بنك الأمل
للتمويل الأصغر
AL-AMAL MICROFINANCE BANK

From Green Finance to Client Impact:

AMB's Experience in Yemen

A Study Conducted by the
International Partnerships and Cooperation Department
in Al-Amal Microfinance Bank (AMB)

Green Finance | Economic Empowerment | Environmental Sustainability | Social Impact

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Executive Summary

Green finance is increasingly viewed as a mechanism for linking financial inclusion with environmental sustainability and economic resilience. Yet evidence on how microfinance institutions operationalize green finance in fragile and conflict-affected economies remains limited. This paper examines the extent to which Al-Amal Microfinance Bank (AMB) adopted green finance practices and the socioeconomic, environmental, and social outcomes associated with these practices in Yemen during 2023–2025. The study used a convergent mixed-methods approach combining semi-structured interviews with staff of AMB's Sustainability and Climate Action Unit, documentary analysis, quantitative indicators, institutional reports, project records, and selected external evidence.

The findings show that AMB moved beyond individual green-finance initiatives toward a broader institutional approach covering green financial products, portfolio allocation, environmental and social policies, ESG practices, partnerships, and institutional capacity. By 2024, AMB had financed 1,866 cumulative green projects valued at more than YER 6.3 billion, with green financing representing 19% of its reported portfolio. In 2025, documented green-related financing included 270 agricultural loans valued at USD 4.2 million and 407 solar-energy loans valued at USD 1.1 million. The evidence also indicates measurable client-level outcomes. Among surveyed clients, 65% reported increased household or business income, 48% reported expansion of business or agricultural production, 35% reported creating new local jobs, and 40% reported greater financial independence and reduced reliance on informal moneylenders.

Environmental outcomes were strongest in renewable-energy and clean-technology adoption. AMB distributed 40,000 Solar Home Systems in 2024 and a further 45,000 solar-energy sets in 2025. Its green financing also supported solar irrigation, water-efficient technologies, greenhouses, and electric mobility. Social outcomes included improved energy access, household cost savings, and greater household and enterprise resilience. The Yemen Emergency Electricity Access Project provided clean-energy access to 40,000 direct beneficiaries in 2024 and approximately 160,000 indirect beneficiaries. The evidence is strongest for green-finance adoption, income, business expansion, employment, renewable-energy adoption, and energy access. However, AMB's capacity to measure client-level environmental impact remains less developed. Standardized baseline and follow-up systems for fuel savings, resource savings, and CO_2-equivalent reductions are not yet available across the full green-finance portfolio.

The case demonstrates that microfinance institutions can integrate green finance with financial inclusion in fragile settings when financing is linked to clients' practical needs. It also highlights the importance of partnerships, environmental and social risk management, institutional capacity, and impact measurement. For AMB and similar institutions, the next stage is to move from measuring green-finance deployment toward systematically measuring and demonstrating client-level environmental and socioeconomic impact.

Keywords: *Green finance; green microfinance; financial inclusion; renewable energy; climate finance; socioeconomic outcomes; environmental impact; energy access; microfinance institutions; Yemen; fragile and conflict-affected economies; Al-Amal Microfinance Bank.*

Introduction

Green finance has become an important mechanism for linking financial inclusion with environmental sustainability and economic resilience. Its relevance extends beyond financing large-scale climate projects. For low-income households, microenterprises, farmers, and small businesses, access to suitable green finance can remove the financial barriers that prevent investment in renewable energy, energy-efficient equipment, sustainable agriculture, and other climate-related technologies. This is particularly important for microfinance institutions because their core mandate already focuses on populations that face limited access to conventional financial services. By integrating environmental objectives into their existing financing activities, microfinance institutions can enable underserved clients to invest in technologies that reduce energy costs, improve productivity, strengthen business continuity, and increase resilience. In this way, green finance can address two constraints at the same time: limited access to finance and limited access to sustainable technologies.

The case for green finance is particularly strong in Yemen. The country faces prolonged conflict, damaged infrastructure, institutional weaknesses, financing constraints, and high exposure to climate risks. These conditions have affected access to essential services and weakened the capacity of households and businesses to cope with economic and environmental shocks. The energy sector illustrates this challenge. Damage to the national electricity system and the limited reliability and affordability of conventional energy have increased dependence on decentralized solar systems. At the same time, Yemen has significant potential for renewable energy, particularly solar energy. However, high upfront investment costs, weak financial systems, political risks, and limited investment flows continue to constrain the expansion of renewable-energy solutions.

Yemen's climate and development challenges also overlap. Energy access, water security, agricultural productivity, and household livelihoods are closely connected. Clean-energy solutions can therefore serve both mitigation and adaptation objectives. Solar systems can reduce dependence on diesel and other conventional energy sources while improving electricity reliability. Solar-powered irrigation and resource-efficient agricultural technologies can reduce pressure on scarce resources while supporting productive activity. The country's climate-finance environment, however, remains constrained by limited institutional capacity and restricted direct access to international climate finance. These conditions increase the importance of domestic financial institutions that can translate available resources into financing accessible to households, farmers, and small enterprises.

Against this background, this case study examines AMB as a national financial institution operating at the intersection of financial inclusion, green finance, and sustainable development. The study focuses on the period 2023–2025 and addresses two related questions. First, it examines the extent to which AMB has integrated green finance into its products, portfolio, policies and ESG practices, partnerships, and institutional capacity. Second, it assesses the measurable economic, environmental, and social outcomes associated with these practices at the client level. The study therefore moves beyond measuring the volume of green finance provided. It examines whether financing translated into changes in income, business activity, employment, renewable-energy adoption, energy access, household welfare, and resilience. By focusing on a microfinance institution operating in a fragile and conflict-affected economy, the case provides evidence on how green finance can be operationalized at the client level under conditions where conventional climate-finance models face institutional and financing constraints.

AMB and Its Green Finance Journey

AMB was established under Yemeni Law No. 23 of 2002 as the first microfinance bank in the Middle East and North Africa. It began operations in January 2009 following its establishment by the Social Fund for Development, the Arab Gulf Program for Development (AGFUND), and private-sector contributors. As a non-dividend institution regulated and supervised by the Central Bank of Yemen, AMB was established to provide sustainable financial services to low- and limited-income households and micro and small entrepreneurs. Its services include financing, savings, insurance, transfers, and other financial services designed around the needs of underserved clients. This mandate provides the institutional foundation for green finance because AMB already operates close to households, farmers, microenterprises, and small businesses that face constraints in accessing conventional finance.

AMB's entry into green finance emerged from the interaction between its financial-inclusion mandate and the environmental and economic conditions affecting its clients. Yemen's unreliable electricity supply, dependence on diesel, high fuel costs, water scarcity, and climate-related pressures created financing needs that could not be addressed through conventional productive lending alone. The SCA Unit interview confirms that AMB's green-finance products were developed or scaled in response to fuel shortages, high diesel costs, water scarcity, and unreliable electricity. The underlying approach was to enable clients to replace fossil-fuel-dependent technologies with solar systems and water-efficient technologies while reducing operating costs and supporting business continuity.

