA beds to its portfolio.[214]

Figure 22: The structure of Acorn's green bond[215]



[211] Sustainable Finance Initiative, Case Study: Success of East Africa's Debut Green Bond Issue: The Case of Acorn Holdings, Accessed 2024
[212] Ibid
[213] GuarantCo, Our Portfolio: Acorn, 2019
[214] Acorn D-REIT, Annual Report, 2023
[215] FSD Africa, Africa Green Bond Toolkit, 2020.
[216] Acorn Holdings, Sustainability Report, 2023.

Table 5: Summary of Acorn's rating across the three impact pathways

Capital Markets	Environment	Social Inclusion
• Acorn's green bond helped generate capital for Kenya's dormant corporate bond market, which had low growth prospects. • Acorn created about 700 direct jobs, ~ 1,200 indirect jobs, and approximately 2,500 induced jobs per property during the development and operational stages. Post-construction, Acorn created 26 direct jobs per property.	• Acorn used 100% of green proceeds as defined by its use of proceeds, allowing it to achieve notable environmental impacts. • This appropriate use of proceeds has also helped Acorn refine its existing environmental practices and embed sustainability considerations across the organisation. • Acorn recorded impacts, including a reduction of GHG by 142.93 metric tonnes annually and an increase in renewable energy use by 28% annually per property.	• Acorn's green bond has enabled it to actualise its sustainable business strategy by using green buildings as a social inclusion tool, contracting women-owned businesses as suppliers and reserving 60% of the bed capacity across all developments for female students.[216]

Key availability and strength of evidence: Strong | Moderate | Weak

Impacts on Capital markets

Acorn's green bond helped crowd in capital for Kenya's dormant corporate bond market, which had low growth prospects. Kenya's corporate bond market was characterised by low investor confidence due to high default rates by companies and the lack of a compensation mechanism for bondholders when companies collapse.[217] Acorn's green bond, which features a defined use of proceeds criterion and a 50% guarantee from GuarantCo, helped solidify investor confidence in this market segment.[218] However, Kenya's green bond market is small, and it will shrink as Acorn opts for early redemption on the balance of its green bond due to access to alternative financing sources from banks and development partners.[219] Acorn's decision is part of an existing trend in Kenya, where, given the size of the corporate bond market and low investor confidence, issuers often find it easier to access financing through Kenya's large and dominant banking sector rather than floating bonds.[220]

Acorn also self-reported that it had created ~980 direct jobs across the development and post-construction phases. During the development and operational stages, Acorn created about 700 direct and ~ 1,200 indirect jobs, which induced approximately 2,500 opportunities due to economic activity. Post-construction, Acorn reported that it created 26 direct jobs per facility, which primarily include operational staff.[221] More broadly, Kenya's green economy can create 42,000 – 240,000 green jobs by 2030.[222]

Acorn's green bond helped crowd in capital for Kenya's dormant corporate bond market, which had low growth prospects.

Acorn also self-reported that it had created **~980 direct jobs** across the development and post-construction phases.

[217] The East African, Kenya's corporate debt market facing brewing investor confidence crisis, 2023
[218] Acorn D-REIT, Annual Report, 2023
[219] Kenyan Wall Street, Acorn Holdings Bond to Delist from the NSE, 2024
[220] Stakeholder interviews, 2024
[221] Stakeholder interviews, 2024
[222] FSD Africa, Shortlist, Forecasting Green Jobs in Africa, 2024

Impacts on the Environment

Acorn used 100% of green proceeds as defined by its use of proceeds, and self-reported notable environmental impacts. A second-party opinion from DNV GL certified that Acorn's green bond and use of proceeds are in accordance with pre- and post-issuance requirements of the Climate Bonds Standard Version 2.1 and Low Carbon Buildings Sector Criteria.[223] This appropriate use of proceeds has enabled Acorn to realise sustained environmental impact across its portfolio of properties financed by green bond proceeds. These self-reported impacts include reduced energy intensity (~5.4% YoY reduction), increased renewable energy consumption (~ +28% of total energy consumption per property), reduced GHG emissions by 142.93 metric tonnes tCO2e per property annually and waste reduction (~4% YoY growth).[224] Critically, Acorn has achieved IFC EDGE Level 1 certification[225] across all properties[226] by realising 20% savings in energy, water, and embodied energy in materials.

Figure 23: Acorn's self-reported environmental achievements

Energy intensity KwH/m2, 2022-2023		Renewable energy consumption % of total energy consumption, 2022-2023
31.5 KWh/m²	2022	0%
5.4% ▼		28% ▲
29.78 KWh/m²	2023	28%

This appropriate use of proceeds has also helped Acorn refine its existing environmental practices and embed sustainability considerations across the organisation. Acorn has sharpened its targets by establishing baselines for environmental performance. This change has enabled Acorn to compare performance on a property-by-property basis, with the expectation that the collated information will allow new developments to perform better.[227] Continuous reporting (as a result of the green bond requirements) has also resulted in embedding environmental practices across the organisation, as various departments are now working to ensure that they are improving their ESG performance.

"The continuous reporting has helped us to establish baselines. These baselines help us to assess performance against a benchmark, helping us get a clearer view of our performance. Our subsequent developments are getting greener and greener."
- Issuer

[223] Acorn Holdings, Acorn Green Bond Report: Annual Post-Issuance Report and Assurance Opinion, 2020
[224] Acorn Holdings, Sustainability Report, 2023
[225] Edge, Level 1: EDGE Certified, accessed 2024
[226] Ibid
[227] Stakeholder interviews, 2024

Impacts on Social inclusion

Acorn's green bond has enabled it to actualise its sustainable business strategy, allowing it to use green buildings as a social inclusion tool. Acorn worked with women-owned businesses as suppliers to ensure wealth distribution in a construction sector typically dominated by men. This inclusion has resulted in some women-owned businesses reporting revenue increases of 15–20%.[228] Additionally, Acorn has reserved 60% of housing in its green development for female students, enabling them to access safe and secure accommodation.

