

Using Finance to Accelerate Adoption of More Energy-Efficient and Climate-Friendly Appliances

Insights from Ghana, Senegal, and Rwanda



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1. Executive summary

This report showcases the lessons learned from three market-based financing mechanisms developed to facilitate consumer purchases of energy-efficient and climate-friendly refrigerators and air conditioners in lieu of outdated appliances.

The ECOWAS Refrigerators and Air Conditioners (ECOFRIDGES) initiative in Ghana and Senegal, and the Rwanda Cooling Initiative (R-COOL), have been instrumental in promoting energy-efficient and climate-friendly appliances in these markets. These initiatives, supported by the United Nations Environment Programme's (UNEP) United for Efficiency (U4E) initiative, the respective governments, and with assistance from the Basel Agency for Sustainable Energy (BASE), have implemented financing mechanisms that are central to their success over the course of several years. The projects were made possible through grants by ClimateWorks Foundation's Clean Cooling Collaborative (CCC).

Additionally, the report provides comprehensive guidelines for stakeholders involved in similar financing mechanisms for energy-efficient and climate-friendly appliances. These guidelines offer valuable insights into the expectations for such mechanisms and outline the specific ways in which each stakeholder can actively contribute to their successful implementation and outcomes.

For vendors, this includes establishing a solid relationship with manufacturers or regional distributors to secure the required equipment at affordable prices. Further, the guidelines lay out the need for vendors to ensure their technicians are trained to install and maintain the appliances, and to anticipate potential requests from financial institutions, such as opening a bank account for transferring payments. It's also important for vendors to ascertain the energy performance of eligible products, whether a national energy labelling system exists or not.

Financial institutions are encouraged to assess the cost of funds, their business strategy, and potential rebates, verifying their capability to provide access to green finance. They should also work with the project team on risk mitigation strategies and standardising processes to facilitate consumer finance.

Furthermore, financial institutions should assess their ability to meet the programme requirements and be prepared for the gradual adoption of financing mechanisms. It is important to recognise that these mechanisms may take time to gain momentum, and financial institutions should plan and adjust their expectations accordingly.

The government's role includes securing the buy-in of other government departments or government-owned companies and aligning the programme with national sustainability commitments. Governments should also verify that supportive policies and regulations exist and are fully operational in the country. Furthermore, governments should be prepared to take over the mechanism in the long-term, provide technical assistance to all parties, and dedicate resources for awareness-raising campaigns. Governments are also advised to allocate personnel for ongoing management and oversight of the financing mechanisms.

The detailed description of the mechanisms, barriers, and challenges encountered, as well as the impact achieved, are provided for reference in the annexes of this report.

Key Lessons Learned

Experiences to date highlight the importance of:

- ① Providing adequate incentives for all stakeholders involved, including vendors, financial institutions, and government entities.
- ② Running a limited pilot programme before launching a mechanism nationwide to assess its feasibility, identify potential challenges, and make necessary adjustments.
- ③ Ensuring a recurrent source of funding for the continuity of programme management and for providing consistent support to awareness-raising campaigns and other necessary initiatives.
- ④ Engaging early with stakeholders and obtaining their buy-in, as it allows for feedback integration and fosters ownership.
- ⑤ Having the flexibility to adapt and modify the structure of the financing mechanism based on stakeholder feedback and market responses.
- ⑥ The importance of supportive government policies and regulations such as minimum energy performance standards (MEPS), energy labels for products, and regulations around e-waste management.

2. Introduction

This report presents the lessons learned from three market-based financing mechanisms developed by UNEP and BASE in collaboration with the Governments and local stakeholders from Ghana, Senegal, and Rwanda, and made possible through technical assistance grants by CCC. The report also provides guidance to stakeholders about what to expect, and how they can contribute to the success of the mechanisms. The details of the mechanisms' objectives, design criteria, barriers and challenges encountered during their implementation, as well as impact achieved are described in the annexes as reference for the reader.

The three national financing mechanisms presented in this report are:

- Ghana: ECOFRIDGES Green-On-Wage (GO).
- Rwanda: R-COOL Green-On-Wage (GO).
- Senegal: ECOFRIDGES On-Bill Financing.

These market-based mechanisms aim to accelerate the adoption of energy-efficient and climate-friendly room air conditioning and refrigerating appliances in place of a continuation of business as usual. Currently, such products have modest market share mainly because they are more expensive than typical alternatives using outdated technology. Outdated products come with a lower purchase price, making them appealing. However, they result in higher utility bills for consumers.

Additionally, they put a greater strain on the electricity grid and have a more significant impact on the environment with higher direct (from refrigerant leakage) and indirect (from electricity generation) greenhouse gas emissions and pollution.

The methodology used for this report involves surveys and interviews with a diverse group of stakeholders, including end-users, vendors, banks, government officials, and the initiatives' development team. It also draws information from existing monitoring, reporting, and verification (MRV) reports from the course of the programmes.

The main stakeholders for the mechanisms are:

- Local banks who provide financing for eligible appliances through personal loans. They raise awareness on-site through their branches and promotions through social media, websites, and other means.
- Vendors who sell eligible appliances and promote the financing mechanism to their customers. They provide technical assistance and support to end-users to help them better understand the benefits of eligible products.
- Government agencies who provide policy and programmatic support, which can integrate existing programmes such as energy labelling, outreach efforts, incentives, e-waste collection and recycling, and/or other aspects into the new financing mechanisms. The government usually also takes the role of programme manager once the design is complete and initial implementation is underway, overseeing day-to-day operations, managing relationships with stakeholders, overseeing compliance with agreed terms and conditions, etc.
- End-users can include households, small businesses, and/or other target beneficiaries that purchase and use such cooling and refrigeration appliances.

Other cohorts such as civil society organizations, standards bodies, academia and so forth may also have important roles depending on the financial mechanism.

3. Lessons learned and recommendations

Key lessons learned during the development and implementation of the three financing mechanisms are presented in two categories:

- **The pre-conditions** to the development of financing mechanisms are elements that are necessary for a successful development and implementation of the initiatives. These include government involvement and commitment, favourable energy regulatory framework, support from utilities, banks and vendors, and waste management systems. Without these pre-conditions, programmes may continue, however they may also be substantially hampered or falter altogether.
- **The risks that materialised during the development process** refer to the challenges and obstacles that were faced when implementing the financing mechanisms. These risks included the administrative costs of the financing mechanisms, a change in the general financing conditions, and limited differentiation of the mechanisms.

Recommendations include effective planning, stakeholder engagement, and risk management in the development of financing. By addressing the pre-conditions and risks early in the development, and implementing the recommended actions, future financing mechanisms can be more effective, sustainable, and successful in promoting the adoption of energy-efficient and climate-friendly appliances.

3.1 Pre-conditions to the development of financing mechanisms

3.1.1 Favourable energy regulatory framework

The presence of a stable and recognised regulatory framework, such as energy standards and labels for appliances or green lending targets for banks, can help create a favourable environment for the development of financing mechanisms and enhance the adoption of energy-efficient and climate-friendly appliances.

For example, in Ghana, it was relatively easy to transmit to vendors the energy efficiency requirements of ECOFRIDGES GO, as they were based on the national energy labels for such appliances. This interaction resulted in a positive feedback loop for the national labelling programme and facilitated the introduction of the desired appliances in the market.

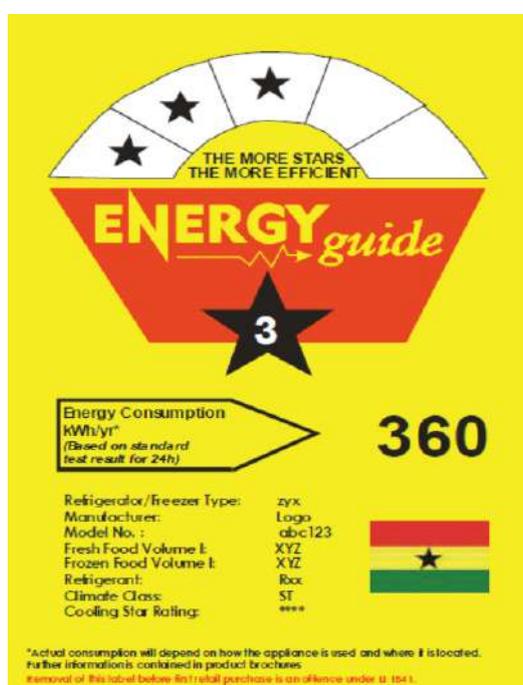


Figure 1. Sample energy label for refrigerators in Ghana

In Rwanda and Senegal, this same process was more time consuming as the vendors were not used to a national energy label. In Rwanda, the energy labelling regulation was barely starting at that time, while in Senegal, a regional directive from UEMOA (West African Monetary and Economic Union) existed, but had not yet been implemented. A solution has been to review laboratory test reports, extracting key data that allows the energy efficiency assessment according to reference regulations. The process was a lengthier and cumbersome fallback option, as it required informing the vendors of the type of test reports required, then placing the request to their manufacturers, and analysing those reports.

3.1.2 Government involvement and commitment

The government has a paramount role in the development, implementation, and sustainable operation of financing mechanisms for energy-efficient appliances. Government involvement and commitment can significantly impact the success of these programmes for a number of reasons, including:

- **Awareness raising:** Governments play an essential role in raising awareness about the benefits of energy-efficient appliances and the financing mechanisms available. Their sponsorship also provides credibility for other stakeholders. A good example of government support was the involvement of the Energy Commission in Ghana, which presented the programme at public events and on radio and TV shows. Other awareness activities can include public campaigns, education and training programmes, and partnerships with local communities and organizations. Some pictures taken during public events promoting the three programmes are shown in [Figure 2](#).
- **Partnerships and coordination:** Governments are key in coordination among different stakeholders, acting as a convener for more effective and successful financing mechanisms, therefore, obtaining the maximum support from the various government agencies is a strong pre-condition for the success of the mechanism. Most officials that answered the surveys pointed to ensuring the buy-in of other government entities and private actors as the main thing that they would have done differently in the project. The responses to this survey question are illustrated in [Figure 3](#). The two government officials that would have implemented another financing mechanism were from Senegal, where the on-bill financing was deployed.
- **Sustainability:** A government's involvement and commitment facilitate the sustainability of financing mechanisms beyond the launch phase by providing long-term programme ownership and management, promoting best practices, and creating an enabling environment for their continued success.



Top left and top right: Public outreach through the media and stakeholder meetings in Ghana. Bottom left: Launch event in Rwanda with key partners. Bottom right: Public outreach session in Senegal.

Figure 2. Examples of the Governments' public engagement events

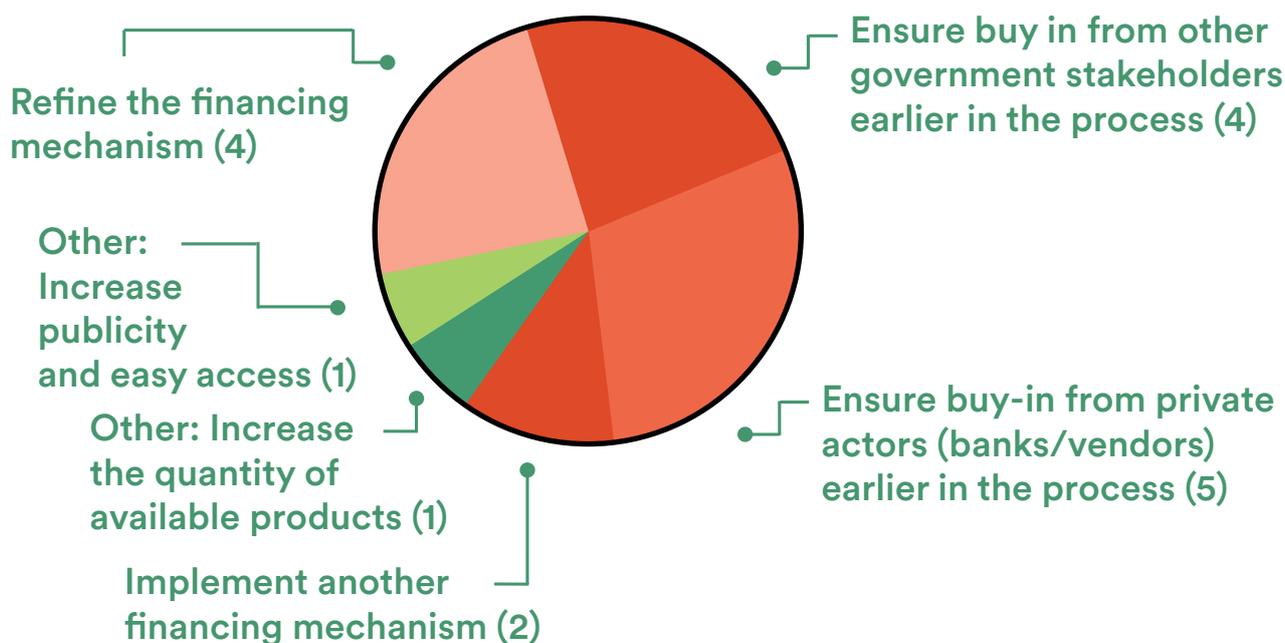


Figure 3. Responses of senior government officials in leadership positions for the projects to the question of “What would you have done differently if the programme was starting again?”