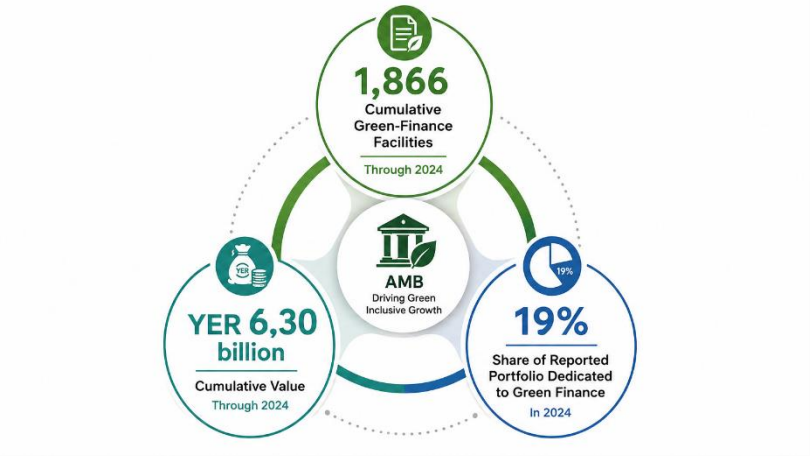
This process began with the Green Banking Initiative in 2022. AMB then developed its Environmental Policy in 2023, followed by the Environmental and Social Risk Management (ESRM) framework and due-diligence mechanisms in 2024. The Bank also began engagement with international climate-finance mechanisms. Its partnership with the World Bank and UNOPS through the Yemen Emergency Electricity Access Project (YEEAP) provided another channel for expanding solar-energy access among households and SMEs. By 2025, the approach had moved beyond individual green initiatives toward a structured institutional model. AMB established and operationalized the Sustainability and Climate Action (SCA) Unit to coordinate environmental and social governance, climate action, sustainability initiatives, reporting, and integration of environmental and social considerations into financing and operations. Environmental and social assessment was incorporated into the Credit Assessment Process Model, while staff received related training. Green finance also expanded from agriculture and renewable energy into water-efficient technologies and clean mobility.

The scale of this transition is reflected in the Bank's financing activities. By 2024, AMB reported 1,866 cumulative green-finance facilities valued at YER 6.30 billion and a 19% green-financing share of its portfolio. In 2025, the Bank reported 270 agricultural loans worth USD 4.2 million and 407 solar-energy loans worth USD 1.1 million. These developments show that green finance had become an operational component of AMB's financing model rather than a collection of isolated projects. However, the study also finds that institutionalization remained in progress, particularly in transaction-level classification, portfolio monitoring, quantitative targets, data integration, and environmental impact measurement.

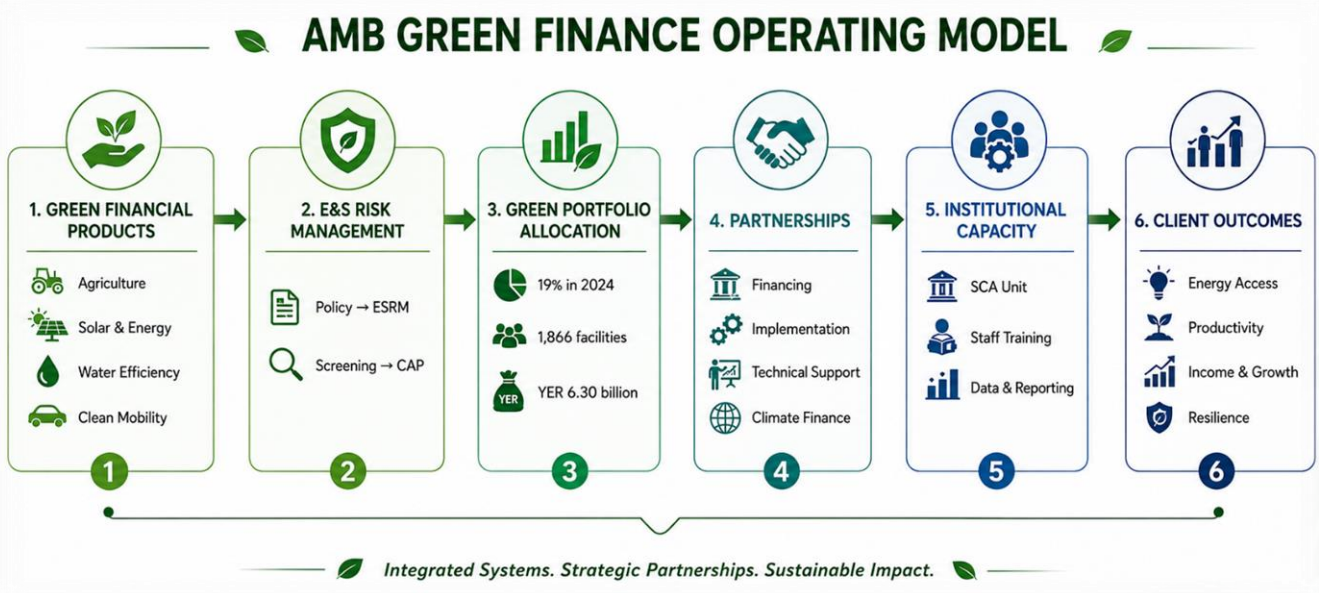
Thus, AMB's green finance journey can be understood as a progression from initiative, to policy, to risk integration, to institutional governance, and finally to a broader green-finance model embedded within its microfinance operations.

How AMB Operationalized Green Finance

AMB's green-finance approach developed from individual environmental financing activities into a broader operating model that combined green financial products, environmental and social risk management, portfolio allocation, partnerships, and institutional capacity. The evidence indicates that green finance was not implemented as a standalone product line. Instead, environmental considerations increasingly became embedded in financing decisions, portfolio development, institutional governance, and partnerships. By the end of 2024, AMB had reported 1,866 cumulative green-finance facilities valued at YER 6.30 billion, while the 2024 Sustainability Report reported that 19% of the Bank's portfolio was dedicated to green financing.



The operational model can therefore be understood as a progression from **financing green activities** toward **integrating environmental and social considerations into the Bank's financing system**. This distinction is important. The evidence demonstrates substantial adoption of green-finance practices, but it also shows that transaction-level classification, portfolio monitoring, data integration, verification, and standardized impact measurement were still developing.



Green Financial Products

AMB's green-finance implementation was first visible through the development and expansion of financing mechanisms directed toward environmental and climate-related needs. The evidence identifies three direct green-finance product streams during 2023–2025: agricultural and climate-resilient financing, solar and renewable-energy financing, and clean-mobility financing. YEEAP constituted a fourth mechanism in which AMB operated primarily as an implementation and distribution partner rather than as the sole financier.

Agricultural financing formed the main component of this product structure. AMB's Agri-Green Financing supported solar-powered water pumping, modern and drip irrigation, greenhouses, agricultural equipment, climate-resilient inputs, livestock production, and food-value-chain activities. In 2024, AMB reported 273 new Agri-Green loans valued at YER 1.27 billion. In 2025, agricultural financing continued through 270 facilities valued at USD 4.2 million. These activities linked environmental objectives with productive use of finance, particularly in response to water scarcity, high diesel costs, and climate-related pressures affecting agriculture.

Solar and renewable-energy financing formed the second major stream. By the end of 2024, the cumulative green-finance portfolio included 428 solar-system facilities valued at YER 2.74 billion, making solar systems the largest single category by financing value. In 2025, AMB reported a further 407 solar-energy loans valued at USD 1.1 million. These facilities supported solar home systems, solar systems for SMEs, and solar-powered agricultural pumps. The financing therefore connected household energy access with productive economic activity.