"We deliberately leveraged women-owned and women-led businesses as suppliers, which helps redistribute wealth to women in a male-dominated industry. This commitment extends to how our product is consumed, including a 60% target occupancy for women, from which we have achieved 55% occupancy by women so far."
- Issuer

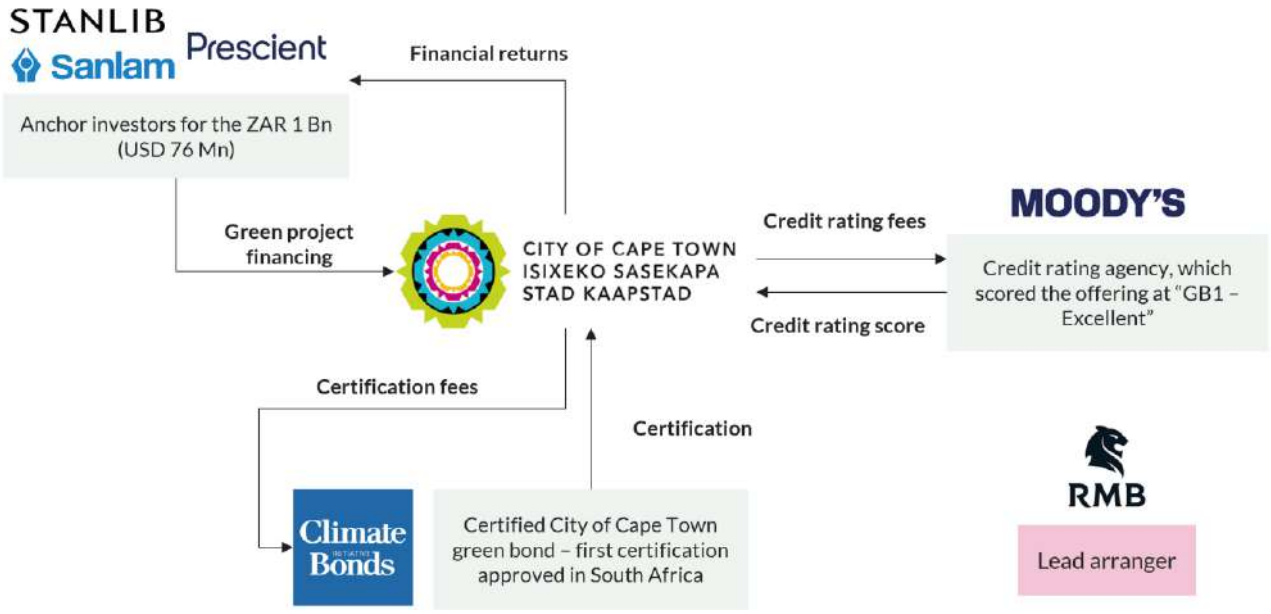
[228] Ibid

3.3 The City of Cape Town

The City of Cape Town (CoCT) is a pioneer in municipal climate mitigation and adaptation through well-articulated action plans. In 2006, Cape Town was the first African city to launch an energy and climate change strategy that proposed integrated approaches to help the most vulnerable communities deal with the effects of climate change.[229] Since then, the CoCT has adopted various mitigation and adaptation plans, including the Energy 2040 Goal (2014), the Environmental Strategy (2017), and the Cape Town Climate Change Policy (2017),[230] the last of which stems from the city's overarching Integrated Development Plan (IDP), a strategic framework that informs municipal plans and policies with the goal of creating a more inclusive society.[231]

In 2017, the CoCT launched a highly successful ZAR 1 billion (USD 76 million) 10-year unguaranteed, CBI-certified green bond. The CoCT launched a green bond in 2017 to finance its IDP's adaptation and sustainability goals. The green bond was the first South African issuance to receive CBI's accreditation due to its close alignment with the globally-recognized standards.[232] The City also launched an unguaranteed bond, relying on its financial stability and creditworthiness, which Moody's rated as 'GB1 – Excellent.'[233] Owing to the certifications, high credit rating, and anticipated environmental benefits, 31 investors oversubscribed to the green bond by a factor of four; eight investors were ultimately approved by CoCT. The green bond outperformed the 10-year R186 government treasury bond by a spread of 0.42%, emphasizing the issuance's investor interest[234]

Figure 24: Key players in the City of Cape Town green bond



[229] City of Cape Town, Energy and Climate Change Strategy, 2006
[230] City of Cape Town, Climate Change Strategy, 2021
[231] City of Cape Town, KPMG – Post Issuance Report, 2019
[232] Global Infrastructure Hub, Cape Town Green Bond, 2021
[233] Moody's, City of Cape Town Green Bond Assessment, 2017
[234] Cities Climate Finance Leadership Alliance, Green bond for infrastructure financing in Cape Town, South Africa, Accessed 2024

The CoCT used the proceeds from this green bond to fund and refinance infrastructural projects to address water structure challenges. Between 2015 and 2017, the City experienced its worst drought in a century, placing its four million residents at a considerable risk of running out of water—a circumstance known as the 'Day Zero Crisis.'[235] Therefore, besides refinancing and funding projects articulated in the IDP, the CoCT also used the proceeds to address immediate water scarcity concerns. Ultimately, the proceeds funded projects that included water capture, storage, and distribution infrastructure, alternative water treatment plants, and flood defences.

"The success ingredients included clear project identification criteria informed by the IDP and certified by CBI. The City also had solid financial fundamentals that attracted many investors."
- Issuer

Figure 25: Projects funded by the green bond[236]

Water infrastructural projects funded by the green bond

Water capture and storage infrastructure	Water capture and storage infrastructure	Water capture and storage infrastructure	Water capture and storage infrastructure	Water capture and storage infrastructure
• **Objective:** Replacement of reservoir roofs • **Cost:** ZAR 4,630,528	• **Objective:** Installation of water treatment plants • **Cost:** ZAR 44,350,768	• **Objective:** Pump replacement programme • **Cost:** ZAR 4,431,377	• **Objective:** Meter replacement programme • **Cost:** ZAR 846,780,178	• **Objective:** Replacement of sewer network • **Cost:** ZAR 42,866,807

Water distribution infrastructure	Flood defence	Flood defence
• **Objective:** Installation of water pressure management zone meters and valves • **Cost:** ZAR 14,694,307	• **Objective:** Development of Strand Sea Wall • **Cost:** ZAR 19,001,782	• **Objective:** Upgrades to Sir Lowry's Pass River • **Cost:** ZAR 23,244,253

Projects assessed in this case study

Table 6: Summary of the key insights across capital markets, environment, and social inclusion

Capital Markets	Environment	Social Inclusion
• The CoCT green bond had a demonstration effect on other market participants, igniting investors' interest in South Africa's green bonds.	• The CoCT adaptation-oriented green projects had notable environmental benefits, including habitat preservation, beach restoration, and water savings.	• Given its adaptation-oriented nature, this project had significant social inclusion co-benefits for local communities.