3.1.3 Waste management systems

Effective waste management systems, including government-sponsored systems or certification programmes, contribute to the market transformation. When energy-efficient appliances reach the end of their lifespan, a waste management system should ensure that the appliances are disposed of safely and the valuable components are recovered, reducing the overall environmental impact of the programme.

These activities should also decrease secondary market circulation of outdated and potentially unsafe products.

Partnering with government-sponsored waste management systems or certification programmes helps ensure that technicians can be trained to safely handle and dispose of used appliances, and that waste management companies have the necessary infrastructure to properly dispose of and recycle hazardous waste.

The absence of an e-waste management programme or registered collectors posed a significant challenge in the implementation of this aspect of the programmes in Ghana and Senegal, which are currently on-hold. The establishment of such a system is a complex and time-consuming process, which falls beyond the scope of the financing mechanism. The programme managers in those countries stressed the importance of having buy-in from other government entities responsible for electric/electronic waste management.

In contrast, the presence of registered waste collection entities in Rwanda facilitated the successful implementation of the take-back component of the programme.

3.1.4 Support from electric utility and suitable billing setup

One approach for on-bill financing is to partner with an electric utility which has an established administrative framework and client pool. This can be utilised for the repayment of loans taken by customers. It requires setting up an automatic deduction system to facilitate the collection of loan repayments, and on-going programme management, such as arrears reminders and debt collection enforcement. This approach can help to reduce the risk of default and ensure the long-term sustainability of the mechanism.

Additionally, the utility can play a significant role in identifying eligible customers and promoting the programme to them. For example, a higher-than-average monthly consumption may be an indication that the customers have inefficient air conditioning and/or refrigeration appliances operating at home, which would make them particularly suitable for the mechanism.

The utility can also facilitate the credit risk assessment, summarising metrics such as utility payment history and overall consumption into a synthetic credit rating. The utility can also use the regular billing correspondence to include promotional messages and offers about the programme. The participation of the utility in the programme can also bring several benefits to its own activities, for example, supporting a smart metering rollout or obtaining concessional funds for demand-side management activities from international partners.

Finally, another important precondition for on-bill financing is the suitability of the electricity billing context. The case of Rwanda clearly showed that a significant part of the population (particularly in Kigali) would not be eligible for the mechanism, as the utility registers the electricity meters in the name of the property owner. Tenant-occupied properties would therefore become difficult to manage for the programme, as there would not be a direct link between the borrower and the repayment channel (electricity meter).

During the discussions with the utility in Rwanda, the administrative costs, the unsuitable billing framework, and the conflicting incentive for the utility of reducing electricity consumption resulted in a lack of support for an on-bill financing mechanism. While not found to be suitable in Rwanda, it may be a compelling option elsewhere. Utilities can benefit from demand-side management opportunities, delaying need for further investment in generation through less costly energy efficiency measures, and possibly expanding their customer base by offering additional services.

3.1.5 Support from vendors

Vendors play a critical role in the promotion and adoption of energy-efficient appliances, as they are responsible for the introduction and distribution of products and services in the market. This involves their willingness to collaborate with other stakeholders, such as banks and government agencies, to ensure that the financing mechanism is designed and implemented in a way that meets the needs of the target customers.

Additionally, vendors may need to adjust their business practices to accommodate the financing mechanism, such as upgrading their product line, providing additional training, or changing their pricing structures to make energy-efficient appliances more affordable for customers.

Vendors are also essential partners to provide technical support to customers. For example, they can provide advice on appliance selection and explain the benefits in terms of running costs. This technical support increases the customer confidence in the energy-efficient appliance market, thereby driving adoption.

Finally, vendors must keep adequate stock levels of the registered appliances before the launch of the programme. The lack of available stock caused delays and a deterioration in the perception of the mechanism in Ghana and Senegal among those who had to wait to access desired products.

Participating in the programme can also bring several benefits to the vendors, which serve as important incentives to ensure their participation.

Benefits include:

 **Increased sales:** Tapping into a new market of customers who may have previously been unable to purchase energy-efficient appliances due to financial constraints, leading to increased sales and revenues for products with a higher sales price.

 **Competitive advantage:** Offering energy-efficient appliances through the financing mechanism can give vendors a competitive advantage over their peers not participating in the programme. This is because customers are becoming increasingly aware of the importance of energy costs and may prefer to purchase appliances from vendors who offer energy-efficient options.

 **Enhanced reputation:** Improving their reputation and brand image as customers may perceive vendors who offer energy-efficient appliances as socially responsible and environmentally conscious.

During the setup of ECOFRIDGES GO in Ghana, an interesting dynamic was encountered when approaching various vendors to participate in the programme.

Upon learning about the eligibility criteria, several vendors expressed dissatisfaction, perceiving them to be too strict. Some vendors even refused to participate, while others proposed appliances targeted at the higher-end market segment.

However, one vendor with ambitious expansion goals perceived ECOFRIDGES GO as an opportunity to expand its market share in the country. The vendor actively contacted their manufacturing partners to ensure the equipment met the eligibility criteria defined by the mechanism and subsequently placed significant orders for this equipment.

These units sold quickly, thanks to the programme's promotion and endorsement, as well as their competitive price point. Upon learning of this vendor's success, other vendors upgraded their product lines to match the quality and price of the proactive vendor.

This resulted in several requests from other vendors to join the programme, leading to the inclusion of a fifth partner vendor.

3.1.6 Support from local financial institutions

Local financial institutions play a significant role in providing financial resources to customers who are interested in purchasing energy-efficient appliances. By offering favourable loan terms and interest rates, they can make it more affordable for customers to invest in energy-efficient appliances.

The support of local financial institutions also enhances the credibility of the financing mechanism. They can provide assurance to customers that the programme is legitimate and that they are investing in energy-efficient appliances that meet high-quality standards.

Partnering with financing mechanisms can provide several benefits for financial institutions.

Benefits include:

-  **Access to new customers:** Accessing new customers who may have previously been unable to access credit to purchase eligible appliances. This can result in increased revenue and market share for the bank.
-  **Competitive differentiation:** Differentiating themselves in a highly competitive market by offering favourable loan terms and conditions. This can help build a reputation for socially responsible investments and attract new client segments.
-  **Attracting refinancing opportunities:** Developing a green lending portfolio can attract funding from national and international entities at favourable conditions. Multiple international financial institutions offer earmarked credit lines and other facilities for climate finance. This can help the institution to diversify its funding sources and reduce its cost of capital.
-  **Integration in the green economy:** Positioning themselves at the forefront of current and planned government policies, technological innovation, and emerging market trends in the green energy sector. This can help them to develop new business opportunities and build a reputation as leader in sustainable finance.

3.2 Risk mitigation

The development of financing mechanisms for energy-efficient appliances is not without risks, and several challenges may arise during the process of implementing these mechanisms. This section discusses some of the risks that materialised during the development of the financing mechanisms.

3.2.1 Administrative costs of financing mechanisms

Financing mechanisms are often associated with administrative costs, which can put a strain on the programme's finances. This is particularly the case for on-bill financing mechanisms, which need to establish a billing infrastructure, account management systems, and customer service teams to support the programme's operations.

To address those costs, alternative funding sources have been explored, such as management fees to reduce the programme's administrative burden, but this was later in the process when terms and conditions had already been discussed with the vendors and banks, so they could not be tested.

In general, the mechanism must be designed so that there are enough incentives for all participants to dedicate their time and effort to the success of the programme. For vendors, the endorsement of their products by a government-sponsored programme tends to be enough to collaborate; however, additional financial commitments, such as rebates, are difficult to negotiate.

3.2.2 Change of general financing conditions

Financing mechanisms are subject to changes in general financing conditions such as variations in interest rates, which can impact the attractiveness of the programme for end-users. The establishment of rigid financing terms and conditions for the programme may result in their unsuitability once the general financial market changes.

For example, in Ghana, the programme set up a 12-month 0% interest rate, subsidised by the rebate obtained from the vendors. Due to changes in the benchmark interest rate (which increased from 14% to 28% in just over a year), and general tightening of liquidity, the original terms and conditions could not be sustained by the banks. To mitigate this risk, financing mechanisms need to be flexible and incorporate provisions to adjust to changes in financing conditions for new applicants as the programme evolves. Further, the programme manager should have enough resources and capacity to react to these changing conditions and revise the terms and conditions accordingly to make a compromise.

3.2.3 Limited differentiation of the financing mechanism compared to existing ones

A risk that materialised in Rwanda was that the financing mechanism was not attractive enough compared to the standard financial products that already exist in the country. Due to the short timelines and limited rebates obtained from vendors, the financing mechanism does not offer any unique advantages or incentives compared to other financing options. It is then seen as unattractive to customers or vendors and is one of the reasons why it has struggled to gain traction and achieve its goals.

To mitigate this risk, the financing mechanism should be carefully designed to offer clear advantages and incentives not available through other financing options, such as lower interest rates or longer repayment periods. This approach was taken in Ghana, where there was a higher initial uptake, which has recently ramped down due to the changes in the general financing conditions.

3.3 Recommendations to programme developers

The main objective during the development of any financing mechanism is to ensure that it achieves the impact intended in the long term. There are multiple dimensions to achieving this impact, such as:

- The eligible appliances must have environmentally desirable characteristics such as energy efficiency, lower-GWP refrigerants, and other such considerations noted in UNEP's green public procurement [guidelines](#) and similar.
- The eligible appliances must be sold in high quantities.
- The end-of-life impact of appliances must be minimised.
- The targeted market must be large enough to have an impact.
- The mechanism must be possible to sustain once the development team hands over the management of the programme to the corresponding government entity, etc.

Based on the lessons learned from the development of financing mechanisms for energy efficient appliances, several recommendations can be made to enhance their effectiveness. These may be applied in other countries that wish to replicate these mechanisms, or upscale existing ones.

Stakeholder Involvement and Incentives

- 1 Develop a mechanism with the right set of incentives for all stakeholders.
 - a. Usually, the vendors' incentive to increase sales is enough for them to join the mechanism, but economic contributions based on volume of sales are subject to negotiation.
 - b. Financial institutions are very much concerned about the time spent by their staff in the process (see point c), their positioning in the market, the utilisation of green credit lines funds provided by international financial institutions, and their own sustainability objectives.
 - c. One way to incentivise the financial institutions is to build a quantifiable benefit for their business operations into the programme, for example, in the form of lower credit risks through the introduction of a partial credit guarantee programme. This would be particularly useful for countries where unsecured lending to households is not the norm within the financial sector. These programmes require external non-reimbursable funding, which may not be available if the programme is purely market-based. Some international financial institutions offer credit guarantee facilities for local financial institutions, or government agencies.
 - d. The mechanism must be aligned with the mandate of the government agency responsible for the ongoing management of the programme. These agencies are often located within the Ministry of Energy or the Ministry of Environment and are often budget constrained. To ensure long-term sustainability, a funding mechanism for the ongoing management of the programme must be envisioned.
 - e. The utility may have an interest in combining the programme with existing projects. For example, in Senegal, the main incentive for the utility was to link the mechanism only to pre-paid meters, as they were in a rollout phase.

- 2 Obtain buy-in from stakeholders early in the process and be flexible to restructure the mechanism. Financing mechanisms require the support of key stakeholders to be effective. To ensure stakeholder buy-in, mechanisms need to engage stakeholders early in the development process, solicit feedback, and be flexible to restructure the mechanism based on stakeholder input.
- 3 Integrate local market insiders in the development team. During the negotiation with vendors, it is key to have a specialist in the local appliances market, who is knowledgeable about the various actors in the supply chain, market share, typical product mark-ups, etc. It worked well in Ghana to incentivise them to successfully negotiate the rebates, but it did not work in Senegal and Rwanda because the consultants were not sales experts and were not familiar with the local vendors to the same extent.
- 4 Select vendors that have a nationwide presence, if possible. Even if most units will be sold in the economic capital of the country, leveraging their existing distribution network is beneficial for the mechanism to raise awareness.
- 5 Identify and engage with companies authorised to manage electric and electronic waste. Ascertain the proper disposal costs early in the process to build them into the economic model of the programme.