The product structure expanded further in 2025 through the Captain product, which financed electric delivery bikes for young courier workers. This development extended AMB's green-finance activities beyond agriculture and energy into low-emission transportation. The available evidence therefore suggests that the green-finance portfolio was becoming more diversified over the study period. YEEAP provided a different implementation mechanism. Under the partnership with the World Bank and UNOPS, AMB supported the distribution of solar-energy systems at a scale beyond conventional individual lending. The project records indicate 40,000 solar-energy sets distributed during 2024 and a further 45,000 during 2025, bringing the reported two-year distribution to 85,000 units.

Financing stream	Main applications	Evidence of scale
Sustainable agriculture	Solar pumps, drip irrigation, greenhouses, inputs, livestock	270 loans / USD 4.2m in 2025
Renewable energy	Solar home systems, SME solar, solar pumps	407 loans / USD 1.1m in 2025
Water efficiency	Modern irrigation, pressurized networks, water-saving technologies	Included within green portfolio
Clean mobility	Electric delivery bikes	Captain launched in 2025
YEEAP	Solar-energy distribution	85,000 units in 2024–2025

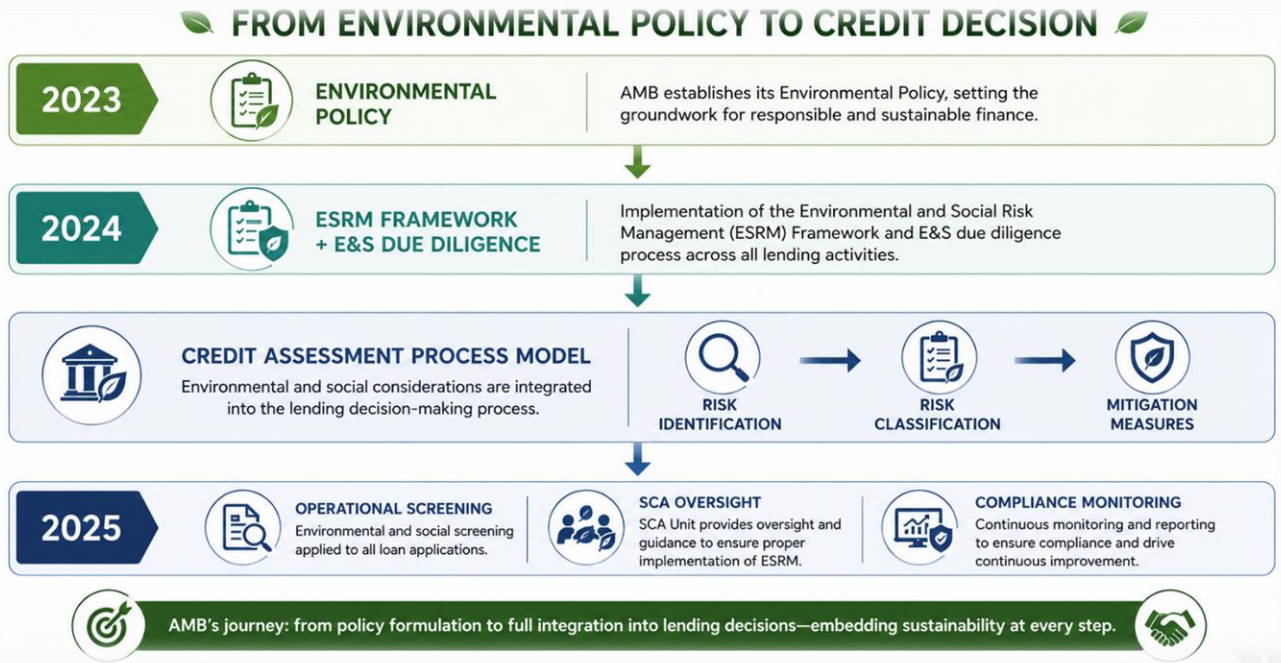
Environmental and Social Risk Management

The development of green finance was accompanied by a shift in how environmental and social considerations entered AMB's financing process. The first major institutional step was the development of the Environmental Policy in 2023. During 2024, AMB developed an Environmental and Social Risk Management framework and an Environmental and Social Due Diligence instrument. These mechanisms were intended to bring environmental and social considerations into financing decisions.

The most significant operational development was the incorporation of the environmental and social risk instrument into the Credit Assessment Process Model. This allowed environmental and social risks to be considered within credit assessment rather than being treated as a separate sustainability exercise. The reported functions included identifying environmental and social risks, determining mitigation measures, classifying enterprises according to risk, and directing financing toward more sustainable activities.

The interview evidence provides further detail on how the process was intended to work. Initial exclusion screening occurs at branch level, followed by environmental and social screening within the credit assessment process. Higher-risk cases require additional due diligence and mitigation measures. The SCA Unit serves as a technical second-line function, while risk, compliance, and internal audit provide complementary oversight. This development represents an important change in the nature of green-finance adoption. AMB was no longer relying only on the identification of green products. It was beginning to assess the environmental and social characteristics of financing activities within the lending process itself.

However, the evidence requires a distinction between **formal adoption** and **full implementation**. By 2025, the environmental policy, ESRM framework, due diligence mechanisms, and E&S integration into credit assessment had been substantially implemented. Green classification and comprehensive portfolio monitoring remained less mature.

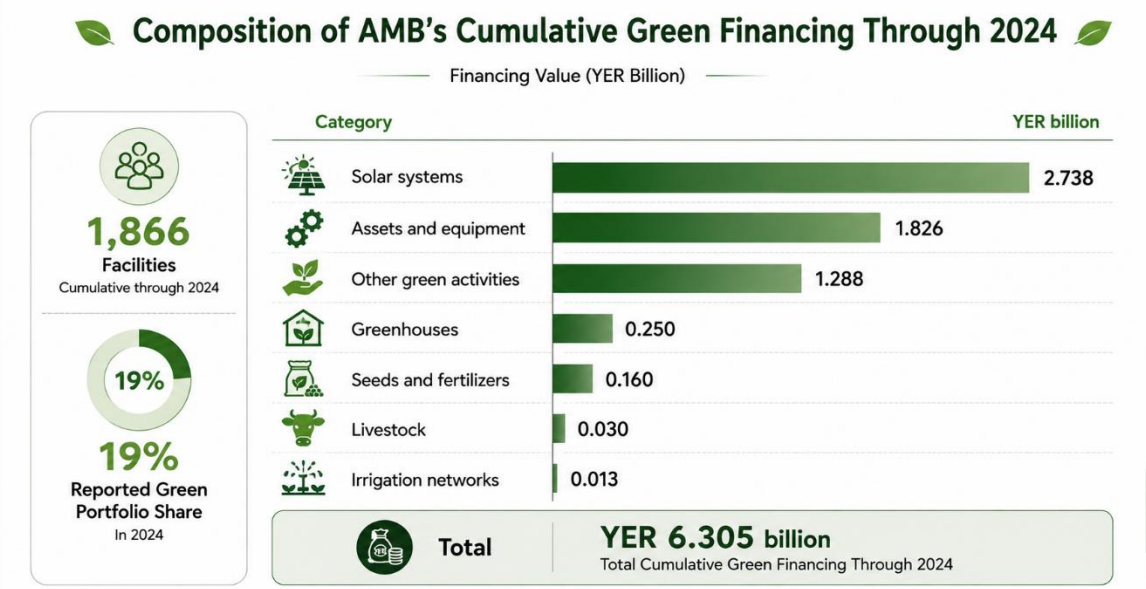


Green Portfolio Development

The development of the green portfolio provides the clearest evidence that AMB translated its sustainability orientation into financial allocation. The 2024 Sustainability Report reported that 19% of AMB's portfolio was dedicated to green financing. This indicates that green financing had become a material component of the Bank's portfolio rather than remaining a limited pilot activity.