Key availability and strength of evidence: Strong | Moderate | Weak

[235] City of Cape Town, Cape Town's Water Strategy, 2020
[236] For the case study, we focused on three projects: (I) Water pressure management, (II) Development of the sea wall, and (III) Upgrades to Sir Lowry's Pass; given the unique nature of flood deference projects and financing stage of the projects, higher priority to those which have used all the financing from the green bond.

Impacts on Capital markets

The CoCT green bond had a demonstration effect on other market participants, igniting investors' interest in South Africa's green bonds. The CoCT green bond was the first instrument listed under the then-new Johannesburg Stock Exchange (JSE) Green Bond Segment.[237] This listing was instrumental for the segment due to the global interest the green bond received—e.g., its fourfold investor oversubscription and winning the best green bond award at the UK Environmental Finance Green Bond Awards 2018.[238] As such, this green bond was an ideal example to highlight a credible pathway for issuers to access concessional financing and for investors such as pension funds that needed to comply with new ESG mandates to channel funds to 'sustainable' investments.[239] The segment saw increased activity following this issuance, including the GrowthPoint Properties and Nedbank repeat issuances.

"The listing of the Cape Town green bond on the JSE segment provided a pathway for investors, including pension funds, to invest in sustainable investments in line with their ESG mandates and the Advisors' guidance note."
- Issuer

Impacts on the Environment

The CoCT adaptation-oriented green projects had notable environmental benefits, including habitat preservation, beach restoration, and water savings. The green projects helped reduce pre-existing climate-change-related infrastructural damage from flooding and burst water pipes that had produced negative environmental impacts. Due to the challenges of defining and measuring the impact of many adaptation and resilience projects, these environmental benefits are primarily qualitative. The table below highlights the prior damage and benefits of these projects.

Table 7: Environmental benefits of the City of Cape Town's green-bond-funded projects[240]

Project and objective	Prior environmental damage	Environmental benefits
Strand Sea Wall *Objective:* *Upgrade the sea wall to address the environmental and property damage due to high tides and storms.*	*The critical environmental damage included:* • **Beach loss** – Continued erosion gradually reduced the buffer zone between the ocean and inland properties. • **Marine habitat disruption** – The collapse of the sea wall and associated sediment disrupted the local aquatic ecosystem. • **Vegetation damage** – Storm surges led to saline intrusion into soils, damaging vegetation and making the area less hospitable to coastal plant life.	*The notable environmental benefits included:* • **Beach restoration** – The project enhanced the area's resilience to soil erosion by widening and nourishing the beach. • **Habitat preservation** – The design of the new sea wall incorporates natural elements, such as artificial reefs and breakwaters, which help to promote marine biodiversity. • **Controlled drainage** – The new infrastructure prevents flooding, reducing environmental degradation through waterlogging and saltwater intrusion.

[237] Global Infrastructure Hub, Cape Town Green Bond, 2021
[238] Environmental Finance, Green bond of the Year - Local authority: City of Cape Town, 2018
[239] Ibid
[240] Stakeholder interviews, 2024

Project and objective	Prior environmental damage	Environmental benefits
Water metering and pressure management *Objective:* *Upgrade the water infrastructure, primarily pressure management valves, to limit water loss in the city.*	*The adverse effects before the project include:* • **Water wastage** – The prior infrastructure suffered frequent leaks and bursts, leading to massive water losses. • **Over-extraction of natural water sources** - Without effective pressure management, the city had to extract more water from reservoirs and rivers, affecting ecosystems and reducing river flows. • **Inefficient energy use** – Water pumping and other inefficiencies led to high carbon emissions due to increased energy consumption.	*The notable project benefits include:* • **Reduced water wastage** – By regulating and lowering water pressure and limiting the pipe bursts, the city reduced water wastage by ~50%. • **Preservation of natural water sources** – By reducing water demand, the city extracted less water from its natural sources, reducing strain on the rivers. • **Energy savings and lower carbon footprint** – With the optimal water distribution system and lowered water pressure, the city reduced its energy consumption.
Upgrades to Sir Lowry's Pass *Objective:* *Develop infrastructure to reduce the instances and impacts of flooding in the area.*	*Intense flooding in the areas leads to the following impacts:* • **Soil erosion** – Intense flooding in the area often leads to soil erosion, stripping the land of vegetation. • **Water contamination** - Sedimentation and runoff contaminate water supplies with debris, silt, and pollutants, impacting the water quality in the downstream area. • **Biodiversity loss** – The flooding is threatening to destroy natural vegetation.	*The project is still in the design phase; anticipated benefits include:* • **Soil conservation** – The infrastructural upgrades aim to stabilize the slopes and reduce landslides and erosions. • **Improved water quality** – The planned stormwater drainage aims to divert water and reduce surface runoff, protecting the downstream water systems from contamination. • **Habitat restoration** – Portions of the area will be reforested with Indigenous crop species, promoting biodiversity.

"It is important to conduct environmental impact and social vulnerability assessments to understand potential adverse factors and carefully plan for them. The City of Cape Town developed a comprehensive vulnerability assessment to identify such problems early."
- Issuer

Impacts on Social inclusion

Given its adaptation-oriented nature, the funded-projects had significant social inclusion co-benefits for local communities. From their onset, the projects aimed to safeguard and build the resilience of communities in Cape Town, resulting in enhanced community safety, improved living conditions, and job creation. The table below highlights these co-benefits in detail.