Financial Concerns and Commitments

- 1 Financial institutions operate with thin margins. Their financial products are built stacking up layers of costs, starting from their cost of capital, adding fixed operational costs, and transaction costs (credit assessment, and other administrative costs). As such, investing the time and effort into a yet-to-be-proven mechanism may be difficult for the financial institution, they may lose patience quickly if the initial stages are slow. If the commitment of the financial institutions is perceived as low, and other incentives are not available (e.g., lack of non-reimbursable funding for a credit guarantee programme), an option to facilitate their involvement is to run the mechanism on a cash-only basis for some time, until the programme gets some traction. Once there is a functioning mechanism known by the general public and operating smoothly with the vendors, the financing options may be added for those who cannot afford the upfront cost. This structure requires longer involvement during the development phase but facilitates the onboarding of financing institutions.
- 2 Incorporate a recurrent funding source for programme management to cover the administrative and operational costs of the programme. It could come from a general budget expenditure, or cost-sharing arrangements with stakeholders, such as fees per unit sold, programme registration fees, etc. If cost-sharing is chosen, it is essential that transactions are recorded in a data system controlled by the government. This data collection may be integrated into existing import procedures with customs, or newly created through the development of a digital platform where end-client requests are recorded, and approval processes managed. These options may require a budget for software development and integration with the various partner IT systems.
- 3 Design flexible financing terms and conditions. As financial markets conditions may change, being bound to a fixed setup may result in a mismatch of the mechanism to the future financial market realities.

- 4 If subsidised funds are available, consider including an incentive for vendors reluctant to import eligible models that they may perceive as not demanded by the users. This incentive could take the form of a partial subsidy (for the vendor) of the first units that enter the country, with the commitment from the vendors to maintain adequate stock levels once these units are sold.
- 5 On-bill financing is a complex mechanism to establish. It relies on multiple interactions between the various stakeholders, which can easily be delayed. For on-bill financing to work smoothly, automation (which may be expensive to implement) must be put in place. Further, in the design of the mechanism, the repayment amounts must be low enough that they are attractive for the end-users, but the loan tenors must be limited to avoid an excessive interest costs burden.

Communication and Education

- 1 Dedicate an on-going budget for awareness raising. Financing mechanisms need to invest in awareness-raising campaigns to educate the public about the benefits of energy-efficient appliances in general, and of the financing mechanism. Stop-and-go efforts may result in some market transformation, but long-term communication work would have been helpful in the three countries. Budget funding may also be available from national communication plans of the government organization that will manage the programme in the long term. Allocate a suitable communication budget from the outset of the project.
- 2 Differentiate the mechanism from alternative approaches through specific marketing and communication efforts, which should focus on highlighting the unique benefits of this financing mechanism to potential customers and vendors.
- 3 Provide ad-hoc technical assistance and capacity building to financial institutions and vendors, particularly in those countries with recently implemented MEPS and label policies. Financial institutions and vendors may require technical assistance to participate in financing mechanisms for energy-efficient appliances. For example, both Senegal and Rwanda did not have a long-standing MEPS and labelling policy. Vendors were supported by the development team to obtain laboratory test reports that would be sufficient to prove eligibility for the programme, as well as assessing those reports.

Other

- 1 Before launching the product nationwide, run a limited pilot with employees from one of the partner institutions, or government agencies. This will bring to the surface most of the limitations/challenges and offer the opportunity to solve them in a controlled environment.
- 2 Adapt existing financing mechanisms that are known to market participants to gain acceptance from stakeholders, reduce complexity, and improve the chances of success. This can include the incorporation of energy-efficient appliances into existing loan products, such as consumer loans, wage-deduction loans, or microfinance loans. Adding energy-efficient appliances can help reduce the perceived complexity and risk associated with new financing mechanisms. Moreover, it can increase the availability of financing options for consumers. Another option is leveraging existing government programmes such as affordable housing schemes or rural electrification programmes.
- 3 Consider early in the process temporary storage locations for turned-in appliances and estimate the cost for such storage.

4. Guidance to stakeholders

The success of financing mechanisms promoting energy-efficient and climate-friendly appliances depends on the participation of the key stakeholders. As each stakeholder group has specific motivations, roles, and responsibilities, it is crucial to provide guidance for each group to ensure the smooth functioning and sustainability of the programme.

Below are guidance points for financial institutions and vendors considering joining the programme, and the government entities responsible for the ongoing management of the financing mechanism. Following these guidelines can help the various participants to overcome potential barriers and contribute to the achievement of the financing mechanism's objectives.

4.1 Guidance to vendors

- The financing mechanisms promoting energy-efficient and climate-friendly appliances target equipment with certain characteristics which may not be part of a vendor's current offering. A good relationship with manufacturers and/or regional distributors is needed to obtain eligible equipment at reasonable prices and lead times. In conjunction with the relevant suppliers, identify models that meet the eligibility criteria of the mechanism and are suitable in terms of pricing and availability for the local market.
- Ensure that technicians are trained to install and maintain such appliances. For example, the climate-friendly refrigerants commonly found in domestic air conditioning and refrigeration appliances have a higher flammability rating than traditional refrigerants.
- Programme design should be clear and without undue bureaucracy or complexity which may otherwise stifle financial institutions and vendors from participating due to the added transaction costs. Utilise existing commercial channels and business practices to the extent practicable.
- To demonstrate the energy performance of the eligible products there are two possibilities:
 - For countries with existing energy and product registration procedures, the financing mechanism will likely establish its criteria according to the existing policies, aiming for products of the higher energy efficiency categories.
 - For countries without an existing energy labelling system or product registration procedure, the financing mechanism will likely establish its criteria based on international testing standards. There are a limited number of testing standards for cooling equipment, and most manufacturers test their equipment according to those standards, which means that laboratory test reports according to those standards are usually available from the manufacturer. The financing mechanism manager will ask for those test reports to assess the performance of the equipment. Energy test certificates and energy labels from other countries may be available, however, those are not recommended, as they are usually not compatible. The reason is that national regulations, even if they use the international testing standards as basis, differ in their ratings and assessment procedures.

4.2 Guidance to financial institutions

- Review the cost of funds, business strategy, and proposed rebates to assess the potential for the institution's participation in the financing mechanism. The programme may support the financing product in part, but it must be attractive for the end clients for it to be successful.
- Ensure that the institution has relevant access to green finance or can provide consumer finance products in order to participate in the financing mechanism.
- Engage and seek support from the project team to develop potential risk mitigation strategies, standardise processes to facilitate consumer finance, and to streamline MRV of the programme impact.
- Ensure that the institution has the capacity to implement the financing option considered and is able to comply with the requirements of the programme, particularly in terms of response times. The mechanism may be designed in a similar way as one of the existing financing products but may also be completely new in nature. These programmes require an investment of time and effort from all participants, and an early message about the institution's inability to participate is more desirable than an early commitment that vanishes over time.
- Be aware that financing mechanisms of this type take time to gain momentum, and that sales may take some time to ramp up.
- Assess any potential misalignment between the cost of funds, target customer market segment, and the interest rate structure requested in the programme terms and conditions.
- In the case of international entities, ensure that the local branch has the approval from its international headquarters to join the financing mechanism.
- Be flexible and willing to negotiate during the development of the programme, as the programme managers may need to restructure the mechanism based on feedback from stakeholders.
- Ensure that the institution has a clear understanding of the programme's requirements and procedures and has the resources to undertake the necessary marketing and communication efforts.

4.3 Guidance to governments

- Ensure buy-in of other government departments or government-owned companies identified as stakeholders in the programme. One possible path is to link the programme with a country's Nationally Determined Contribution (NDC) and other national sustainability commitments and policies. Stakeholders may include the Ministry of Environment (or equivalent) responsible for waste collection policies or programmes, the electricity utility company, etc. Buy-in is preferably ascertained through written commitments to their role in the programme, and the assignment of a focal point for the programme within the department.
- Ensure that supportive policies and regulations such as MEPS, energy labels, and e-waste management programmes exist and are fully operational in the country. They form the basis of communication with the vendors and the general public, and they will likely be used to establish the eligibility criteria for the appliances. National utility and sustainable finance regulations may also be adjusted to provide a more supportive framework to these programmes.
- During the development phase, be critically minded about the potential long-term sustainability of the financing mechanisms, including their financial viability and ability to be scaled up or replicated in other contexts. At the end of the development phase, it will be the government's programme.
- Provide technical assistance and capacity building to financial institutions, vendors, and consumers to promote understanding of the benefits of energy-efficient appliances and financing mechanisms.
- Allocate personnel and a dedicated budget for awareness-raising campaigns to promote the financing mechanisms and their benefits among the public, vendors, and financial institutions. Investigate available slots for government communication in national media. Join private media talk shows to bring the information closer to the general public.
- During the development phase, insist that the financing mechanisms should be accessible and equitable to all segments of society, including low-income households and both men and women, and take steps to address any potential barriers or challenges to participation. These include partnering with vendors with a nationwide presence, avoiding mechanisms that automatically exclude a significant portion of the population, etc. At the same time, be conscious that in a pure market-based mechanism, private lenders do not consider 100% of the population eligible for credit.
- Allocate personnel (only part time may be needed) to provide ongoing management and oversight of the financing mechanism to ensure its effective implementation and continued success. This also includes monitoring compliance with programme requirements and addressing any issues or challenges that may arise.

Annexes

The main findings and insights presented in the preceding sections of this report are complemented by a series of informative annexes, each offering in-depth insights into specific aspects of the financing mechanisms. These annexes provide a comprehensive overview of the background and development of the mechanisms, as well as the challenges encountered during their design and implementation.

Furthermore, they delve into the impact achieved in terms of increased availability, affordability, and sales of energy-efficient appliances, along with the enhanced integration of various market participants. These annexes collectively serve as an integral companion to the main report, offering detailed contextual information that contributes to a holistic understanding of the mechanisms' effectiveness and implications.

Annex 1. Financing mechanisms general background

Energy-efficient and climate-friendly cooling appliances benefit consumers, governments, and industry. Increasing efficiency lowers energy costs, enhances energy security, helps expand access to energy services, and reduces greenhouse gas emissions. It can also stimulate innovation and provide business with export opportunities.

Consumers are often highly price sensitive, and the potential benefits of utility bill savings over the lifecycle of an efficient product is typically less apparent than the price premium at the point of sale. Studies show that the cost of equipment acquisition represents only a fraction of the total cost of ownership (over the lifecycle), and most of these costs are mainly related to energy and maintenance costs.

Awareness of these benefits is often lacking, leading to low participation rates and a lack of trust in the claimed benefits. In many cases, financial institutions lack the technical experience to provide financing for energy-efficient appliances, and they often have competing traditional financial products such as consumer loans which are open to appliances regardless of energy or environmental performance. According to the International Energy Agency (IEA) and UNEP, the average efficiency of cooling systems that customers buy on the market is only one-third of the highest efficiency commercially available.¹

Various financing and support mechanisms that have been used in the past to promote energy-efficient appliances were assessed, including:

- Loans, which provide households and businesses with the capital necessary to purchase energy-efficient appliances and are paid back over time with interest.
- On-bill financing, which allows consumers to pay for energy-efficient solutions through their utility bill.
- On-wage financing, which allows consumers to pay for energy-efficient solutions through payroll deductions.
- Rebates, which provide households and businesses with a financial incentive to purchase energy-efficient appliances by offering a purchase price discount or cashback.
- Bulk procurement, which is a demand-driven mechanism that brings down product prices through economies of scale and competitive bidding.
- Positive lists, which refer to agreed-upon lists of appliances that are pre-approved for participation in the programme as they meet certain desired criteria such as energy-efficiency level, type of refrigerant gas, etc.

1. Dreyfus, G., Borgford-Parnell, N., Christensen, J., Fahey, D.W., Motherway, B., Peters, T., Piccolotti, R., Shah, N., and Xu, Y. (2020) Assessment of climate and development benefits of efficient and climate-friendly cooling. Molina, M., and Zaelke, D., Steering Committee Co-Chairs. Available <https://www.ccacoalition.org/resources/assessment-climate-and-development-benefits-efficient-and-climate-friendly-cooling>.

A1.1 Financing mechanisms context

Financing mechanisms were developed and pursued in Ghana, Senegal, and Rwanda starting in late 2020 to help households purchase energy-efficient and climate-friendly refrigeration and room air conditioning systems through market-based approaches (i.e., without subsidies on the product price). Other financing mechanisms such as grants, guarantees, or servitisation models were not considered due to either the lack of non-reimbursable funds to test them in the market, or because of the lack of evidence of their implementation in small-scale cooling systems in the market.