By the end of 2024, AMB had reported 1,866 cumulative green-finance facilities with a total value of YER 6.30 billion. The portfolio included 428 solar-system facilities, 475 assets and equipment facilities, 25 greenhouses, 600 seed and fertilizer facilities, 29 livestock facilities, 12 irrigation-network facilities, and 297 facilities classified under other green activities. Solar systems represented the largest category by financing value at YER 2.74 billion, followed by assets and equipment at YER 1.83 billion. This composition indicates that AMB's green portfolio was closely connected to productive investment, particularly agriculture and decentralized energy.

The 2025 evidence shows continued deployment. AMB reported 270 agricultural loans valued at USD 4.2 million and 407 solar-energy loans valued at USD 1.1 million. Together, these represented 677 documented facilities and USD 5.3 million in financing. This amount should not be treated as AMB's total 2025 green portfolio because other green-finance activities were also present and the reporting basis differs from the cumulative 2024 measure.



Partnerships

Partnerships provided the external resources, technical support, and implementation channels required to scale AMB's green-finance activities. The documented partnership network included the World Bank, UNOPS, UNDP, the European Union, AGFUND, EAA, BCHR, and other organizations. These partnerships served different functions. Some provided financing. Others supported implementation, technical assistance, institutional development, environmental and social systems, or climate-finance access.

The World Bank–UNOPS partnership under YEEAP was particularly significant because it allowed AMB to participate in clean-energy distribution at a scale that conventional individual lending would not have achieved. The project resulted in 40,000 solar-energy sets distributed during 2024 and another 45,000 during 2025. Partnerships also supported youth and enterprise development. The second phase of the Support to Youth Entrepreneurship and Financial Inclusion project was funded by the European Union, EAA, and AGFUND, with a reported value of €8.959 million and a target of 17,918 beneficiaries. AMB also initiated engagement with the Green Climate Fund during 2023 in coordination with Yemen's Ministry of Water and Environment. This indicates that partnerships were not limited to implementation. They also formed part of AMB's strategy to develop future access to international climate finance.

The evidence therefore supports viewing partnerships as a dual mechanism: **they enabled green-finance delivery while also building the institutional capabilities required to expand it**. At the same time, reliance on external financing and technical assistance remained a constraint. Limited access to suitable long-term green and climate refinancing and continuing needs for technical support in impact measurement, climate-risk assessment, and verification were identified as barriers to further scale.

Institutional Capacity

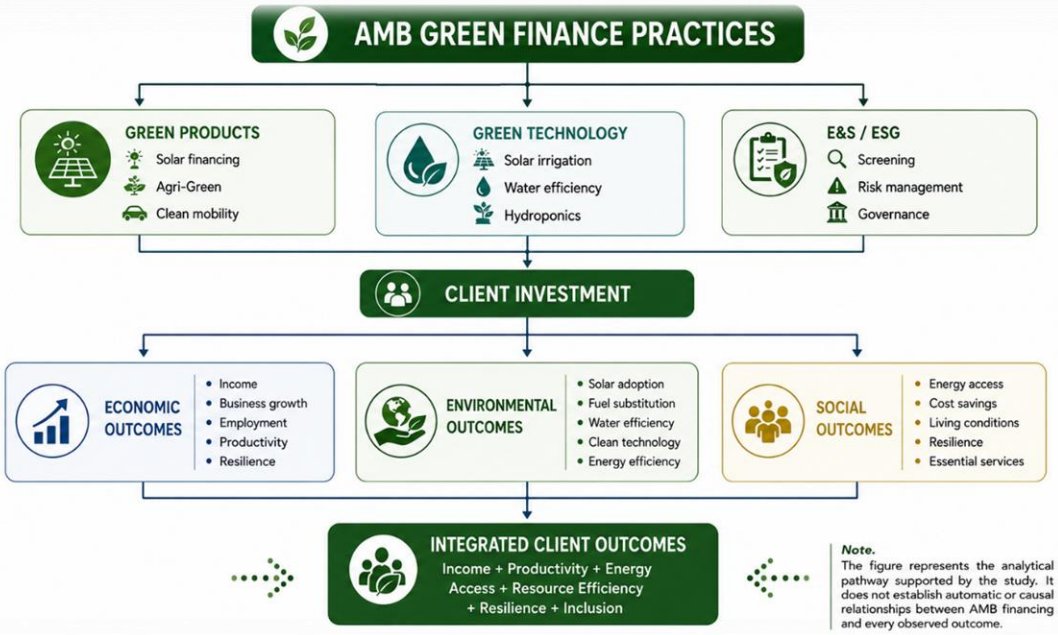
Institutional capacity developed alongside AMB's products, portfolio, risk systems, and partnerships. The central institutional mechanism was the Sustainability and Climate Action Unit. The 2024 Sustainability Report describes the SCA Unit as responsible for sustainability data, climate-finance portfolio management, partnerships, capacity building, green financial product development, and sustainability reporting. The evidence indicates that its operational framework was developed during 2024, while the Unit was formally established in March 2025. This distinction is important because it reconciles the references to the Unit's development in 2024 with the formal establishment date in 2025.

Human-capacity development complemented the creation of the institutional structure. During 2024, AMB trained 177 employees on environmental and social standards and the ESRM Manual. The training included branch-level personnel, indicating an effort to extend environmental and social responsibilities beyond the head office. The wider training program also included 67 internal and 91 external training programs, 158 orientation sessions, and 345 training beneficiaries. Sustainability, E&S risk management, data, and other technical areas formed part of the capacity-building agenda.

What Changed for Clients?

The analysis now moves from AMB's institutional and operational adoption of green finance to the outcomes experienced by clients. The evidence indicates that AMB's green-finance practices were associated with changes across three dimensions of client-level impact: economic, environmental, and social. These dimensions were not independent. In many cases, one green investment generated several outcomes at the same time. For example, solar financing could reduce dependence on diesel or commercial generators, lower energy costs, improve electricity reliability, support business continuity, and improve household living conditions. Similarly, water-efficient agricultural technologies could reduce resource use while increasing production and sales. The evidence therefore supports an integrated interpretation of client outcomes rather than treating economic, environmental, and social effects as separate results.

The strength of evidence differs across the three dimensions. Economic outcomes have the strongest quantitative indicators. Environmental outcomes are strongest in technology adoption and substitution of conventional energy. Social outcomes are strongest in energy access and improved living conditions. Across all three dimensions, however, the absence of standardized baseline and follow-up data limits the ability to attribute changes exclusively to AMB financing or to estimate their magnitude across the entire green-finance portfolio.



Economic Outcomes

The evidence indicates that AMB's green-finance activities were associated with improvements in household and business income, business expansion, production, employment, operating costs, business continuity, and financial independence. The strongest quantitative evidence comes from AMB's 2025 post-disbursement assessments. Among surveyed clients, 65% reported an increase in household or business income, 48% reported expansion of their business or agricultural production, and 35% reported creating new local jobs. A further 40% reported greater financial independence and reduced reliance on informal moneylenders.