Table 8: Social inclusion co-benefits of the green-bond-funded projects

Project	Social benefits
Strand Sea Wall	• **Community safety**: The upgraded sea wall protects the community from property destruction, road damage, and flooding from high tides and extreme weather events. • **Improved living conditions**: Adding new sewerage and drainage systems underneath the wall's promenade ensures that residents have limited exposure to sewerage bursts experienced in neighbouring areas. • **Job creation**: An estimated ~20 businesses have opened in the Strand Sea area after the erection of the new sea wall in 2019, thereby increasing job opportunities. • **Recreational activity**: The revitalized area next to the beach has created space for activities such as swimming, walking, and picnicking, enhancing social interaction.
Water metering and pressure management	• **Water availability**: The reduced leaks and wastage has ensured a more consistent and reliable water supply for Cape Town residents, particularly during the past drought. • **Job creation**: The project has created job opportunities in installing and monitoring the pressure reduction valves and zones.
Sir Lowry's Pass	The project is still in the design phase; anticipated benefits include: • **Affordable housing**: The project aims to reclaim a portion of the flood plain and create low-cost housing to benefit ~5,000 households that are living in informal settlements nearby • **Job creation**: In line with the City's agenda, individuals from marginalised communities will have opportunities to work to maintain housing facilities.

"There is vibrancy in this area compared to several years ago. People now view this area as a tourist centre attracting more than 50,000 visitors, creating jobs and enhancing the community's safety."
- Residents Association

3.4 African Development Bank

The African Development Bank (the Bank or AfDB) is an AAA-rated multi-lateral DFI that contributes to African countries' sustainable economic development and social progress.[241] The Bank provides financing for development projects and programmes, policy-based loans, equity investments, and guarantees for private sector credit.[242] In addition to financing, AfDB offers technical assistance and helps member countries coordinate development policies and plans.[243]

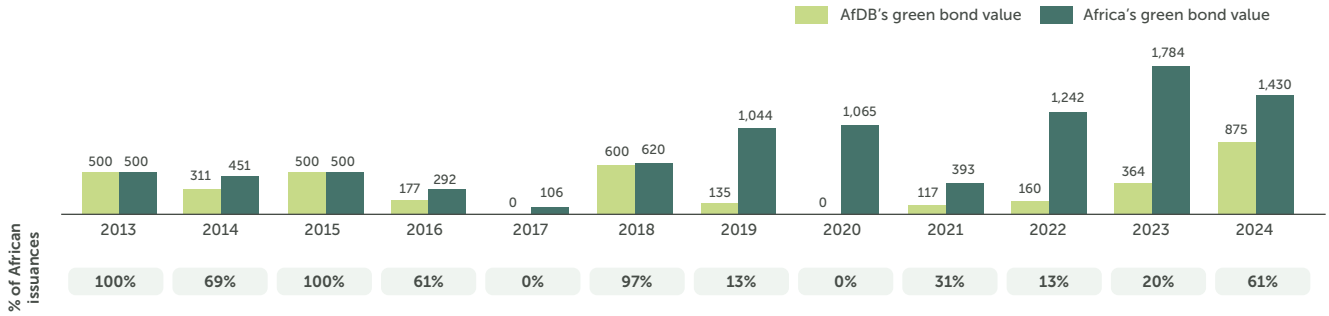
Cross-cutting priorities—including gender, governance, fragility, youth, and climate change—guide the Bank's activities. The Bank's Ten-Year strategic objective for addressing climate change centres on accelerating inclusive green growth and driving prosperous and resilient economies, underpinning its commitment to supporting African countries as they adapt to climate impacts.[244] This commitment inspired the Bank's issuance of its first green bond in 2013, under the Bank's Green Bond Framework, and the establishment of its Sustainable Bond Program in 2023, which combines and updates its previous Green Bond Program and Social Bond Program.[245]

As the continent's premier issuer, the Bank issued 18 green bonds between 2013 and 2024, with a combined value of ~USD 4.1 billion. Since 2013, the Bank has issued green bonds predominantly in USD, Swedish Krona (SEK), and Norwegian Krone (NOK); USD-denominated issuances, in particular, are the largest representing 43% of AfDB's entire green bond issuance value.[246] The Bank often selects its issuance market strategically, issuing bonds in markets where it can achieve relatively favourable pricing and strong investor demand.[247]

Figure 26: AfDB's green bond issuances vs. African green bond issuances

The Bank is Africa's largest green bond issuer by value, making up on average 47% of all African issuances between 2013 and 2024

USD Mn, 2013 - 2024



[241] African Development Bank, About, accessed 2024
[242] African Development Bank, Information Statement, 2016
[243] Ibid
[244] African Development Bank Group, Ten Year Strategy 2024-2033, 2024
[245] African Development Bank Group, Sustainable Bond Program, accessed 2024
[246] Dalberg analysis, 2024
[247] Stakeholder interviews,2024

The proceeds from The Bank's green bonds are allocated semi-annually to a portfolio of eligible green projects. This unique approach involves selecting a portfolio of eligible green projects based on the Bank's Sustainable Bond Framework and issuing the requisite green bonds.[248] When there are no immediate disbursements to underlying green projects, the proceeds are kept in the Bank's liquidity portfolio.

"The African Development Bank follows a portfolio approach. We look at the outstanding green bonds and allocate the proceeds to eligible green projects. One green bond is not funding one specific project; rather, each green bond's proceeds are financing a portfolio of various eligible green projects"
- Issuer

