



Ministry of Environment , Climate
Change and Technology

DEVELOPMENT OF FINANCIAL PROGRAMME FOR ENERGY EFFICIENT APPLIANCES

Promoting Energy Efficient Buildings through
Strengthening Low Carbon Energy
Island Strategies (LCEI) Project





Ministry of Environment, Climate
Change and Technology

Strengthening Low Carbon
Energy Island Strategies (LCEI)
Project



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**Ministry of Environment, Climate Change and
Technology**

Development of Financial Programme for Energy Efficient Appliances

Inception Report

**Promoting Energy Efficient Buildings through
Strengthening Low Carbon Energy
Island Strategies (LCEI) Project**



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1. Introduction to Project

The Republic of Maldives is highly dependent on imported fossil fuels to meet its energy needs. Furthermore, as a Small Island Developing State, it also relies on fossil-fuel based transport for the imports that provide the needs and wants of the population. As a result, the cost of energy generation and energy dependent appliances is both high and unreliable, causing financial constraints on national budget and individual finances.

Government of Maldives has initiated the “**Strengthening Low Carbon Energy Island Strategies Project (LCEI)**”, which is designed with a goal of market transformation for energy efficient technologies in buildings and the built environment in the Maldives to promote energy efficiency investments in buildings. The project not only targets energy efficient technologies but also encourages the use of emerging low carbon energy technologies for the building sector. LCEI Project is funded by the Global Environment Facility (GEF) and implemented by the Ministry of Environment with support from UN Environment. It aims to reduce greenhouse gas (GHG) emissions through energy efficiency in the building sector. Appliances and their use in building sector has been identified as the focus area for energy efficiency as per the National Energy Policy and Strategy (2010). As part of the LCEI project, some of the initiatives already taken by Ministry of Environment (ME), Government of Maldives, are:

- *Development of Standards and Labelling (S&L) programme for air-conditioners, refrigerators, and washing machines. The regulation is expected to be implemented that shall shift market to high quality, low impact appliances.*
- *Energy efficiency guidelines for buildings are being developed that shall lay the minimum energy efficiency requirements for buildings in Maldives.*
- *Life cycle cost based public procurement guidelines thereby promoting energy efficient products and technologies*
- *Establishment of the ‘Green Loan’ under Bank of Maldives Green Fund for increasing investment in energy efficiency and renewable energy solutions*

These initiatives indicate that Maldives is on a path of a transformational journey towards building its climate resilient capacity. It is anticipated that in near future the market will have higher share of energy efficient products and technologies.

One of the key barriers identified in uptake of energy efficient appliances is higher upfront capital expenditure. This calls for a need to develop an innovative financial programme such that it can compensate for incremental cost of purchase by offsetting the higher upfront cost of purchase as a result of bulk adoption by end users, and lead to greater uptake of energy efficient appliances. At the same time, the financial programme needs to be robust and easy to operate. *On account of above listed foreseen challenges and to bring in energy efficiency market transformation with introduction of S&L regulation for appliances, it is necessary for Maldives to have a robust and locally adapted financial programme to promote greater adoption of energy efficient appliances across sectors and market segments.* At the same time, utmost care shall be taken towards making the programme a sustainable one such that the programme supports purchase of energy efficient appliances and leads to recovery of capital through operational energy cost savings. The scope of the assignment includes:

1. Inception workshop and review of existing financing mechanisms to identify stakeholders and workable financing mechanisms as per the local context.
2. Develop draft financial strategy and draft financial programme
3. Finalise draft strategy and programme after stakeholder consultations
4. Conduct consultation workshops and meetings with stakeholders for establishing financial strategy and financial programme.
5. Implementation of financial strategy and financial programme.
6. Capacity building and training of stakeholders.