Income improvement represents the strongest quantitative indicator. Sixty-five percent of surveyed clients reported increased household or business income following financing. This finding is supported by the qualitative evidence, which links income improvement to lower operating costs, increased productivity, improved energy reliability, and expansion of productive activity. Business expansion provides the second strongest quantitative result. Forty-eight percent of surveyed clients reported expansion of business or agricultural production. The evidence suggests that green technologies can affect production through several mechanisms. Solar energy can reduce energy-related operating costs. Water-efficient technologies can reduce resource use. Improved production technologies can increase output and product quality. The Garonia Agricultural Nursery case provides a concrete example. The financed transition to hydroponic farming reduced water consumption, improved production efficiency and product quality, enabled diversification of seedlings, and was followed by doubled sales. This case demonstrates how an environmental investment can produce a direct economic pathway through resource efficiency and improved market performance.

Employment represents another documented outcome. Thirty-five percent of surveyed clients reported creating new local jobs. The Captain electric-mobility product provides an additional product-level pathway by linking an environmentally cleaner asset with income-generating activity for young delivery workers. The study does not, however, identify a portfolio-wide number of jobs attributable specifically to green finance. The broader figure of approximately 8,750 jobs created through AMB financing in 2024 cannot be attributed solely to green finance. Reduced operating costs and business continuity also emerged from the evidence. Solar financing can reduce dependence on costly conventional energy sources, while water-efficient agricultural technologies can reduce resource costs. Reliable energy can also allow enterprises to continue operating during electricity disruptions. These effects are supported mainly by documentary and interview evidence rather than standardized portfolio-wide measurements. Financial independence provides an additional economic dimension. Forty percent of surveyed clients reported greater financial independence and reduced reliance on informal moneylenders. This suggests that green finance may influence not only income and production but also clients' financial vulnerability. Overall, the economic evidence shows a consistent pattern. Green investments were associated with increased income, expansion of productive activity, employment, lower operating costs, continuity, and greater financial independence. The evidence is strongest for income and business expansion. However, the study does not establish a causal effect across the full portfolio because AMB does not yet maintain standardized baseline and longitudinal follow-up data for all green-finance clients.

Economic outcome	Evidence	Measurement status	Assessment
Increased income	65% of surveyed clients	Quantified post-disbursement assessment	Strong
Business or production expansion	48% of surveyed clients	Quantified post-disbursement assessment	Strong
Employment creation	35% of surveyed clients	Quantified post-disbursement assessment	Strong
Financial independence	40% of surveyed clients	Quantified post-disbursement assessment	Moderate to strong
Reduced operating costs	Solar and water-efficient technologies	Reported, not standardized	Moderate to strong
Increased sales	Hydroponic nursery reported doubled sales	Individual case evidence	Moderate
Productivity and efficiency	Agricultural and energy-related cases	Documented	Moderate to strong
Business continuity	Solar energy and reliable energy access	Qualitative and documentary	Moderate
Jobs maintained	No standardized portfolio indicator	Qualitative	Limited to moderate

Environmental Outcomes

The environmental findings show a clear transition toward renewable energy and other clean technologies among financed activities. The strongest evidence concerns technology adoption and substitution rather than quantified environmental impact. AMB's green-finance activities supported solar home systems, solar irrigation, water-efficient technologies, greenhouses, hydroponic farming, and electric mobility. YEEAP alone resulted in the distribution of 40,000 Solar Home Systems in 2024 and a further 45,000 solar-energy sets in 2025. The scale of deployment provides strong evidence of renewable-energy adoption among beneficiaries. The environmental pathway can be summarized as:

Financing → technology adoption → substitution of conventional systems → resource efficiency → environmental outcome

Solar systems reduced dependence on conventional energy sources. Solar-powered irrigation reduced reliance on fuel-based pumping. Drip irrigation and hydroponic technologies supported more efficient use of water. Electric mobility introduced an alternative to conventional fuel-powered transport. The evidence for reduced fuel consumption is credible but less precise. AMB documents the replacement of diesel generators, kerosene lamps, and other conventional energy sources. However, the Bank does not systematically record the number of liters of fuel displaced at the client level. Water efficiency provides another documented outcome. The Garonia Agricultural Nursery case showed reduced water consumption following adoption of hydroponic technology. AMB also finances drip irrigation, solar-powered pumps, and other water-efficient agricultural technologies. These activities indicate that the environmental effect extends beyond energy substitution to resource efficiency. The portfolio also expanded into clean technology. The Captain product introduced electric motorcycles in 2025, extending the green-finance model into transportation. This diversification indicates that AMB's environmental outcomes are not limited to solar-energy adoption. Carbon reduction requires greater caution. AMB reports environmental benefits from replacing diesel generators and kerosene lamps, but it does not yet have standardized client-level measurements of CO_2-equivalent reductions across the portfolio. The 65.9 tCO_2e avoided in 2024 and approximately 78 tons of CO_2 avoided in 2025 relate to AMB's own operations and should not be presented as client-level impact. This distinction is central to the study. The number of solar systems cannot be converted directly into a credible CO_2 reduction estimate without information on the baseline technology, fuel consumption before installation, system capacity, operating hours, actual use, and appropriate emission factors. These data were not consistently available.

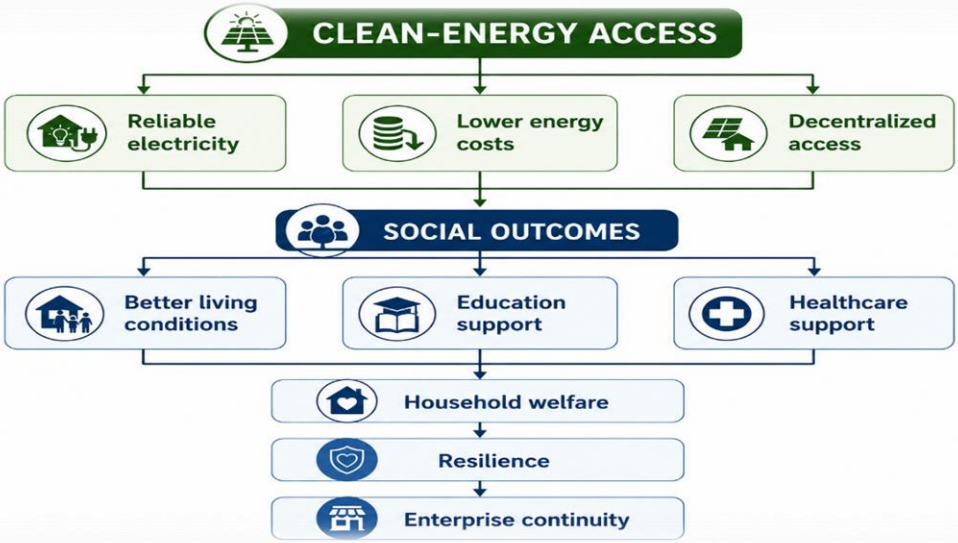
STRENGTH OF EVIDENCE ACROSS ENVIRONMENTAL OUTCOMES

ENVIRONMENTAL OUTCOME	EVIDENCE AVAILABLE	MEASUREMENT STATUS	EVIDENCE STRENGTH
Renewable-energy adoption	40,000 SHS in 2024 and 45,000 solar sets in 2025	Quantified	Strong
Solar-finance adoption	428 solar systems through 2024 and 407 solar-energy loans in 2025	Quantified	Strong
Reduced conventional-energy dependence	Diesel and kerosene substitution	Documented but not quantified in fuel units	Strong
Clean-technology adoption	Solar irrigation, hydroponics, greenhouses, electric mobility	Documented	Strong
Water efficiency	Drip irrigation, hydroponics, solar irrigation	Partly quantified	Moderate to strong
Fuel substitution	Solar and electric technologies	Technology-level evidence	Moderate to strong
Client-level CO_2 reduction	Reported environmental effect	No standardized measurement	Evidence-dependent
Portfolio-wide client CO_2e reduction	No baseline and follow-up dataset	Not available	Limited

The environmental finding is therefore precise. AMB can demonstrate the scale and type of clean-technology adoption. It can document substitution away from conventional energy and examples of improved resource efficiency. It cannot yet quantify the total environmental impact of the client portfolio. The SCA Unit identified baseline data, follow-up measurement, asset-use verification, and technology-specific methodologies as priorities for the next stage. This shows that the principal limitation is not the absence of environmental activity but the transition from measuring **green-finance deployment** to measuring **environmental outcomes**.