Figure 27: AfDB's green bonds structure

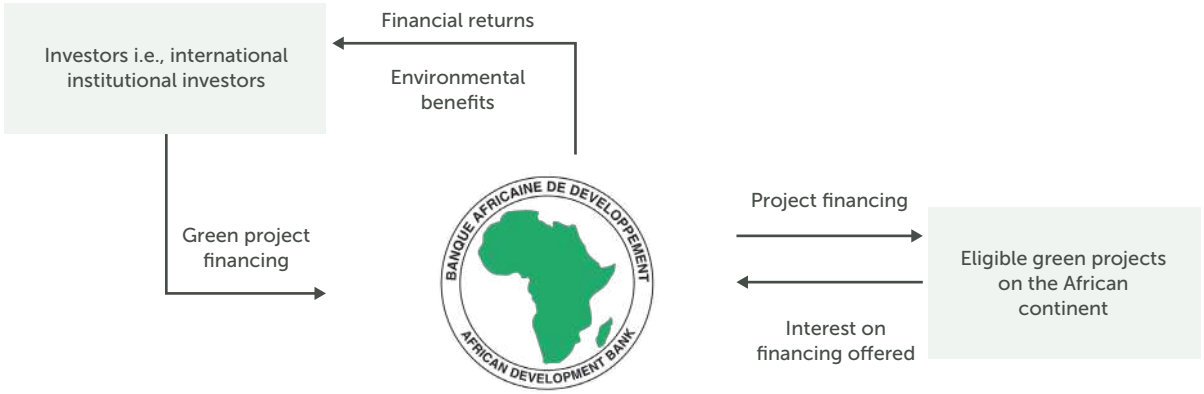


Table 9: Summary of AfDB's green bond portfolio across the three impact pathways

Capital Markets	Environment	Social Inclusion
• AfDB is the continent's premier green bond issuer, growing Africa's green financing space through 17 repeat issuances since 2013. • AfDB's foreign currency issuances enable international ESG-focused investors to channel financing to African projects. However, these issuances in hard currencies and onward lending in home currencies can increase the servicing cost of loans. • More broadly, AfDB's deep involvement in the climate finance ecosystem has enabled it to catalyse concessional financing for green projects in Africa through other mechanisms. • AfDB's green bonds have led to the creation of ~2.9 million jobs in Africa since 2013	• AfDB's large and diverse green bond portfolio has allowed it to achieve notable environmental impacts across mitigation and adaptation. • AfDB's green bond portfolio is catalysing progress towards its commitment to aiding African countries in meeting their Nationally Determined Contributions.	• While AfDB's green bonds focus on environmental issues, its portfolio has enabled it to achieve significant social inclusion benefits. • These benefits include providing clean transportation to 64,205 new passengers in Tanzania, a ~83% drop in the average price of electricity in Cameroon, and a EUR 57 increase in average household income in select counties in Kenya, among others.[249]

[248] Ibid

[249] African Development Bank, Green Bonds Impact Reporting, 2024.

Impacts on Capital markets

The African Development Bank is the continent's foremost green bond issuer, growing Africa's green financing space through 17 repeat issuances since its first one in 2013. The Bank is Africa's first and largest issuer of green bonds by value, comprising approximately ~47% of all African issuances.[250] This frequent and consistent involvement in the green bond market—exemplified by a commitment to issue at least one green bond a year—aligns with AfDB's strategic priority of addressing climate change in Africa.[251] The Bank's issuances have also provided a proof of concept for other issuers on the continent; with more than 70 issuances, following the Bank's debut issuance in 2013.[252]

The Bank's foreign currency issuances have advantages and disadvantages for investors and beneficiaries. In line with the Bank's AAA rating, issuances in foreign currency have provided international ESG-focused investors a channel to invest in Africa's green issuances and climate-positive projects.[253] Nonetheless, raising funding in hard currencies and lending to clients in their national currency contributes to a foreign exchange (FX) risk, which typically increases the cost of servicing the debt and, thus, the cost of the loan.

More broadly, AfDB's deep involvement in the climate finance ecosystem has enabled it to catalyse concessional financing for green projects in Africa through other mechanisms. In addition to attracting funding from anchor investors, AfDB has partnered with organizations such as the Green Climate Fund, the Climate Investment Fund, and the Global Environment Facility to unlock concessional climate financing for mitigation and adaptation activities across the continent (see the table below).

Table 10: Sample of concessional climate financing mobilised through AfDB[254,255,256]

Fund	AfDB's role	Amount deployed to African green projects	Climate goal
Climate Investment Fund (CIF)	Implementing entity	USD 2.939 billion *(CIF – USD 0.946 billion: AfDB –USD 1.993 billion)*	Mitigation
Green Climate Fund (GCF)	Accredited entity	USD 189.6 million *(8% of total funding approved by GCF for African countries)*	Mitigation and Adaptation
Global Environment Facility (GEF)	Implementing agency	> USD 400 million	Mitigation and Adaptation

The Bank's green bond portfolio has influenced the creation of ~3 million jobs across Africa. These opportunities have enabled AfDB to increase the income of end-beneficiaries. For example, Burkina Faso's green project, the Leraba Plain Management and Development Project (PAVAL), increased the annual income for women and youth by USD 210.[257] With Africa's green economy expected to create an additional 3.3 million direct jobs by 2030,[258] the Bank is a significant enabler for Africa's 'green workforce.[259]

[250] Dalberg analysis, 2024
[251] African Development Bank, Sustainable Bond Newsletter, 2023
[252] Ibid
[253] Ibid
[254] African Development Bank, Climate Investment Funds, AFDB-CIF Annual Report, 2022
[255] African Development Bank, Green Climate Fund, accessed 2024
[256] African Development Bank, Global Environment Facility, accessed 2024
[257] African Development Bank, Sustainable Bond Program: Green Impact Reporting, 2023
[258] FSD Africa, Shortlist, Forecasting Green Jobs in Africa, 2024
[259] Dalberg analysis, 2024

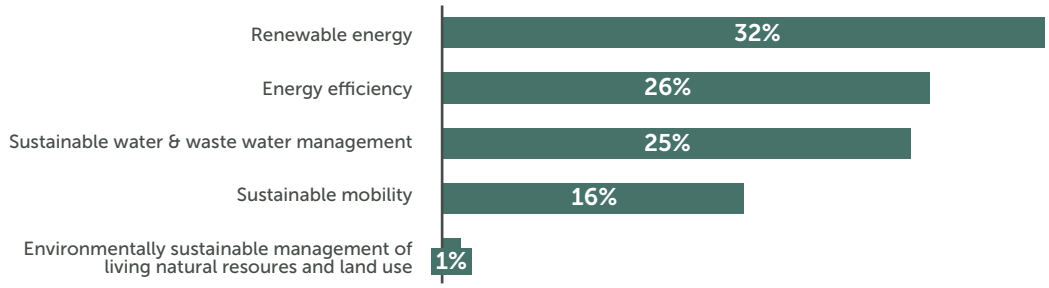
Impacts on the Environment

The Bank's diverse green bond portfolio enables it to address mitigation and adaptation issues across different sectors. AfDB's green bond portfolio has financed green projects across various sectors, including renewable energy, energy efficiency, and sustainable water and waste management.[260] While most of its green projects focus on mitigation, the Bank has also allocated USD 985 million of green bond proceeds to adaptation projects.