Financing mechanisms were designed using information obtained through detailed market studies, composed of surveys to households, data collection of existing studies/statistics, and consultations with stakeholders, to ensure the mechanisms were tailored to the national contexts. Nonetheless, a set of common characteristics were identified:

- The market for second-hand domestic refrigeration appliances and air conditioners is highly active. This informal market provides inefficient cooling systems that are cheaper to purchase but more expensive to operate. This circumstance poses a challenge to formal vendors in the programme who aim to sell new systems which are among the best available in the market in terms of efficiency and refrigerant global warming potential (GWP). For more information, see [the global warming potential side bar](#) at the end of this section.
- The availability of energy-efficient and climate-friendly cooling appliances was low. Mechanisms were tailored to help accelerate the introduction and adoption of more advanced technologies. Typically, these advanced technologies are more common in developed markets. In Rwanda and Senegal, there was a particular lack of such technology. These programmes are geared towards encouraging the shift to newer technologies.
- Price sensitivity is a major factor, as consumers typically prioritise a low-price appliance over a model offering potential operational cost savings from greater energy efficiency, and consumers are largely agnostic when it comes to refrigerant GWP.
- The consumer finance market in various African countries is still the early stages of development. It is common for households to pay in cash for appliance purchases. In countries like Ghana, the utilization of credit cards or vendor-based credit is rare. However, a growing trend towards mobile banking and payment services exists in countries like Rwanda. Senegal also demonstrates this emerging trend, showing an increasing desire to secure loans specifically for acquiring higher-end appliances. Access to credit is hindered for households with income from self-employment, which face difficulties in guaranteeing stable income. In Rwanda, this is particularly relevant, as 62% of workers are self-employed, primarily in the agriculture sector². In Ghana, 12% of the survey respondents indicated that they work for the Government with steady income.
- Energy cost savings potential is significant. According to economic analysis performed during the programme, the promoted appliances would achieve a payback time of between two and four, when compared to a second-hand cooling appliance. This payback period highlights the potential for households to recover their investment in energy-efficient appliances in a relatively short time frame, while also providing long-term energy savings.

2. <https://statistics.gov.rw/publication/eicv5thematic-reporteconomic-activity-thematic-reportpdf>

- Consumer finance is perceived as high-risk by lenders. In Ghana the rate of default is considerably high and there are issues regarding forged or altered documents presented by clients when requesting credit. In Rwanda, consumer finance options are more limited, usually require collateral, and there is a lack of effective credit recovery mechanisms.
- The market for bank loans is highly competitive in Ghana and Senegal, with many banks offering loans to salaried employees through wage deductions.

Global warming potential

GWP is a measure of how much heat a greenhouse gas traps in the atmosphere compared to the same mass of carbon dioxide (CO₂) over a specific time period, typically 100 years. GWP is used to compare the relative impact of various greenhouse gases on climate change, with CO₂ having a GWP of 1 as a reference point. The refrigerant gases contained in air conditioning systems can have significant GWP values, contributing to climate change when released into the atmosphere.

The GWP of refrigerant gases varies, and they can be classified according to Table 1.

Table 1. Refrigerant GWP naming convention³

100-year GWP	Classification
<30	Ultra-low or negligible
<100	Very low
<300	Low
300-1,000	Medium
>1,000	High
>3,000	Very high
>10,000	Ultra-high

HFC-410A is an example of a high GWP refrigerant, with a GWP value of 2,100. HFC-410A has been a mainstay of air conditioning systems since the phase-out of ozone-depleting substances, representing the vast majority of equipment available for sale in the three countries at the start of the project. Medium GWP refrigerants, such as HFC-32 (GWP value of 704), are commonly used as a stepping stone in the transition towards low GWP refrigerants. Low GWP refrigerants are considered more environmentally friendly. HC-290 (propane) is an example of a low GWP refrigerant, with a GWP value of just 3.

The GWP of refrigerants is just one aspect to consider when evaluating their environmental impact. Other factors, such as energy efficiency, ozone depletion potential (ODP), and safety concerns (flammability and toxicity), must also be considered when selecting a refrigerant.

3. UNEP Ozone Secretariat, "2018 RTOC Assessment report", available at https://ozone.unep.org/sites/default/files/2019-04/RTOC-assessment-report-2018_0.pdf

A1.2 Project approach

To address the capacity and awareness challenges, the financing mechanisms were built upon existing government programmes for MEPS, energy labels and waste collection, where available. They also built upon existing structures and relationships between vendors and manufacturers to access new appliances models. Awareness-raising efforts were planned and implemented to ensure that market participants understand the benefits of eligible appliances and how to participate. Tailored training was provided for officials, banks, and vendors.

The definition of positive lists with robust eligibility criteria set a clear bar that had to be met. A list of products that was reviewed and approved by the governments, lending credibility to the programmes and addressing perceived performance risk. The government remained central throughout the design and implementation process, enabling a relatively smooth handover from the technical assistance teams at UNEP and BASE. The ongoing government management is also expected to facilitate the transition to new eligibility criteria once the planned new energy labels are introduced in Ghana and the market consequently evolves.

The projects focus on overcoming key financial and non-financial barriers identified in the market studies to unlock private capital investment by:

- **Increasing the availability of energy-efficient and climate-friendly appliances.** In Ghana, for instance, air conditioning units with HCFC-22 refrigerant were still available for sale at the time of the study, while HFC-410A was considered the ‘environmentally friendly’ refrigerant. The national energy labelling regulation was not particularly demanding, as it was developed in 2009, yet refrigerators of the highest efficiency class (5-star) were not available for sale and represented just 1% of the total registered units in 2020. Similarly, 4-star and 5-star air conditioning units represented 1.2% of the registered units, and no HFC-32 or HC-290 units were found available for sale. The introduction of energy-efficient and climate-friendly cooling systems by partner vendors was a key priority during the negotiations.
- **Improving the affordability of energy-efficient and climate-friendly cooling appliances.** Affordability was identified as a barrier to adoption, particularly for low-income households and small businesses. To enhance the affordability for these appliances, financing mechanisms tailored to the local realities were developed.
- **Incentivising the removal and appropriate disposal and recycling of second-hand inefficient appliances from the market.** This was done in collaboration with environmental regulators, linking the financing mechanisms to the extent possible with certification programmes for waste collectors and incentives for users to turn in their old appliances. This activity helps address the secondary market circulation of outdated inefficient products and contributes to raising the overall efficiency of products in the market while contributing to raising the attractiveness of more efficient products.
- **Strengthening the collaboration between market participants such as banks, vendors, and the government.** Efforts have been made to enhance communication and improve integration of the three key market actors, so the financing mechanism increases the awareness of the benefits of the promoted appliances, provide a range of financing options, and create a stronger market.

A1.3 Development process for financing mechanisms

These design criteria influenced the development of the financing mechanisms in each country and were obtained following the analysis of the market barriers and incentives of local stakeholders. The market assessment and detailed stakeholder consultations took place over the course of roughly 14 months.

Common design criteria included:

- 1 The availability and current barriers of financing options.
- 2 The ability to source products that would meet eligibility criteria.
- 3 The regulatory and policy environment.
- 4 The level of involvement and support from local governments, vendors, power utilities, and financial institutions, and their capacity to implement the mechanism effectively.
- 5 The mechanism's scalability and sustainability for long-term impact.

In all three countries, several components were implemented as part of the mechanisms. These are indicated below:

- Negotiation of wholesale discounts with refrigeration and air conditioning vendors for newly eligible imported models.
- Promotion of energy-efficient refrigerators and air conditioning units.
- Positive list of eligible cooling appliances.
- Set up system for collection and disposal of old equipment.

The establishment of these components required multiple activities, such as the development of terms and conditions with local legal professionals, brokering/facilitating partnerships and signing terms and conditions, developing common communications and outreach materials, etc. The activities encompassing the establishment of the financing mechanisms were executed over a time frame of roughly one year, which saw an overlap of approximately four months with the data collection phase. This overlap was integral in creating a seamless transition from planning to implementation.

Following the initial developmental phase, the piloting and initial implementation phases varied in duration between four to 10 months, largely dictated by the unique challenges each country faced. In Ghana, for instance, a significant impediment was the lack of available appliance stocks at the vendor's premises. This issue, critical to the successful roll-out of the financing mechanism, required four to five months to address.

Regarding the grant for technical assistance, the development costs associated with these initiatives led to an expenditure of approximately USD 500,000 per country. The costs encompassed the diverse range of activities needed to establish and promote the financing mechanisms, from market assessments, stakeholder consultations, programme design, operational expenses, reporting templates, and marketing campaigns. The ongoing management requires one part-time employee from the primary government agency in charge of the programme.

A1.3.1 Ghana

In Ghana, an on-bill financing mechanism was initially considered to mitigate the risk of default and issues with forged loan applications. A previous unsuccessful joint project between the energy regulator and electric utility discouraged the government's support for this model, therefore, an alternative was pursued.

Many companies that partnered with banks were identified to offer their employees loans with a wage deduction for the repayment. The financial market is competitive for these types of loans, and given the local experience in this domain, it was decided to develop a green on-wage (GO) mechanism. One drawback of on-wage financing is the limited target group of salaried employees, compared to on-bill financing.

To assess the most suitable financing mechanism, a scorecard was created, including the following assessment categories:

- **Ease of implementation:** Measures the simplicity and speed with which the financing mechanism can be put into operation, considering local context and constraints.
- **Cost-efficiency :** Assesses the balance between the resources invested in the financing mechanism and its overall impact in expanding the purchase of energy-efficient and climate-friendly cooling appliances.
- **Sustainability:** Evaluates the long-term viability of the financing mechanism, including its ability to function without continuous external support.
- **Familiarity:** Assesses the level of understanding and acceptance of the financing mechanism among stakeholders, based on their prior experience and knowledge.
- **Funding availability:** Considers the existing or potential financial resources that could be tapped into to support the implementation of the financing mechanism.
- **Potential buy-in from key stakeholders:** Estimates the likelihood of getting support and engagement from important players such as financial institutions, government bodies, and appliance vendors.
- **Alignment with country strategy and government priorities:** Reviews how well the financing mechanism aligns with the nation's strategic goals and international commitments (e.g., national development plans, NDCs to the Paris Agreement, Montreal Protocol, etc).
- **Aligned with market and target segment:** Examines the fit between the financing mechanism and the needs, preferences, and behaviours of the target customer segment in the local market.

With the information from the market study, feedback from the main stakeholders, and the scorecard results, the financing mechanism proposed for Ghana consisted of the setup of credit facilities between partner banks and participating vendors enabling payment in installments for eligible salaried employees through wage deduction.

A1.3.2 Rwanda

In Rwanda, an on-bill financing mechanism was initially considered to mitigate the risk of default and to ensure the inclusion of self-employed Rwandans. Several rounds of discussions were organised with Rwanda Energy Group (REG) and the Energy Utility Corporation Limited (EUCL) - the country's sole electricity provider - and the Development Bank of Rwanda (BRD) as financing partner.

During the process, multiple barriers were identified (see [Annex 2.2](#) for details), which discouraged the key stakeholders from pursuing on-bill finance. The effort moved towards an on-wage financing system, as it would comprise a clearly addressable market.

Due to the absence of functioning MEPS and labelling regulation at the time, some of the programme activities included the assessment of appliance test reports from the laboratories assessing their energy efficiency.

A1.3.3 Senegal

In Senegal, discussions led to the exploration of a combination of mechanisms to facilitate household access to formal markets and to financing for the replacement of refrigeration and air conditioning units.

The utility company, Senelec (Société nationale d'électricité du Sénégal), welcomed the proposed on-bill financing, as it could be bundled with an ongoing effort to transfer users from post-paid meters to Woyofal meters. Woyofal is a prepaid electricity metering system introduced in Senegal in 2005. Its main objective is to improve access to electricity by increasing operational efficiency and improving revenue collection. The system allows customers to prepay for electricity, rather than relying on a post-paid billing system. The on-bill financing mechanism was therefore offered to those clients with Woyofal meters.

Due to the absence of labelling regulations, an energy efficiency assessment spreadsheet was developed for the government officials managing the programme. The purpose was to facilitate the assessment of appliance test reports from the laboratories.

A1.4 Description of the three financing mechanisms

This section provides an overview of the three financing mechanisms developed. Table 2 below presents key information, including the target audience, financing options available, interest rates, and repayment terms for the three programmes. The operational details for each mechanism are provided in the sub-sections.

Table 2. Overview of the three financing mechanisms

Main financing mechanism	Ghana ECOFRIDGES GO	Rwanda R-COOL GO	Senegal ECOFRIDGES On-bill Financing
	On-wage financing	On-wage financing	On-bill financing
Target audience	Salaried employees of institutions profiled or in a business relationship with partner banks of the programme Open to everyone through cash payments	Salaried employees of institutions profiled or in a business relationship with partner banks of the programme Open to everyone through cash payments	Pre-paid utility customers Open to everyone through cash payments
Positive list (limited product eligibility)	Yes	Yes	Yes
Discount off manufacturer's suggested retail price (MSRP) granted by vendors	Yes	Yes	Yes
Participating banks	3	2	1
Participating vendors	5	4	1
Special financing conditions	0% interest for 12+ months / 18 – 36 months at special interest rate ⁴	No special conditions	0% interest for 24+ months / 24 - 48 months at ⁵ special interest rate
Voucher for discarded appliances	Yes: 10%	Yes: 15%	Yes: 10%

4. Status as of May 2023.

5. The rebate obtained from vendors allows offering more attractive financing options, such as 0% interest rates for a period of 12 months or lower interest rates compared to standard rates for longer repayment tenors.