Social Outcomes

The strongest social outcome is improved access to electricity and clean energy. This outcome is particularly significant in Yemen because decentralized solar systems can address energy-access constraints among households and SMEs. YEEAP provides the strongest evidence. AMB distributed 40,000 Solar Home Systems in 2024 and a further 45,000 solar-energy sets in 2025. The 2024 intervention reached 40,000 direct beneficiaries, including 6,072 women, and approximately 160,000 indirect beneficiaries. The intervention covered rural and underserved communities and provided decentralized energy where conventional electricity access was limited or unreliable. The social effects extended beyond electricity itself. The evidence indicates improved lighting, support for children's nighttime study, safer domestic activities, mobile-phone charging, and the operation of essential medical devices. These effects demonstrate how energy access can influence household welfare and access to essential services. Household cost savings formed another pathway. Reduced dependence on diesel and commercial generator services lowered the pressure created by energy expenditure. Participants reported that households could redirect available resources toward food, education, healthcare, and livelihood activities. The direction of this effect is supported, but AMB does not yet report a standardized average monetary saving per beneficiary. Energy access also supported enterprise continuity. Reliable decentralized electricity reduced exposure to electricity interruptions and supported SMEs in maintaining their activities. This created a direct link between the social and economic dimensions of the outcome framework. Resilience represents a further social outcome. Reduced dependence on vulnerable energy sources and lower household energy costs provided a buffer against economic shocks. For enterprises, reliable energy supported continuity. For agricultural clients, resource-efficient technologies reduced exposure to water constraints. The evidence supports this mechanism, but no standardized longitudinal resilience indicator exists across the portfolio.



This figure should sit after the discussion of household cost savings. It shows why energy access should be treated as a social outcome rather than simply an environmental indicator.

Social outcome	Evidence	Measurement status	Assessment
Improved energy access	40,000 SHS in 2024 and 45,000 solar sets in 2025	Quantified	Strong
Access among underserved groups	Rural communities, low-income households, SMEs, farmers, women, youth	Documented	Strong
Improved energy reliability	Decentralized solar and SME continuity	Documented	Strong
Household cost savings	Reduced diesel and generator expenditure	Reported, not standardized monetarily	Moderate to strong
Access to education	Nighttime study enabled by solar lighting	Documented	Moderate to strong
Access to health-related services	Operation of essential medical devices and household allocation toward healthcare	Documented	Moderate
Improved living conditions	Reported among solar beneficiaries	Documented	Strong
Household resilience	Savings and reliable energy provide a buffer against shocks	Qualitative	Moderate
SME continuity	Reliable solar access supports enterprise continuity	Documented	Strong
Community resilience	Clean energy and agricultural adaptation support vulnerable communities	Qualitative/documentary	Moderate

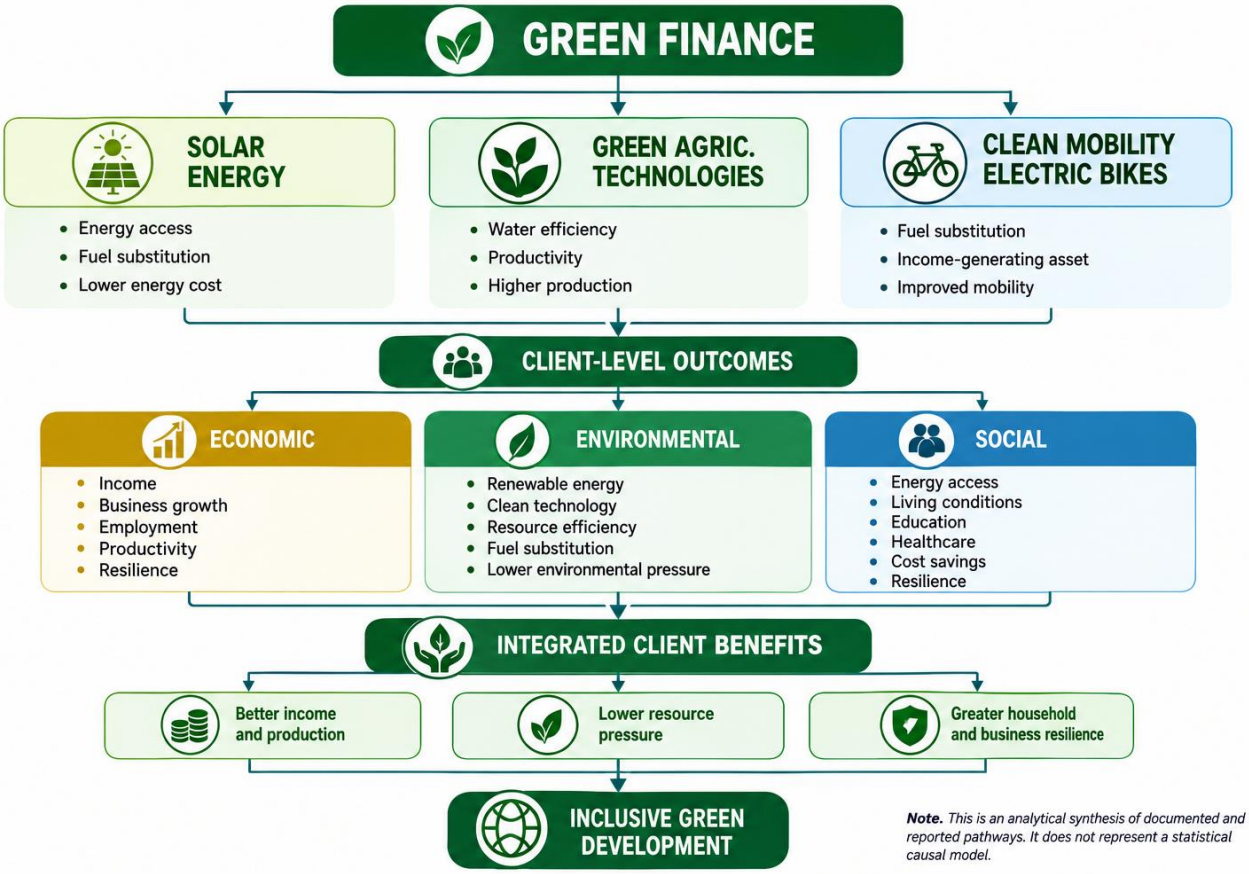
Overall, the social evidence demonstrates that AMB's green-finance activities affected more than environmental conditions. Clean-energy access influenced household welfare, education, healthcare, productive activity, and resilience. The evidence is strongest for energy access and improved living conditions. Cost savings and resilience are supported but require standardized longitudinal measurement before their magnitude can be established.

Integrated Client-Level Outcomes

The three outcome dimensions should not be interpreted as separate effects. The evidence shows a connected pathway in which environmental investments generated economic and social consequences, while economic improvements reinforced household and enterprise resilience.