Figure 28: AfDB's green bond portfolio by sector[261]

58% of AfDB's funded green projects are in renewable energy or energy efficiency

%, as of June 2023



The Bank used the proceeds defined by its Sustainable Bond Framework and self-reported notable environmental impacts across its green bond portfolio. AfDB cites that all proceeds from its green bond have been deployed towards eligible green projects as defined by its Sustainable Bond Framework.[262] Considering the whole portfolio of the Bank's green bonds, AfDB self-reported impacts, including ~ 1.6 million MWh of energy produced annually, annual energy savings of about 820,761 MWh, ~ 111 million cubic metre of water savings, and ~ 10.2 million tonnes of GHG emissions avoided.[263]

AfDB's green bond portfolio contributes to its climate goals and supports African countries in meeting their NDCs by accelerating their contribution through adequate climate finance. AfDB shares African countries' commitment to addressing global climate change and green growth, which aligns with the Paris Agreement.[264,265] Central to AfDB's commitment are its efforts to catalyse adequate climate financing. The Bank's goal is to crowd in USD 25 billion of climate financing by 2025;[266] green bonds have so far generated USD 4.1 billion, indicating that they are a useful financing instrument to mobilise capital from a large pool of ESG-focused investors. This financing will help enable the Bank to meet its commitment to addressing global climate change by investing in green projects in African countries, and will contribute to countries meeting their NDCs and achieving the reduced emissions goals of the Paris Agreement.

Impacts on Social inclusion

The Bank's green projects have led to indirect social inclusion benefits. Given the intersections of climate change and social inclusion issues, AfDB's portfolio of green projects has resulted in social inclusion benefits. These self-reported impacts include providing clean transportation to 64,205 new passengers in Tanzania, a ~83% drop in the average price of electricity in Cameroon, and a EUR 57 increase in average household income in select counties in Kenya, among other social inclusion benefits.[267] As of June 2023, AfDB's green bonds had ~15.2 million beneficiaries.[268] While social inclusion benefits are not the primary goal of AfDB's green bonds, the achievement of these social inclusion benefits contributes to the Bank meeting its Sustainable Bond Program targets of inclusive growth.

[260] African Development Bank, Green Bonds Impact Reporting, access 2024
[261] African Development Bank, Sustainable Bond Newsletter, 2023.
[262] Stakeholder interviews, 2024
[263] Ibid
[264] African Development Bank, Climate and Green Growth Strategic Framework: Projecting Africa's Voice (Strategy 2021-2030), 2021
[265] Ibid
[266] Ibid
[267] African Development Bank, Green Bonds Impact Reporting, accessed 2024
[268] Ibid

4. Recommendations

The report presents potential recommendations to support Africa's green bond ecosystem based on prevailing market contexts, challenges to green bond issuance, and the impacts that green bonds can achieve. This report has segmented the recommendations into three categories:

Capacity building – Opportunities to enhance awareness of issuers and build governments' capacity to issue green bonds.

Green bond guidelines – Incorporation of the obligatory 'Do no harm' principle to mitigate inadvertent social and environmental effects. Additionally, regulators need to require issuers to embed a gender lens in projects with clear links to social inclusion.

Financing – Facilities to help issuers articulate the commercial viability of their adaptation projects, enhancing the flow of financing to address this climate goal.

Capacity Building

Deepen issuers' awareness of and compliance with relevant climate taxonomies and impact measurement frameworks.

Challenge

Issuers face challenges in interpreting and complying with the guidelines and thresholds articulated in global taxonomies and principles, which leads to additional verification and advisory costs. Moreover, issuers face difficulties in assessing the impact of green projects since they use non-standard metrics or rely on communicating the benefits qualitatively, which makes it difficult to aggregate impact measurements across projects.

Pathway

FSD Africa and other programmes can enhance awareness and encourage compliance with taxonomies that are appropriate for the issuers' context, such as the recent Climate Bonds Resilience Taxonomy (CBRT)[269] and ICMA's Harmonised Framework for Impact Reporting.[270] This ensures that green bond issuances align with globally accepted standards and intensify investor interest. Additionally, actors could offer technical assistance to support issuers in classifying green projects, providing sufficient evidence, and complying with the thresholds set in the relevant taxonomies.

[269] Climate Bonds Initiative, Climate Bonds Resilient Taxonomy, 2024

[270] ICMA, Harmonized Framework for Impact Reporting, 2022

Capacity Building

Build the capacity of governments to design and issue green bonds to finance climate master plans.

Challenge

African governments have articulated NDCs and climate plans in line with the Paris Agreement and national ambitions. Nonetheless, they face challenges accessing information, technical assistance, and financing to launch projects that meet their climate mitigation and adaptation targets. This challenge is pertinent, given the potential of governments to leverage their scale and reach to launch large-scale projects with substantial environmental benefits.

Pathway

Ecosystem actors such as FSD Africa could build the capacity of governments to launch green bonds by embedding advisory units within public agencies to support them in identifying bankable green projects and conducting the design. Further, the ecosystem could develop cross-learning platforms to enhance knowledge sharing across public agencies, particularly in the same sector or with similar mandates. For example, the City of Cape Town's green bond could provide valuable lessons for other governments or municipalities looking to launch water infrastructure or broader adaptation-oriented projects.

Green Bond Guidelines

Include the 'Do no harm' principle as an obligatory requirement in project design and implementation to mitigate adverse environmental and social effects.

Challenge

Projects funded with green bonds might lead to unintended environmental and social consequences, such as habitat destruction, erosion, displacement of people, and disruption of livelihoods.

Pathway

Regulators can enforce this principle by mandating that issuers conduct **environmental impact assessments and social vulnerability tests** to identify and plan for potential adverse effects. Furthermore, regulators could stipulate that the issuers' bond frameworks must clearly articulate these potential impacts and mitigation steps.

Place a requirement for issuers to set gender provisions in the design and evaluation of projects with clear social inclusion links.

Challenge

Green bonds are less likely to include gender criteria in the design process, including allocating proceeds and monitoring gendered impacts.[271] This absence is an issue since environmental and social issues are inextricably linked, and women are disproportionally affected by adverse environmental conditions.