	Ghana ECOFRIDGES GO		Rwanda R-COOL GO		Senegal ECOFRIDGES On-bill Financing	
Voucher status	Not implemented due to lack of approved collection recycling entities (Waste from Electrical and Electronic Equipment programme (WEEE) not active)		Agreements in place, no reporting to date		Not implemented due to lack of approved collection recycling entities	
Existing national MEPS and labels	Yes		Yes		No	
Main eligibility criteria	Fridge 5-star efficiency GWP<20, 150g 2-year warranty New product 3 years after sales support.	Air Conditioner 3-star efficiency GWP<750 2-year warranty New product 3+ years after sales support.	Fridge Fridge A, B, C, D efficiency class GWP<20, 150g 2-year warranty New product 3 years after sales support	Air Conditioner A, B, C, D efficiency class GWP<750 2-year warranty New product 3 years after sales support	Fridge UEMOA Regulation Directive IEE<40% GWP<20, 150g 2-year warranty New product 3 years after sales support	Air Conditioner UEMOA Regulation Directive Class 3 GWP<750 2-year warranty New product 3 years after sales support

A1.4.1 Ghana

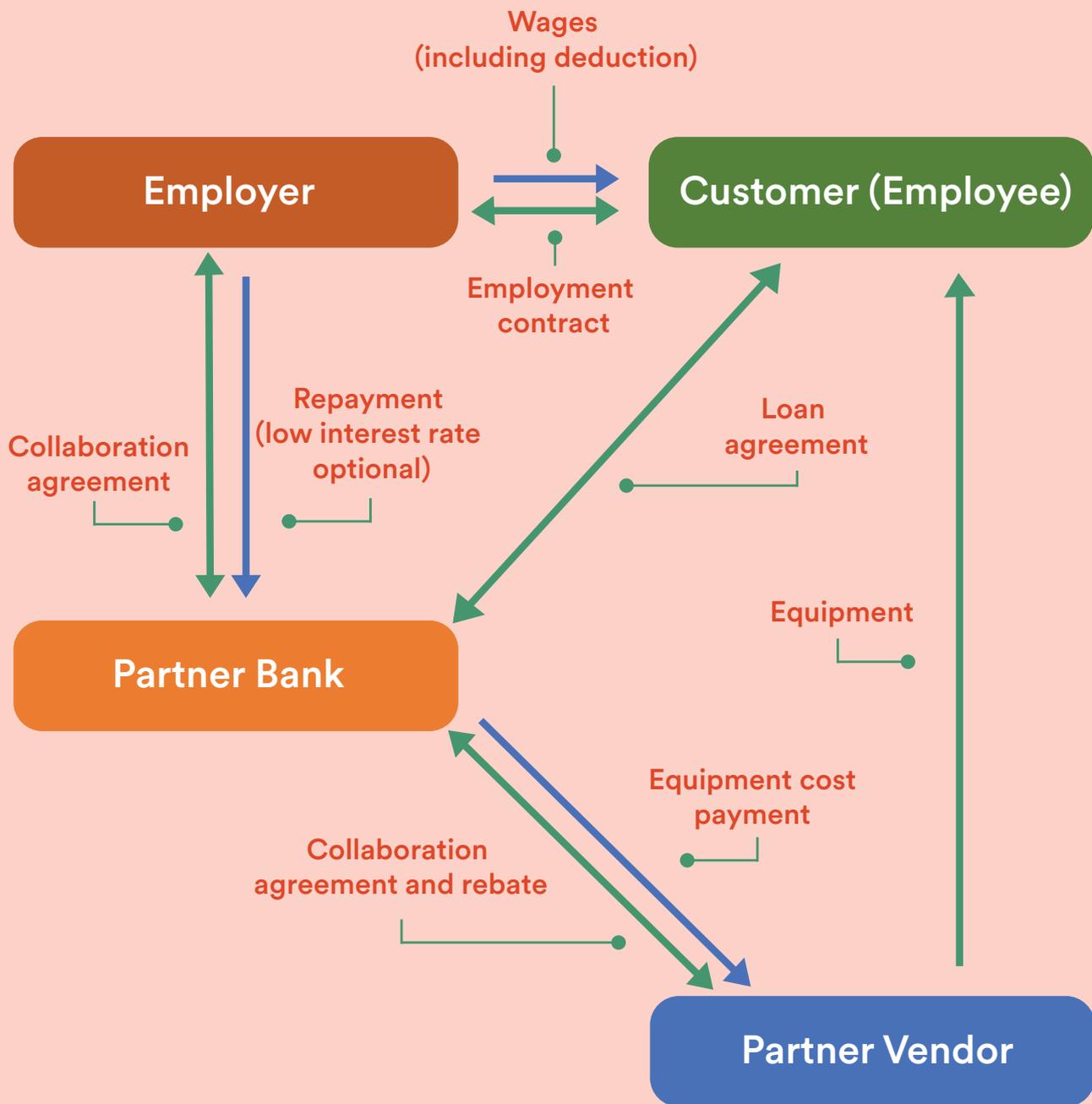


Figure 4: Schematic of the main stakeholder interactions for ECOFRIDGES GO in Ghana and R-COOL GO in Rwanda

The process between the various stakeholders is as follows:

- 1 A customer either picks up an ECOFRIDGES GO customer application form at the participating vendor, at the participating bank, or on the Energy Commission's online platform⁶, chooses an approved model from among those in the positive list, and fills in the application form to benefit from the mechanism.
- 2 The vendor checks the customer's application, completes a dedicated part of the customer form, and provides a pro forma invoice to the customer.
- 3 The vendor sends the customer application to the partner bank chosen by the customer.
- 4 The bank sends confirmation of loan approval to the customer and vendor partner.
- 5 The bank fills in the designated part of the ECOFRIDGES application form and sends a monthly summary report to the Energy Commission for monitoring and reporting.
- 6 Optional: If of interest to the customer, the vendor collects their old but functioning appliance (not implemented yet in Ghana due to lack of certified collectors, though it remains an ambition to do so when practicable in the future).
- 7 Vendor delivers new appliance to customer and gives them a voucher for future purchases (not implemented yet in Ghana due to lack of certified collectors, though it remains an ambition to do so when practicable in the future).
- 8 E-waste management company collects the old but functioning appliance (not implemented yet in Ghana due to lack of certified collectors, though it remains an ambition to do so when practicable in the future).
- 9 Vendor pays the e-waste management company for the collection and disposal of the old but functioning appliance against proof of disposal (not implemented yet in Ghana due to lack of certified collectors, though it remains an ambition to do so when practicable in the future).
- 10 Bank credits the vendor the waste collection costs once the proof of disposal is received (not implemented yet in Ghana due to lack of certified collectors, though it remains an ambition to do so when practicable in the future).
- 11 Vendor forwards the customer application, pro forma invoice, and proof of disposal (disposal was not implemented in the projects as of this writing) to the Energy Commission for monitoring and reporting purpose.
- 12 The energy Commission processes the customer application information in a central repository.
- 13 Energy Commission generates reports on the number of sales, loans provided, recovered loans and outstanding, tally of models sold, combined energy saving against baseline consumption, avoided CO₂ emissions, number of old appliances received, percentage of old appliances received against appliances sold, etc.

6. <https://www.ecofridgesgo.com/>

An ECOFRIDGES GO portal was developed to facilitate and manage the application process, product availability, and communications with the public. This platform remains up to date with new products and information. Screenshots from this portal are shown in Figure 5.

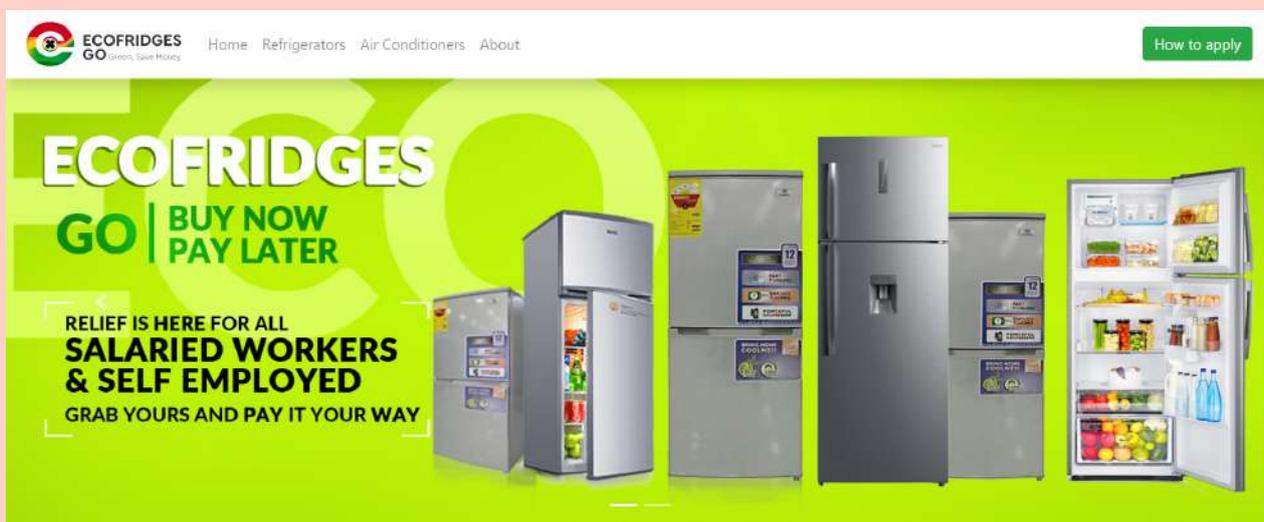


Figure 5. ECOFRIDGES GO public portal⁶

A1.4.2 Rwanda

The R-COOL GO mechanism was structured similarly to ECOFRIDGES GO in Ghana. A schematic of this mechanism's operation is displayed in [Figure 4](#).

During the design and implementation of R-COOL GO, there was a short timeline to transition from on-bill financing to on-wage financing. Negotiations to obtain a larger rebate with the vendors were difficult, and the financing mechanism could only include the cost of recycling turned-in equipment and a voucher for customers.

Despite these limitations, the R-COOL GO financing mechanism was able to address key barriers to adoption such as the availability of appliances, by introducing new eligible models in the market, awareness through government sponsorship, and, to a limited extent, access to financing. Further details are provided in [Annex 3](#).

A1.4.3 Senegal

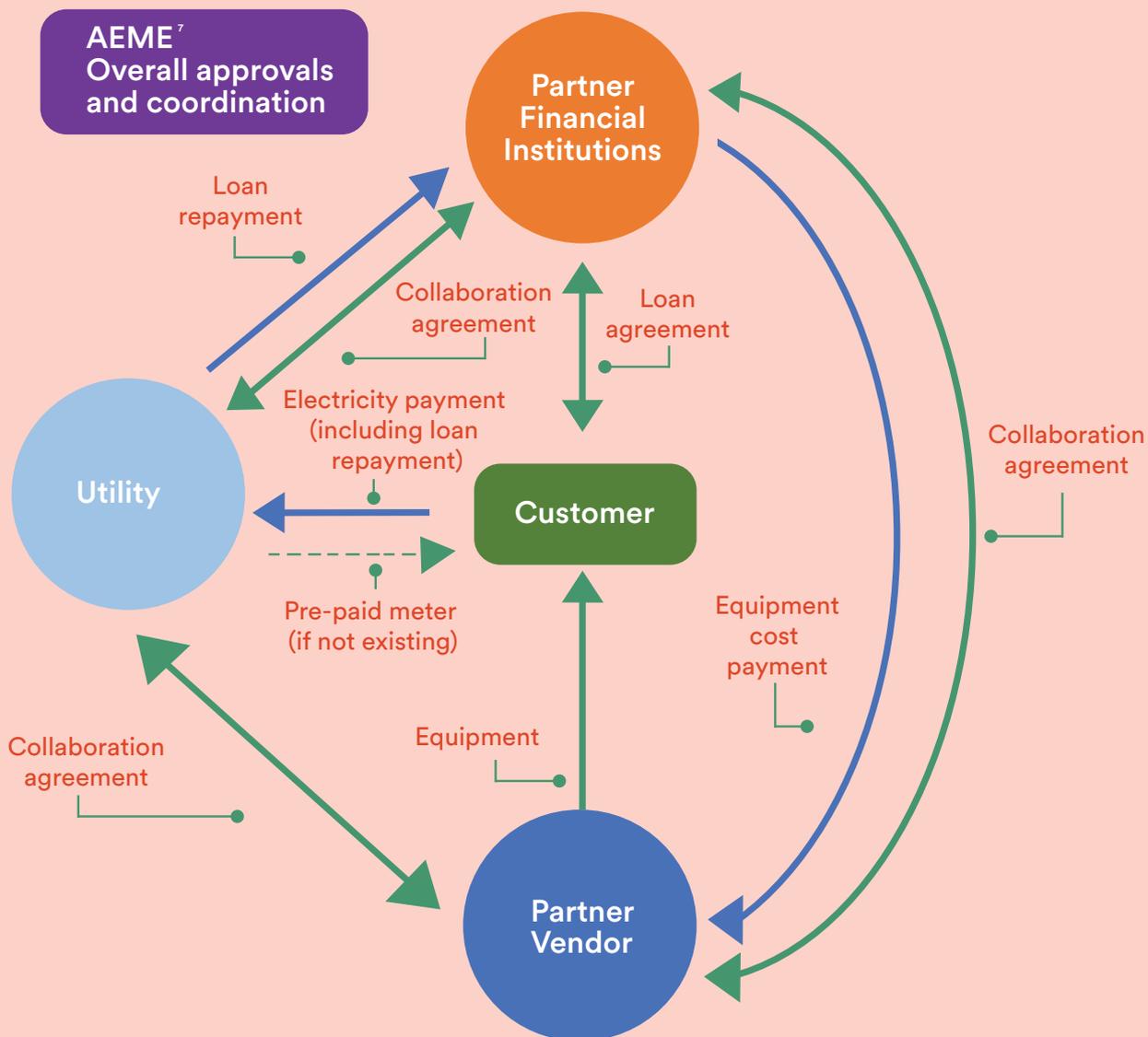


Figure 6. Schematic of the main stakeholder interactions for ECOFRIDGES Senegal

7. Agence pour l'Économie et la Maîtrise de l'Énergie (AEME)

A more detailed process with the various interactions between the various stakeholders is described below:

- 1 The applicant completes a request form for the purchase of an eligible ECOFRIDGES product from the vendor of their choice registered on the positive list.
- 2 The applicant submits the form and supporting documentation to the vendor.
- 3 The vendor sends the completed application form and the invoice for the selected product to the AEME.
- 4 AEME's Eligibility Officer checks whether the form is complete and whether the requested product and vendor are on the positive list.
 - a) If the file is incomplete, additional documents are requested from the customer via the vendor.
 - b) If the file is complete, AEME's Eligibility Department asks the utility (Senelec) to provide it with the applicant's data for the calculation of their credit score in order to decide on the applicant's eligibility.
- 5 Senelec transmits to AEME the following data:
 - a) Possession of a Woyofal pre-paid meter and the applicant's subscription date.
 - b) The applicant's monthly electricity consumption for the last 18 months.
 - c) The number of recharges made on the Woyofal meter by the applicant over the last 18 months.
 - d) The applicant's electricity consumption receivables ratio over the last 18 months.
- 6 AEME's Analysis Officer determines the credit score and finalises the analysis of the applicant's eligibility.
- 7 If the applicant is eligible, their file is sent to the partner bank for its review.
 - a) If favourable, AEME notifies Senelec and the vendor, and the applicant signs the credit agreement with the bank.
 - b) If the bank's opinion is not favourable, a rejection is sent to Senelec and the vendor.
- 8 The bank returns the signed credit agreement to AEME, Senelec and the vendor
- 9 The vendor delivers the new product to the approved applicant and gives them a delivery note. AEME also receives a copy of the delivery note.
- 10 The vendor picks up the old product from the approved applicant and gives them a collection certificate, and a gift certificate (not implemented yet in Senegal due to lack of certified collectors, though it remains an ambition to do so when practicable in the future).
- 11 If necessary, the vendor makes the old product available to the waste management company and notifies the Department of Environment and Listed Establishments (DEEC) and the AEME by sending them a copy of the delivery note "old product" (not implemented yet in Senegal due to lack of certified collectors, though it remains an ambition to do so when practicable in the future).

- 12 The vendor then presents the copy of the invoice, the delivery note of the new ECOFRIDGES product, and a the delivery note of the old product and the copy of the gift voucher (if applicable) to the bank's Credit Officer.
- 13 The bank's Credit Officer makes the payment to the vendor and notifies AEME and Senelec.
- 14 AEME's Eligibility Officer sends Senelec the applicant's credit agreement, payment notification, invoice and delivery note of the product and copy of the gift voucher.
- 15 The person in charge of the eligibility analysis at Senelec enters the amounts and duration of the recovery of credits in its information system.
- 16 The approved customer makes monthly repayments on their pre-paid metering system to reimburse the loan.
- 17 Senelec makes monthly payments to the bank for the amount recovered from applicants who received credit.
- 18 AEME reports on the number of eligible and approved applicants, the number of loans granted to vendors and applicants, the type and category of product, the prices of the products, the type and weight of refrigerant recovered (this last part not implemented), the number of old functioning products recovered, and the amount of CO2 emissions avoided.

Annex 2. Barriers and challenges during design and implementation

The main barriers encountered during the design and implementation of the financing mechanisms are presented in this section. These have been obtained through interviews with the main stakeholders (vendors, banks, and government officials), survey data collection, and consultation missions.

Twenty-one respondents to the surveys provided their insights. Sixteen of the respondents were men, and five women. The country with the largest number of respondents was Senegal with a total 12, followed by Ghana with five, and Rwanda with four. The barriers and challenges identified have been grouped by country. The main challenges reported by the financing mechanism participants are summarised in [Figure 7](#).

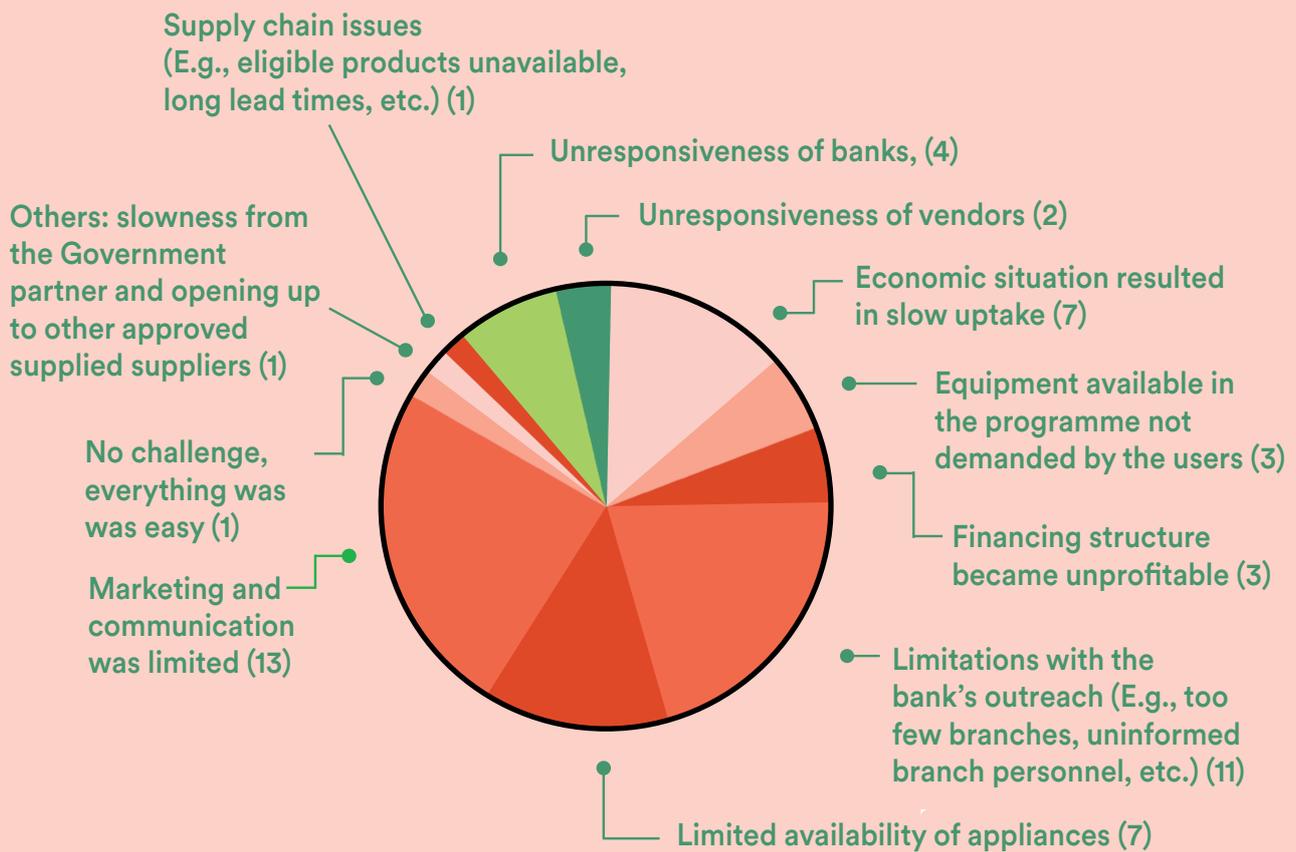


Figure 7. Challenges perceived by the various financing mechanism participants

A2.1 Ghana

During the development of ECOFRDIGES GO, several issues were faced, which delayed the original implementation by six months. The main barriers during the design and implementation phase were:

- Hesitance of vendors:** Vendors were hesitant to import appliances with characteristics that they perceived to be in low demand (higher price, different refrigerants). The background to this hesitancy was the risk of placing orders for equipment that could not be sold. However, with the success of a single vendor who took the initial step and created demand through rigorous marketing, other vendors became encouraged to import eligible appliances.
- Rebate limitations:** The potential for negotiating discounts with participating vendors was closely linked to the size of the market and the structure of the supply chains for appliances in the country. Vendors that were both retailer and distributor of a certain appliance brand were more likely to match the requested rebates. However, retailers were not able to commit to significant rebates. Some rebates came from the limited marketing and promotion budget from the vendors (e.g., direct rebates on the selling price of appliances to the customers).

- **Low stock levels:** Major inventory management efforts for approved appliances had to be undertaken to constantly meet customer demand and ensure continuous availability.
- **Global pandemic:** The Covid-19 pandemic resulted in delayed supply of appliances and higher shipping costs for the vendors. It also shifted commercial/strategic priorities for some non-partner and partner banks resulting in fewer partners joining the programme than anticipated.
- **Slow roll-out:** The unavailability of appliances at the time of the launch of the mechanism resulted in a reduction of the momentum gained after the launch. This slow roll-out sent mixed signals to the programme stakeholders about the viability of the new financing mechanism.
- **Rigid banking policies:** Difficulties were experienced in the negotiation process with some non-partner banks, who thought that the requirements of the programme terms and conditions were too stringent compared to existing financing agreements for credit facilities they had with other vendors to sell various non-energy-efficient appliances. For example, some banks requested additional charges to be included as part of the financing mechanism, such as a mandatory life insurance policy. This would have added an extra cost of 1% per annum for the end-user. Negotiations with the banks were arduous, and ultimately one bank agreed to remove the extra insurance, while another did not.
- **Bank's strategy not aligned with the programme:** One of the partner banks committed to the programme but then realised that there was a strategic mismatch as they focus on microfinancing and their main clients come from low-income households/individuals. This resulted in a mismatch with the lending conditions of the programme.

The issue was that 12 monthly installments were not enough for their customers to repay the loans and they could not provide more time. As an observation, it may have been viable if they could have offered longer repayment periods at subsidised interest rates.

- **Limited expansion of loan promotion beyond the pilot to own employees:** The banks did not embrace or expand to the full potential of the mechanism. It was initially piloted with its own employees, but the extension to all salaried employees was not perceived in the market.
- **Lack of e-waste management:** The lack of a functioning e-waste management scheme in the country made it virtually impossible to implement this element in the programme. Despite the presence of an environmental levy on newly purchased appliances, the absence of a proper waste management system posed a challenge in disposing of the old and inefficient appliances in an environmentally responsible manner.
- **Lack of awareness:** Major marketing and communication efforts must be undertaken to create demand with customers and build capacity with credit officers.

A2.2 Rwanda

During the development of the mechanism, several issues were faced, which made the implementation of the originally intended on-bill financing not possible. The main barriers include:

- **Administrative costs:** On-bill financing requires additional administrative costs to be incurred by the utility company. These include IT costs to set up the loan repayment schedule within the utility bills and running costs to provide customer service for the mechanism.
- **Lack of utility interest:** On-bill financing requires the involvement of the utility company to administer the programme. Initially, EUCL expressed their willingness to support the programme, however, there was a clear message that the company would not take the credit risk of the clients. As conversations developed, additional issues came up, such as the conflicting incentive of reducing electricity sales, or the legality and cost of disconnecting clients who do not pay the portion of the bill corresponding to the loan. Progressively, there was certain disengagement from EUCL.
- **Lack of funds:** Initially, the BRD had expressed interest in the programme as a possibility to use a World Bank credit facility for on-bill financing. During the development phase, it became clear that the proposed mechanism would not be eligible for the World Bank credit facility. Also, BRD requested co-financing to subsidise the lending to the end-users which the programme could not provide.
- **Consumer access:** In Rwanda, particularly in Kigali, the proportion of owner-occupied dwellings is low. Many people live in rented properties, which, according to the utility regulations, have the electricity meter registered under the landlord's name (most electricity meters are pre-paid, which works well under this arrangement). The implementation of on-bill financing would make it difficult to assign the loan repayment obligation to an electricity account not owned by the original borrower.
- **Difficult to assess creditworthiness:** Some consumers may not have access to credit or may not have a credit score sufficient to qualify for a loan. Associating the loan to an energy bill is an additional risk mitigation for default (as the electricity supply could be cut-off), however, this does not eliminate the risk, and the process to determine the creditworthiness of clients is much easier for salaried workers with a track record of earnings. The risk in question was addressed through the creation of a synthetic credit scoring formula, which relied on utility billing data. However, this approach introduced additional complexity to the project.