The Garonia Agricultural Nursery case demonstrates this integrated pathway particularly clearly. Hydroponic financing reduced water consumption, improved production efficiency and quality, enabled diversification, and was followed by doubled sales. The case therefore contains an environmental outcome, an economic outcome, and a livelihood effect within one intervention.

Clean mobility provides another example. The Captain product combines an environmental objective with income generation by financing electric delivery motorcycles. This illustrates how green finance can serve environmental and economic objectives simultaneously.



What the AMB Experience Tells Us

The AMB case shows that green finance can be integrated into microfinance operations in a fragile economy when environmental objectives are linked to clients' practical financial needs. It also shows that product expansion alone is insufficient. Partnerships, institutional systems, and impact measurement determine whether green finance can move from individual interventions to a sustainable institutional model.

Green Finance as a Financial-Inclusion Tool

AMB's experience shows that green finance can complement financial inclusion when products address constraints faced by underserved clients. Solar financing can improve energy access and reduce dependence on costly conventional energy. Agricultural green finance can support productive investment, water efficiency, and income generation. Clean-mobility financing can combine an environmental objective with an income-generating asset. The main lesson is that green finance becomes relevant to low-income clients when it finances technologies and activities that also solve economic problems.

Client need → Green finance → Productive or clean technology → Lower costs / higher productivity → Income and resilience

The Role of Partnerships

Partnerships were central to AMB's ability to expand green finance. They provided financing, technical assistance, implementation capacity, and access to international climate-finance mechanisms. The World Bank–UNOPS partnership under YEEAP was particularly important in expanding solar-energy access beyond the scale of conventional individual lending. The experience indicates that financial institutions operating in fragile markets cannot rely solely on their own resources. Strategic partnerships can reduce financing and technical constraints while supporting institutional development.

Institutionalization Beyond Products

AMB's experience demonstrates that green finance requires more than creating green products. The development of an Environmental Policy, ESRM framework, E&S screening, the SCA Unit, staff training, partnerships, and sustainability reporting shows a broader institutional transition. The critical lesson is:

Green products + E&S systems + governance + capacity + partnerships = institutional green finance

However, institutionalization remains incomplete. Transaction-level classification, portfolio monitoring, data integration, verification, and standardized impact measurement require further development.

From Financing to Impact Measurement

The strongest lesson concerns the transition from measuring **what AMB finances** to measuring **what changes for clients**. AMB can document financing volumes, green activities, renewable-energy adoption, and beneficiary reach. Evidence also indicates improvements in income, business activity, energy access, and resilience. However, standardized baseline and follow-up systems remain limited, particularly for fuel savings and client-level CO_2-equivalent reductions. The next stage should therefore focus on linking each green-finance product to a small set of measurable outcome indicators.

The AMB case therefore demonstrates both **what a microfinance institution can achieve through green finance in a fragile economy and what systems it still needs to build to demonstrate impact with greater precision**.

Challenges and Lessons Learned

AMB's experience demonstrates that expanding green finance in a fragile economy requires more than developing suitable products. The main challenges concerned access to appropriate financing, institutional systems, impact measurement, and the operating environment. These constraints did not prevent AMB from expanding green-finance activities, but they affected the pace of institutionalization and the ability to demonstrate outcomes with consistent evidence.

Financing Constraints

Access to suitable long-term green and climate finance remains a major constraint. Green investments often require longer repayment periods, technical assessment, and financing structures that differ from conventional microfinance. AMB's experience shows that partnerships can help address these constraints, particularly where development partners provide project financing or technical assistance. However, reliance on externally supported programs limits the extent to which green finance can be scaled through the institution's own resources. The lesson for financial service providers is to develop diversified financing channels that combine institutional resources with concessional finance, guarantees, climate funds, and development-partner resources. Green-finance expansion also requires financing terms that correspond to the economic life and cash-flow profile of the technologies being financed.

Institutional Constraints

Green finance requires institutional systems that extend beyond product development. AMB developed an Environmental Policy, an ESRM framework, environmental and social due diligence, E&S screening within credit assessment, and the SCA Unit. Staff capacity was also strengthened through training. However, the study indicates that some systems remained under development, particularly transaction-level classification, portfolio monitoring, banking-system integration, and the consistent application of green-finance criteria. This illustrates a common institutional challenge. Green finance can be introduced faster than the systems required to manage and monitor it. The key lesson is that financial institutions should develop governance, risk management, staff capacity, data systems, and reporting mechanisms alongside green products rather than after portfolio expansion.

Impact Measurement

The strongest measurement challenge concerns the transition from tracking financing activities to demonstrating outcomes. AMB can document green-finance facilities, financing values, renewable-energy systems, and beneficiary reach. It also has evidence of changes in income, business activity, energy access, and other client outcomes. However, standardized baseline and follow-up data remain limited. This is particularly relevant to environmental outcomes. Client-level fuel savings and CO_2-equivalent reductions cannot be reliably established without information on pre-financing energy use, technology performance, utilization, and post-financing conditions. The lesson is that impact measurement should be designed into green-finance products from the beginning. Each product should have a limited set of measurable indicators, baseline information, follow-up measurements, and clear responsibility for data collection and verification.

Fragile-Context Constraints

AMB operates in an environment characterized by conflict, economic instability, infrastructure limitations, weak electricity supply, financing constraints, and institutional uncertainty. These conditions affect both clients and the institution. They can increase transaction costs, complicate monitoring, restrict access to finance, and make long-term investment planning more difficult. At the same time, the fragile context increases the relevance of green finance. Decentralized solar energy, energy-efficient technologies, and productive-use renewable energy can reduce clients' dependence on unreliable infrastructure and conventional energy sources. AMB's experience therefore suggests that green finance in fragile settings should be designed around resilience as well as environmental sustainability. Flexible financing, partnerships, decentralized technologies, and practical client-level solutions are particularly important.

Recommendations for Financial Service Providers

AMB's experience provides several lessons for financial service providers seeking to develop green finance in developing and fragile markets. First, green-finance strategies should begin with client needs rather than with environmental labels. Financing solar systems, water-efficient technologies, productive agricultural assets, and clean mobility becomes more relevant when these investments also reduce costs, increase productivity, improve energy access, or support income generation.

Second, financial institutions should integrate green finance into their existing operating systems. Green products should be supported by environmental and social policies, risk-management procedures, eligibility criteria, staff capacity, portfolio classification, and reporting systems. This reduces the risk that green finance remains a collection of isolated projects.

Third, partnerships should be treated as part of the institutional strategy rather than as supplementary support. Development partners can provide financing, guarantees, technical assistance, technology, and access to climate-finance mechanisms. For institutions operating in fragile economies, these partnerships can help overcome constraints that cannot be addressed through internal resources alone.

Fourth, impact measurement should be incorporated at the product-design stage. Financial institutions should establish baseline indicators before financing and collect comparable information after financing. Economic indicators may include income, sales, production, employment, and operating costs. Environmental indicators should be appropriate to the technology financed, including fuel consumption, energy use, renewable-energy adoption, water use, and CO_2-equivalent emissions where reliable calculations are possible. Social indicators can include energy access, household savings, essential-service access, and resilience.

Finally, financial service providers should preserve the financial-inclusion objective of green finance. Green products should remain accessible to low-income households, microenterprises, farmers, women, youth, and other underserved groups. The objective should not be limited to increasing the volume of green lending. It should be to ensure that green finance generates practical improvements for clients while supporting environmental sustainability.