Pathway

For projects with a clear social inclusion link, especially adaptation projects, regulators could require green bond issuers to articulate the gender provisions in their frameworks. These provisions include establishing gender objectives and commitments, defining the use and management of proceeds criteria, and documenting the reporting metrics.

[271] International Institute for Sustainable Development, Integrating Gender Considerations in Green Bonds, 2021

Green Bond Guidelines
Develop an African Sustainable Finance Taxonomy.

Challenge

Issuers of green bonds in Africa face relatively high verification costs because projects on the continent do not neatly fit into commonly accepted global green bond taxonomies.

Pathway

Notwithstanding the need for governments to build capacity on the existing climate bonds taxonomy, policymakers in Africa should develop an African sustainable finance taxonomy that will provide guiding principles to govern green bond markets aligned with Africa's sustainable development targets. A harmonised regional taxonomy will provide context-relevant guiding principles and support increased investment into Africa's green bond market.

Figure 29: Illustration of gender provisions in issuers' green bond frameworks

Objectives

- Issuer to provide clear **commitments on how the project could improve gender equality.**
- Issuer to share the **principles and strategic priorities of its gender and inclusion strategy** that are relevant to the eligible project categories.

Proceeds

- Issuer to conduct **preliminary gender analysis and document** the gendered positive and negative impacts of their projects
- Issuer to include **gender indicators in the eligibility criteria** that determine the type of projects that could be financed with the bond

Reporting guidelines

- Issuer to define the **key metrics to measure the gender impacts** of their green projects
- Issuer to also **articulate the impact measurement methodology**

Financing
Connect prospective adaptation project issuers with project preparation facilities (PPFs).

Challenge

Many adaptation projects targeting vulnerable communities do not access climate finance or commercial loans since they do not investigate and articulate the possible cashflow opportunities needed to meet minimum investment requirements. This situation is particularly challenging for prospective issuers since they would face difficulties matching revenue to their coupon payment obligations. Therefore, these actors need targeted blended solutions that enable them to elevate the commercial viability of their adaptation projects.

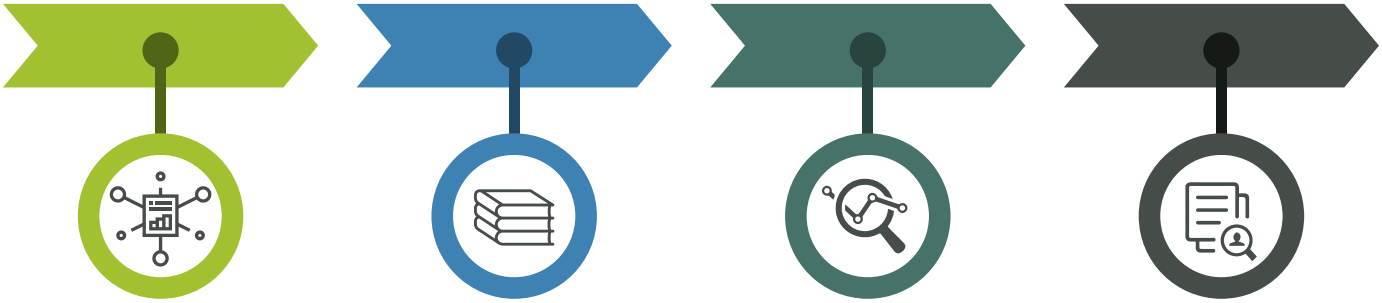
Pathway

An ecosystem actor such as FSD Africa could connect prospective issuers to existing or new PPFs such as the Green Climate Fund or the Adaptation Benefits Mechanisms. These structures would provide financing for the issuers to conduct pre-investment activities such as project feasibility studies, climate and social risk assessment, and design to inform the inherent cashflow opportunities or additional investable avenues that would elevate the commercial viability of these projects.

Annex 1: Research Methodology

The report followed a four-phase approach to conduct this research. This report assessed the impact of green bonds, starting from the conceptual framework and then conducting literature review, targeted research, and case studies.

Figure 30: Four-phase approach



Conceptual framework

Develop a theory of change (ToC) to act as **the conceptual framework for the research,** and to draw out testable claims

Literature review

Conduct a thorough literature review of the testable claims' **breadth of research, rigour and strength of evidence**