Once the transition to the on-wage financing mechanism was envisioned, various additional challenges were encountered, including:

- **Low rebate:** The negotiated rebate could hardly cover all the costs associated with the components of the programmes (i.e., concessional financing, vouchers/ cash-back, and take-back scheme) as well as the management and compliance costs. Therefore choices had to be made, resulting in reduced incentives for vendors to join the programme.
- **Low stock levels:** Major inventory management efforts for approved appliances had to be undertaken to constantly meet customer demand and ensure continuous availability.

- **Global pandemic:** The Covid-19 pandemic resulted in delayed supply of appliances and higher shipping costs for the vendors. It also shifted commercial/strategic priorities for some non-partner and partner banks.
- **Communication challenges:** Major marketing and communication efforts (both internal and external) must be undertaken to create demand with customers and build capacity with credit officers.
- **Complex process:** The current loan approval procedures are perceived as too demanding by the end-users and the partner government agency. This includes, for example, the provision of collateral. The government agency in charge of ongoing programme management is currently exploring possibilities to provide credit guarantees for loan applicants after checking their background.

A2.3 Senegal

In Senegal there was a substantial commitment from the utility provider to drive the on-bill financing mechanism, primarily motivated by the integration of an ongoing programme (the expansion of pre-paid meters).

The main barriers identified during the development and operationalisation of the mechanism include:

- **Regulatory barriers:** Preferential terms for loans structured by some partner banks had to be approved by the financial regulator.
- **Appliance availability:** The majority of vendors were unable to meet the technical and commercial eligibility criteria of the programmes and/or access the supply of appliances. Only one vendor was able to register one model and their stocks were limited to Dakar and were depleted before they could be replenished.
- **Rebate limitations:** The potential for negotiating discounts with participating vendors was limited. Retailers were not able to commit to significant rebates and the funding of other activities in the programme was, therefore, limited.
- **Slow roll-out:** The general slow roll-out of the programme at the time of the launch resulted in a reduction of the engagement by various stakeholders.
- **Lack of e-waste management:** The lack of a functioning e-waste management scheme in the country made it virtually impossible to implement this element in the programme. Despite the presence of an environmental levy on newly purchased appliances, the absence of an established waste management system posed a challenge in disposing of the old and inefficient appliances in an environmentally responsible manner. Government buy-in and support is critical in a coordination capacity and to backstop enforcement.
- **Limited promotion of the financing mechanism beyond the pilot targeted at Senelec employees:** The banks did not embrace or expand to the full potential of the mechanism. It was initially piloted with Senelec employees, but the extension to the public was not implemented.

- **Communication challenges:** Major marketing and communication efforts (both internal and external) must be undertaken to create demand with customers and build capacity with credit officers. The marketing and communication campaign needs to last much longer than the initial phase for the programme to gain traction. This was not done, and due to the unavailability of appliances, slow processes, and other challenges, as soon as the communication campaign concluded, interest in the programme reduced significantly.
- **Complex process:** The current procedures are perceived as too cumbersome. As a result, some applications have been delayed for months.
- **Physical space:** The provision and administration of a suitable storage location for participants' old appliances was a problematic point of discussion.
- **Lack of automation:** The automation of repayment amounts between the utility and the partner bank did not take place because there were insufficient account details to perform the transfer. In general, the lack of automated information sharing and payment processes hindered the programme.

Annex 3. Impact of the financing mechanisms

The financing mechanisms developed in Ghana, Rwanda, and Senegal have improved the availability of energy-efficient and climate-friendly appliances, raised awareness in the population, and increased the collaboration between the various participants. The financing mechanisms have had a modest impact in the uptake of loans by the end-users, underscoring the need to onboard financial institutions in a streamlined programme, and the importance of a long-term commitment and resources from the implementing government agencies.

The source of data used to assess the impact of the mechanisms is composed of surveys completed by vendors, financial institutions, governments, and end-users, personal interviews with stakeholders in Ghana and Senegal, MRV reports on the financing mechanisms prepared by the government officials, other reports developed independently by the government officials, and publicly available information of current appliance prices.

A3.1 Availability of energy-efficient and climate-friendly appliances

In general, the financing mechanisms developed were proven to have increased the availability of energy-efficient and climate-friendly products in the market.

The change has been particularly noticeable in Ghana, thanks to the tracking of appliances available for sale as part of the energy efficiency regulations. Before the start of the programme, there were no 5-star air conditioning units registered, and according to the vendors, the few models of 5-star refrigerators registered were not available for sale. Thanks to the mechanism, currently, vendors offer 5-star air conditioners and refrigerators as part of their standard portfolio.

In terms of refrigerants, refrigerators with HC-600a (isobutane) were already commonly available, however, air conditioners available for sale contained primarily HFC-410A, and some units found for sale still contained HCFC-22 (Figure 8).

A similar situation was discovered in the other countries through vendor interviews, however, due to the lack of a centralised appliance registry, a systematic approach could not be followed. The project highlighted the importance of existing energy efficiency regulations in building financing mechanisms, as they facilitate the market assessment, and communication with the vendors about the desired energy performance of the units.

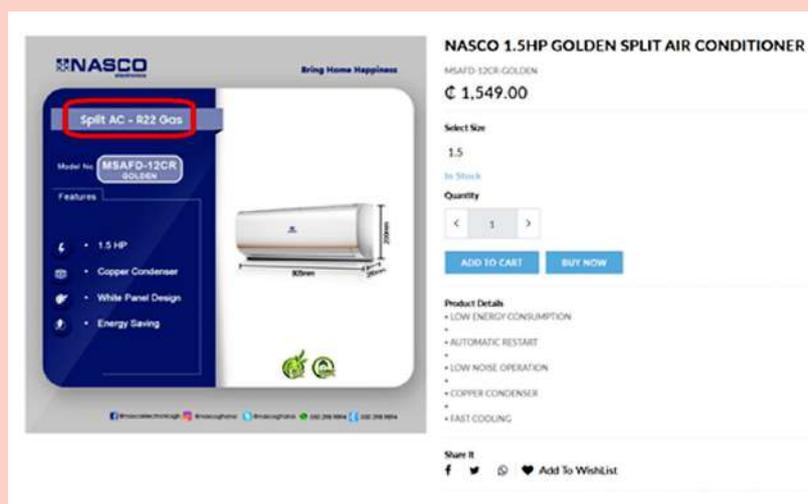


Figure 8. Example of air conditioner unit with HCFC-22 gas available for sale at the time of the market assessment

A3.1.1 Ghana

In Ghana, a total of seven models of refrigerators and 12 models of air conditioners were registered by the five partner vendors and were eligible to participate in the programme. All refrigerators used HC-600a and had a 5-star energy rating (the minimum requirement for refrigerators). All participating air conditioners contained HFC-32 which met the refrigerant GWP minimum requirements, but none used HC-290 which also would have qualified. During the negotiation phase, vendors noted that HC-290 systems were not available at competitive prices and that the flammability of the refrigerant required additional training for installers, which made them less viable than HFC-32 units.

The efficiency for the air conditioners was more evenly distributed: six models had a 3-star rating, two had a 4-star rating, and four had a 5-star rating. The minimum requirement for the programme was a 3-star rating, which from a product availability standpoint is stricter than the 3-star level for refrigerators. In the stakeholder surveys, two out of three vendors agreed that the programme had increased the availability of 'green' cooling products. The remaining vendor neither agreed nor disagreed.

No end-users responded to the survey. According to the government feedback, it is because customers do not like the idea of the public knowing that they have taken a loan to purchase an appliance.

A3.1.2 Rwanda

In Rwanda, a total of 12 models of refrigerators and 13 models of air conditioners were registered by the four partner vendors and eligible to participate in the programme. All refrigerators contained HC-600a and had a “D” energy rating (the minimum requirement).

Rwanda’s⁸ newly adopted refrigerator energy labelling tiers are the strictest in Africa, so a D-level is still a major improvement relative to typical refrigerators in the market. All the participating air conditioners contained HFC-32, and none of them utilised HC-290.

In the stakeholder surveys, the government officials that responded sent a mixed signal, one strongly agreeing that there had been an increase in the availability of ‘green’ appliances, the other official disagreeing.

A3.1.3 Senegal

In Senegal, only one appliance was deemed eligible to join the ECOFRIDGES programme. This is a refrigerator-freezer unit with an affordable price point. This model was, however, already available for sale in the country. At the time of the writing the report, this partner vendor had recently submitted more applications for other appliances to be approved. Another vendor joined the programme and proposed some air conditioning units which were rejected as their price was considered to be much higher than the affordability level expected.

Senegal has had a smaller transformation in terms of availability of appliances than Ghana and Rwanda. The responses collected from the government officials involved in the programme are quite mixed, with three out of seven disagreeing or strongly disagreeing that the programme increased the availability of energy-efficient and climate-friendly appliances.

A3.2 Affordability of energy-efficient and climate-friendly appliances

By making these appliances more affordable through financing mechanisms, it was expected that households could access the benefits of energy efficiency without the need for significant up-front capital.

Another key effort to increase the affordability during the development of the mechanisms was the negotiation with vendors to keep the price of appliances reasonable, which was requested to be comparable to existing models in the market. This was done to avoid the perception of vendors that the eligible models could be placed on a 'premium' segment.

A3.2.1 Ghana

In Ghana, the partner vendors have registered eligible appliances at competitive prices. Vendors that initially placed some uncompetitive models quickly reversed course and added units more suitable for the general public. For example, as of writing this report, refrigerator-freezers between 1-star and 3-star of a similar size to the best-sold ECOFRIDGES GO model, are being sold in a similar price range (between 20% cheaper and 10% more expensive).

8. Note: Rwanda’s new energy labelling scheme has performance tiers which are expected to be the most rigorous in Africa and consistent with those recommended the U4E Model Regulation Guidelines, so a D categorization for energy efficiency in this context should not be misinterpreted as a lack of ambition or stringency.

Similarly, 1-star air conditioners of the same cooling capacity as the best-sold ECOFRIDGES GO model (5-star) are being sold at a discount of between 15% and 30% compared to such models. This price difference is within the expected premium of air conditioners with the desired energy and refrigerant characteristics.

The responses from the government officials regarding the increased affordability of the targeted appliances were on average positive, one strongly agreeing that this had been the case, while another neither agreed nor disagreed.

A3.2.2 Rwanda

In Rwanda the positioning of the R-COOL GO appliances was mixed. While the refrigerators were placed at relatively high price points compared to models of similar characteristics currently available for sale, the split air conditioner price difference was more aligned with the expected surcharge that appliances with the desired energy and refrigerant characteristics command in the market. This still amounted to an approximately 30% higher price.

The responses from the government officials regarding the increased affordability of the targeted appliances were mixed, one agreeing that this had been the case, while another disagreed.

A3.2.3 Senegal

According to the data collected in the interviews, the affordability of the single refrigerator/freezer ECOFRIDGES model available for sale was not particularly attractive. Some users did not find the price/performance balance that they were looking for. However, all units in stock were sold out, and the vendor placed another order to import more units, indicating that there is a market for high performing appliances.

A3.3 Sales of energy-efficient and climate-friendly

The availability of sales data of ECOFRIDGES GO appliances has been mixed across the three countries. While Ghana keeps a regular reporting system that is updated monthly, Rwanda and Senegal collect information less frequently.

A3.3.1 Ghana

The competitive pricing of the ECOFRIDGES GO appliances has resulted in an important uptake of cash sales since the early stages of the project. After the challenges experienced in the financing aspects (primarily the large change in interest rate environment, and disengagement by some banks), cash sales have further increased to nearly 99% of the purchases. Following discussions with the government agency managing the programme and the most active partner bank, it was concluded that the mechanism needs some refinement (e.g., allow for interest rates above zero). It was also discovered that the financing pilot within the bank employees was rather successful, with 50 loans provided, which were not reported through the regular channels (possibly accounted as cash sales by vendors). The bank indicated that their next step is to scale it up to a wider audience, including an activation campaign and expanding to every branch in the country. It will also focus more on direct presentations to the sales force and customers. During the 22 months since the start of ECOFRIDGES GO sales, a total of 2,767 ECOFRIDGES GO appliances have been sold.

Figure 5 shows the evolution of the appliance monthly sales. The first monthly report was collected in October 2021 and contained the sales figures since April 2021. The last report was published in February 2023. The cumulative sales figures in those months has been averaged out in the graph.