Conclusion

AMB's experience demonstrates that a microfinance institution operating in a fragile economy can integrate green finance into its financial inclusion model. Between 2023 and 2025, AMB expanded green financial products, allocated resources to environmentally relevant activities, introduced environmental and social risk-management mechanisms, developed partnerships, strengthened institutional capacity, and established the SCA Unit. The evidence therefore indicates a transition from individual green initiatives toward a broader institutional approach.

The client-level evidence shows that this financing was associated with economic, environmental, and social outcomes. The strongest economic evidence concerns increased income, business and agricultural expansion, and employment. Environmental evidence is strongest in renewable-energy and clean-technology adoption, while social outcomes are particularly evident in improved energy access, household welfare, and resilience.

The case also demonstrates that green-finance adoption and impact measurement are at different stages of maturity. AMB has developed substantial capacity to identify and finance green activities, but standardized systems for measuring and verifying client-level environmental outcomes remain less developed. This distinction is important for both AMB and other financial service providers.

The broader lesson is that green finance can serve as a financial-inclusion mechanism when it addresses the economic and environmental constraints faced by underserved clients. In fragile economies, its value extends beyond environmental benefits. Renewable energy and resource-efficient technologies can reduce operating costs, improve access to essential services, support productive activity, and strengthen resilience.

AMB's next stage should therefore focus on moving from **green-finance deployment to verified impact**. Strengthening baseline data, outcome measurement, portfolio classification, verification, climate-finance access, and institutional systems would allow the Bank to demonstrate more precisely how green finance changes clients' economic, environmental, and social conditions. This would also strengthen the wider evidence base on the role of microfinance institutions in advancing green and inclusive development in fragile economies.

Note to Readers: This paper is an executive summary of a comprehensive research study prepared by the International Partnerships & Cooperation Department of Al-Amal Microfinance Bank (AMB) in August 2026, entitled: "Assessing the Impact of Al-Amal Microfinance Bank's Green Finance Practices on Client-Level Socioeconomic and Environmental Outcomes in Yemen."

The paper synthesizes the study's principal findings, analytical framework, and practical recommendations into a concise, practitioner-oriented publication. While condensed for accessibility, it faithfully reflects the evidence, analysis, and conclusions presented in the full study. It is intended to support financial service providers, policymakers, development partners, climate-finance stakeholders, and financial inclusion practitioners in understanding how green finance can be integrated into microfinance operations and contribute to client-level economic, environmental, and social outcomes in a fragile context such as Yemen.

References

- Aklan, M., & Mohammed, S. (2025). *Unlocking climate finance for fragile states: The case of Yemen* (Policy Brief No. 33). Sana'a Center for Strategic Studies, DeepRoot Consulting, & CARPO – Center for Applied Research in Partnership with the Orient. Sana'a Center publication
- Al-Amal Microfinance Bank. (2024). *Sustainability report 2024*.
- Al-Amal Microfinance Bank. (2025). *Annual report 2024*.
- Al-Amal Microfinance Bank. (2026a). *Annual report 2025*.
- Al-Amal Microfinance Bank. (2026b). *Bridging Yemen's microfinance to voluntary carbon markets (READY4CARBON): CN*.
- Al-Amal Microfinance Bank. (2026c). *Assessing green finance efforts and their socioeconomic impact: Evidence from Al-Amal Microfinance Bank (AMB) in Yemen* [Study proposal].
- Alsufyani, A. (2025). Sustainability of alternative energy in Yemen: A comprehensive review. *Trends in Ecological and Indoor Environmental Engineering, 3*(4), 23–39. https://doi.org/10.62622/TEIEE.025.3.4.23-39
- Aziz, N., Iparraguirre, J., & Ghoneim, H. (2024). The differential impact of green finance on economic growth in developed and developing countries. In *The Annual Conference of Business, Economics and Politics in the Middle East 2024 conference proceedings*. The British University in Egypt.
- Bhandary, R. R. (2024). The role of institutional design in mobilizing climate finance: Empirical evidence from Bangladesh, Brazil, Ethiopia, and Indonesia. *PLOS Climate, 3*(3), e0000246. https://doi.org/10.1371/journal.pclm.0000246
- Forstater, M., Halle, M., & Zadek, S. (2016). *Green finance for developing countries: Needs, concerns, and innovations*. United Nations Environment Programme.
- Guermond, V. (2025). Depleted by debt: "Green" microfinance, over-indebtedness, and social reproduction in climate-vulnerable Cambodia. *Antipode*. https://doi.org/10.1111/anti.12969
- Hendra, T., Mustion, S., Nasution, K. S., & Handra, R. N. (2025). Green finance from the perspective of Islamic social finance: A case study of microfinance practices in Istanbul. *Review of Islamic Social Finance and Entrepreneurship, 4*(2). https://doi.org/10.20885/RISFE.vol4.iss2.art6
- International Capital Market Association. (2025). *Green bond principles: Voluntary process guidelines for issuing green bonds*.
- International Capital Market Association. (2025). *The principles & related guidance: Guidance handbook.*
- Knaack, P., & et al (2023). *Climate risk and financial inclusion: A regulatory perspective*. Consultative Group to Assist the Poor.
- Loan Market Association. (2025). *Green loan principles*.
- Mbokane, L., Reinink, M., Ntakana, K., & Modley, L.-A. (2026). Financing green buildings in South Africa: The role of financial institutions and green finance incentives. *Frontiers in Sustainable Cities, 8*, Article 1758057. https://doi.org/10.3389/frsc.2026.1758057
- Öcal, K., & Küçükkocaoğlu, G. (2026). Green finance: An evolution of traditional finance or a new ethical paradigm? A conceptual discussion in the context of the Green Deal. *International Journal of Behavior, Sustainability and Management, 12*(23), 57–82. https://doi.org/10.71444/jobesam.1800571
- Schoenmaker, D. (2019). A framework for sustainable finance. *Economics: The E-Journal, 13*(2019-2), 1–25. https://doi.org/10.5018/economics-ejournal.ja.2019-2
- Schoenmaker, D., & Schramade, W. (2019). Investing for long-term value creation. *Journal of Sustainable Finance & Investment, 9*(4), 356–377. https://doi.org/10.1080/20430795.2019.1625012
- Shi, S., Al-Jaifi, H., & Kaur, H. (2026). Green finance and green growth: Do green technological innovation and financial constraints matter? *Cogent Economics & Finance, 14*(1), Article 2614795. https://doi.org/10.1080/23322039.2026.2614795
- United Nations. (2015). *Transforming our world: The 2030 Agenda for Sustainable Development*.
- UNDP. (2015). *The financial system we need: Aligning the financial system with sustainable development*.
- United Nations Environment Programme Finance Initiative. (2019). *Principles for responsible banking*.
- World Bank. (2018). *Yemen Emergency Electricity Access Project*.
- World Bank. (2018). *Expanding electrification to low-income households in rural Ghana with microfinance*.
- World Bank. (2021). *Toolkits for policymakers to green the financial system*. https://doi.org/10.1596/35705
- World Bank. (2022). *Boosting access to affordable solar energy in Yemen*.
- World Bank. (2025). *Illuminating lives: Bringing light and hope to Djibouti and Yemen*.
- World Bank. (2026). *Power beyond the grid creates jobs for women*.
- Xu, J., Ma, C., & Liu, M. (2026). Research on the impact effects of green finance on green technological innovation. *Frontiers in Humanities and Social Sciences, 6*(3), 149–156. https://doi.org/10.54691/9btmsx93