Targeted research

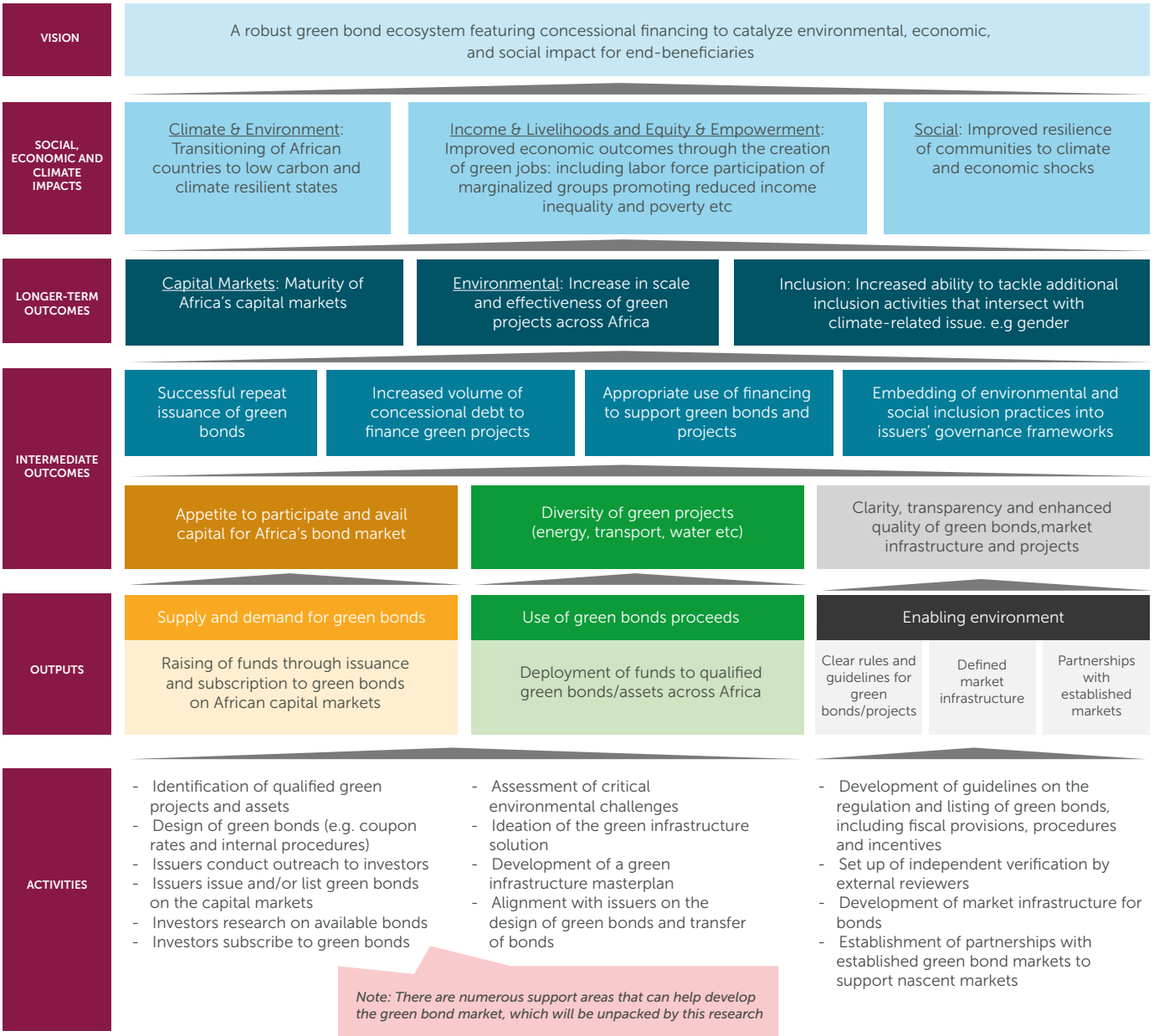
Assess the traction of green bonds in Africa vis~a~vis **capital market, environmental, and social inclusion benefits,** based on the identified research papers

Case study development

Conduct deep dive case studies of the benefits of green bond issuances from **Acorn, City of Cape Town, and North South Power**

Conceptual framework

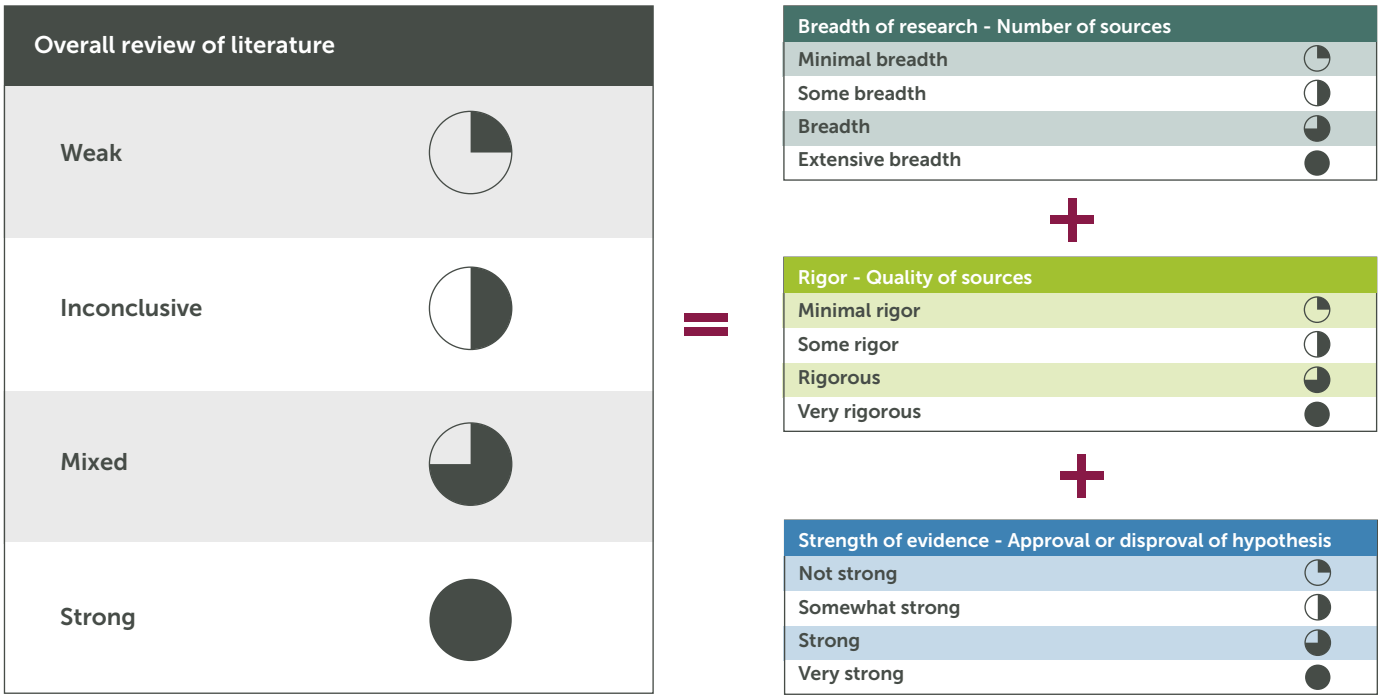
Figure 31: Theory of Change



Literature review

From the ToC, we conducted a detailed literature review, assessing testable claims against a set of criteria based on the breadth of research, rigour, and strength of evidence, resulting in a cumulative rating.

Figure 32: Literature review scoring



Stakeholders

We thank the following stakeholders for providing valuable insights that anchored the report's findings and proposed pathways.

Category	Stakeholder
Issuer	Acorn
	African Development Bank (AfDB or the Bank)
	City of Cape Town (CoCT) and the project's implementing partners
	North South Power (NSP)
	Office National des Chemins de Fer (ONCF)
	OneWatt Solar
Guarantor	InfraCredit
Market actor	Abuja Chamber of Commerce
	Climate Bonds Initiative (CBI)
	Climate Policy Institute (CPI)
	FDMQ
Regulator	Autorité Marocaine du Marché des Capitaux (AMMC)
	Capital Markets Authority (CMA) Kenya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