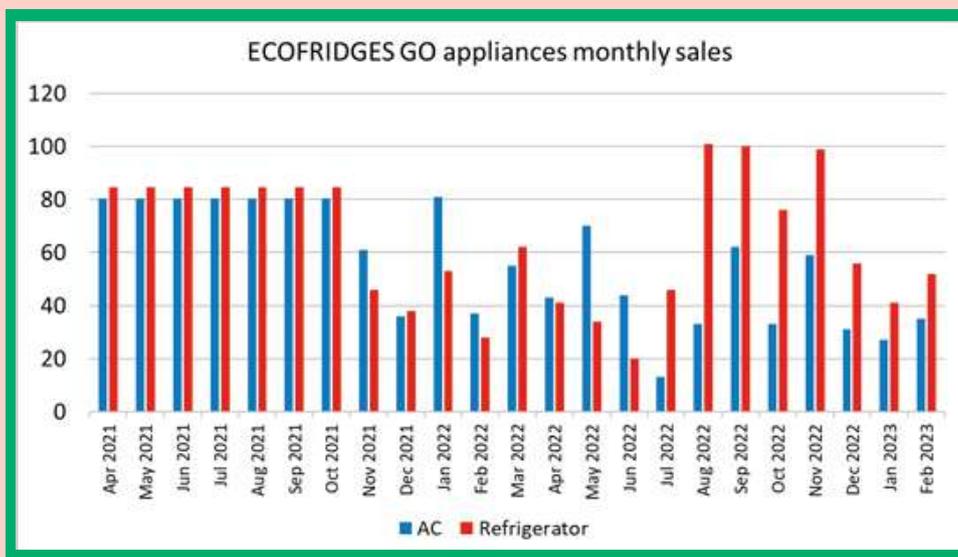


Figure 9. Monthly sales of ECOFRIDGES GO appliances

The ECOFRIDGES GO appliances sold to date are expected to save 1,230 MWh of electricity annually, and result in a reduction of greenhouse gas emissions of 20,330 tCO₂ over their operational lifetime. The three vendors that participated in the surveys indicated that they had perceived an increase in the sales (two agreed, one strongly agreed) thanks to the ECOFRIDGES GO models. Partner banks were reticent to weigh-in for this publication regarding the impacts of the mechanism on their business.

A3.3.2 Rwanda

As of time of writing this report, no monitoring, reporting and verification report has been obtained. A report from the partner government agency indicated that only one of the vendor partners provided sales figures of R-COOL GO products in September 2022. This reporting has since been discontinued. At the moment, it is difficult to assess how many R-COOL GO cooling appliances have been sold, as all the sales have been cash-based.

A3.3.3 Senegal

According to the participating vendor, 150 units of the ECOFRIDGES appliance have been sold since the start of the programme. Of those, the vast majority were cash sales, and only one went through the on-bill financing mechanism. While this is a very slow uptake, the government agencies and the steering committee established to guide its implementation expect that the mechanism will continue to be refined, its processes streamlined, and a renewed push for communication launched.

The main issues that have hindered the operationalisation of the mechanism have been described in [Annex 2](#).

A3.4 Integration of market participants

The integration of various market participants, such as utilities, vendors, financial institutions, and government agencies, was essential to ensure that the mechanisms were tailored to the needs and realities of the local markets. Their integration was assessed through the analysis of the survey responses.

The project aimed to leverage their expertise, resources, and networks to promote the adoption of energy-efficient appliances. An example of this approach was the utilization of local energy labelling standards (where available) to define the eligibility criteria for the appliances. Three out of the four government officials that responded to the surveys in the countries where a labelling system was present, either agreed or strongly agreed that the programme had strengthened the national labelling system.

In terms of general consumer awareness of energy-efficient and climate-friendly appliances, the results were mixed. While most survey participants in Ghana agreed that the mechanism had increased consumer awareness, respondents in Rwanda and Senegal were divided in opinion.

A3.4.1 Ghana

According to the results of the survey, all three vendors that participated either agreed or strongly agreed that the programme led to an increased collaboration with the government. However, the feedback regarding collaboration with financial institutions was mixed, with one vendor perceiving an increase in collaboration, another disagreeing, and the remaining vendor providing a neutral response. This mixed result may be attributed to the slow take up of loans (see [Annex 2](#) for barriers and challenges encountered).

A3.4.2 Rwanda

In Rwanda, feedback from banks and vendors was collected during the inspection performed by the partner government organisation. They indicate that the operation of the vendors and banks has remained largely isolated during the operationalisation of R-COOL GO. Vendors indicated that customers did not ask for financing when buying the appliances. There has been no marketing campaign from the partner banks regarding the programme, despite being provided with communication tools.

Furthermore, the current lending practices of the partner banks discourage loan taking, as they require collateral to be provided. The assessment of the government agency was that for the programme to be successful a refinement of R-COOL GO is needed to ease the application requirements with credit guarantees to the partner banks. Although the provision of credit guarantees would be beneficial, it would necessitate the use of non-reimbursable funds to provide the necessary financial backing. Additionally, the facility terms and conditions, such as the extent of the guarantee, recovery processes, etc, require careful consideration to ensure that they are in line with the objectives of the programme.

A3.4.3 Senegal

Despite the challenges in coordinating activities between the different stakeholders, the increase in collaboration between the various market participants has been positively perceived. For example, the bank that responded to the survey, perceived an increase in collaboration between the government and the vendors. One of the two vendors agreed that collaboration had increased, particularly with the government, while the other respondent only provided neutral feedback. During the personal interviews with vendors and the partner bank, it was also perceived that although there had been an increase in collaboration through the creation of agreements between the parties, this was insufficient, and most stakeholders still operated in 'silos'.

Annex 4. Survey format sample

You have received this survey as a participant in the ECOFRIDGES GO programme. The ECOFRIDGES GO team is interested in your opinion about your experience with it.

General

1. What is your role in ECOFRIDGES GO?

- a. Customer
- b. Vendor
- c. Bank
- d. Government

2. Are you a...

- a. Woman
- b. Man

Customer

1. Why did you buy an ECOFRIDGES GO appliance instead of a regular appliance?

- a. Electricity savings
- b. 0% interest rate and payment facility
- c. Quality of products and after sales service
- d. Government Initiative
- e. Other

2. How did you hear about ECOFRIDGES GO?

- a. At the vendor shop
- b. At the bank
- c. Friend/family member
- d. Radio/TV
- e. Social media (Facebook/Instagram/Twitter)
- f. Public event
- g. Internet search
- h. My employer
- i. Other

3. Did you face any challenges when obtaining your ECOFRIDGES GO appliance? (Select all that apply)

- a. No challenges – everything was easy
- b. The model I wanted was not available
- c. 0% Financing was cumbersome/impossible to get
- d. Delayed response after making a request on the ECOFRIDGES GO website
- e. Slow response from the vendor
- f. Slow response from the bank
- g. Old equipment will not be collected against a 10% voucher
- h. Other

4. From 0 (very negative) to 10 (very positive), your participation in ECOFRIDGES GO was [0-10]
5. Would you recommend buying an ECOFRIDGES GO appliance to a friend/family member? (Yes/No)
6. Which of the following features would make a programme like ECOFRIDGES GO more attractive for you? (select maximum of 3)
 - a. Government endorsement
 - b. Low interest rate
 - c. Discount on the product
 - d. Longer loan duration at standard interest rates
 - e. Cash-back voucher for old appliance
 - f. Pay loan installments through the electricity bill
 - g. Pay loan installments through salary deductions
 - h. Collection of the old appliance at home
7. Please provide any other suggestions/praise/criticisms you wish to share. This will help us to refine future programmes.

Vendor

1. Why did your organization join ECOFRIDGES GO? (Select all that apply)
 - a. Increase sales
 - b. Position the company as a “Green” vendor
 - c. Increase collaboration with the energy regulator
 - d. Increase collaboration with the financial institutions
 - e. Other
2. Were the expectations met? (as per previous question) [Strongly agree, Agree, Neither agree nor disagree, Disagree, Strongly disagree, Not applicable].
 - a. Increased sales
 - b. Positioned the company as a “Green” vendor
 - c. Increased collaboration with energy regulator
 - d. Increased collaboration with financial institutions
 - e. Other
3. What challenges have you faced? (Select all that apply)
 - a. No challenges – everything was easy
 - b. Economic situation resulted in slow uptake
 - c. Limitations with the bank’s outreach (e.g., few branches, uninformed branch personnel...)
 - d. Marketing and communication were limited
 - e. Financing structure became unprofitable for the banks
 - f. Supply chain issues (e.g., eligible products unavailable from manufacturers, too few, long lead times...)
 - g. Approval process for eligible appliances was difficult

- h. Unresponsiveness of banks
 - i. Unresponsiveness of energy regulator
 - j. Other
4. From your perspective, do you think ECOFRIDGES GO achieved its objectives as described below? [Strongly agree, Agree, Neither agree nor disagree, Disagree, Strongly disagree, Not applicable].
- a. Increased availability of “Green” cooling products
 - b. Increased awareness of consumers for “Green” cooling products
 - c. Increased affordability of “Green” cooling products through the financing scheme
 - d. Increased the environmental disposal of used appliances
 - e. Supported the existing “Energy Label” scheme
5. From 0 (very negative) to 10 (very positive), your participation in ECOFRIDGES GO was [0-10].
6. Please provide any other suggestions/praise/criticisms you wish to share. This will help us to refine future programmes.

Bank

1. Why did your organization join ECOFRIDGES GO? (Select all that apply)
- a. Increase loan portfolio
 - b. Position the bank as a “Green” lender
 - c. Bank policy/regulation
 - d. Availability of earmarked climate funds in the Bank.
 - e. Increase collaboration with the energy regulator
 - f. Increase collaboration with vendors/ private sector
 - g. Other
2. Were the expectations met? (as per previous question) [Strongly agree, Agree, Neither agree nor disagree, Disagree, Strongly disagree, Not applicable]
- a. Increased loan portfolio
 - b. Positioned the bank as “Green” lender
 - c. Met bank policy/regulation
 - d. Used earmarked climate funds
 - e. Increased collaboration with policymakers
 - f. Increased collaboration with vendors
 - g. Other
3. What challenges have you faced? (Select all that apply)
- a. No challenge – everything was easy
 - b. Economic situation resulted in slow uptake
 - c. Limitations with the bank’s outreach (e.g., few branches, uninformed branch Personnel...)
 - d. Marketing & communication was limited
 - e. Financing structure became unprofitable

- f. Non availability of appliances stock
 - g. Unresponsiveness of vendors
 - h. Unresponsiveness of the energy regulator
 - i. Other
- 4. From your perspective, do you think ECOFRDIGES GO achieved its objectives as described below? [Strongly agree, Agree, Neither agree nor disagree, Disagree, Strongly disagree, Not applicable]**
- a. Increased availability of “Green” cooling products
 - b. Increased awareness of consumers for “Green” cooling products
 - c. Increased affordability of “Green” cooling products through the financing scheme
 - d. Increased the environmental disposal of used appliances
 - e. Supported the existing “Energy Label” scheme
- 5. From 0 (very negative) to 10 (very positive), your participation in ECOFRIDGES GO was [0-10]**
- 6. Please provide any other suggestions/praise/criticisms you wish to share. This will help us to refine future programmes.**

Government

- 1. From your perspective, do you think ECOFRDIGES GO achieved its objectives as described below? [Strongly agree, Agree, Neither agree nor disagree, Disagree, Strongly disagree, Not applicable]**
- a. Increased availability of “Green” cooling products
 - b. Increased awareness of consumers for “Green” cooling products
 - c. Increased affordability of “Green” cooling products through the financing scheme
 - d. Increased the environmental disposal of used appliances
 - e. Supported the existing “Energy Label” scheme
- 2. What challenges have you faced? (Select all that apply)**
- a. No challenge – everything was easy
 - b. Economic situation resulted in slow uptake
 - c. Limitations with the bank’s outreach (e.g., few branches, uninformed branch personnel...)
 - d. Limited availability of appliances
 - e. Marketing and communication was limited
 - f. Financing structure became unprofitable
 - g. Appliances not available when users requested them
 - h. Unresponsiveness of vendors
 - i. Unresponsiveness of banks
 - j. Other

- 3. What would you have done differently if the programme was starting again? (Select all that apply)**
- a. Ensure buy-in from other government stakeholders earlier in the process
 - b. Ensure buy-in from private actors (banks/vendors) earlier in the process
 - c. Implement another financing mechanism (please provide details below)
 - d. Refine the Green-on-Wage financing mechanism (please provide details below)
 - e. Other
- 4. From 0 (very negative) to 10 (very positive), your participation in ECOFRIDGES GO was [0-10]**
- 5. Please provide any other suggestions/praise/criticisms you wish to share. This will help us to refine future programmes.**

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