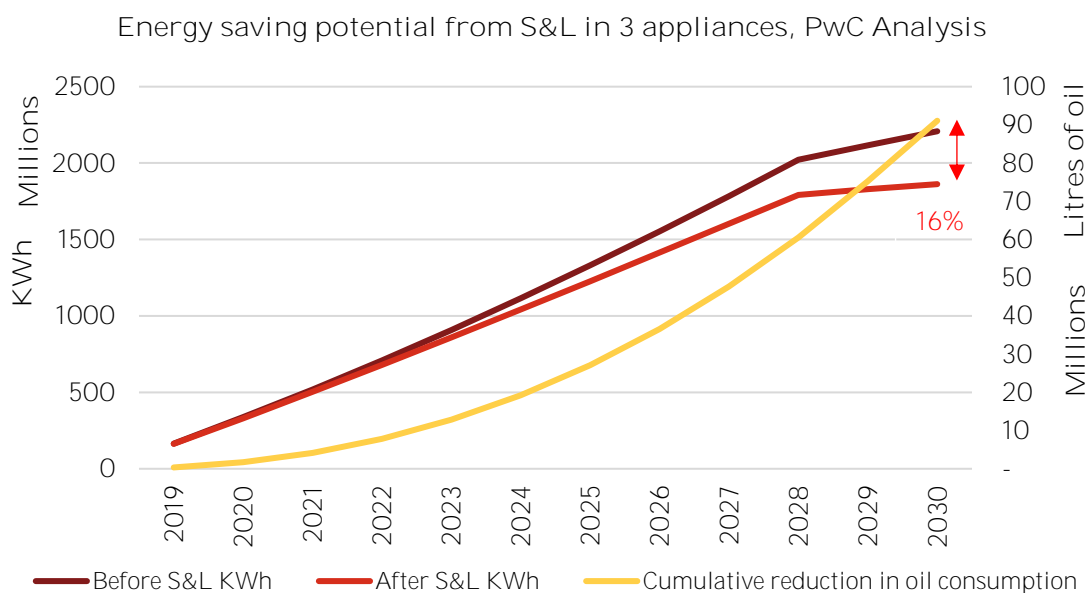
Ministry of Environment engaged a consortium comprising of PwC Maldives, PwC India, and Riyan Pvt Ltd. to carry out the activities as per scope of **the project on ‘Development of financial programme on Energy Efficient Appliances’**. As a first step in the assignment (as mentioned in scope of the assignment), the project team organized an inception workshop. The approach and methodology for the project with key findings during inception phase, and detailed proceedings and agenda of the workshop are presented subsequently.

2. Approach & Methodology for Project

Need of financial programme for energy efficient appliances

Ministry of Environment (ME) has developed the S&L programme for 3 appliances: air-conditioners, refrigerators, and washing machines, and a regulation stating the same shall be notified by the Government of Maldives. It is estimated that the S&L programme for the three appliances alone will result in reduction of energy consumption of 1,326 million kWh (~16 % projected to 2030), GHG emission reduction of 980,321 tCO2 equivalent and reduction in 147 MW of generation capacity by 2030¹. Most of these savings will be accrued from the residential and commercial sector. *However, there can exist other appliances and energy consuming technologies that may further add to realization of energy efficiency in the long run.* Below figure provides projection of energy saving potential estimate based on our analysis².

Figure 1 Energy saving potential from S&L in 3 appliances



Above findings, and other initiatives in the country indicate that Maldives is on a path of a transformational journey towards building its climate resilience capacity. Appliances like air-conditioners, refrigerators, fans, lights etc. are used by varied types of end users including – residential, commercial, industrial, government sectors, and with progressive energy efficient guidelines, it is anticipated that in near future the market will have more energy efficient products and technologies.

Adoption of efficient appliances would require comparatively higher upfront capital expenditure. Consumer behaviour, preferences, and buying capacities across end users thus needs to be assessed in the context of increasing the uptake of energy efficient appliances. This calls for a need to develop an innovative financial programme such that it can compensate for higher cost of purchase by *offsetting the higher upfront cost of purchase as a result of bulk adoption by end users*, and lead to greater uptake of energy efficient appliances. At the same time, the financial programme needs to be robust and easy to operate. *On account of above listed foreseen challenges and to bring in energy efficiency market transformation with introduction of S&L regulation for appliances, it is necessary for Maldives to have a robust and locally adapted financial programme to promote greater adoption of energy efficient appliances across sectors and market segments.* At the same time, utmost care shall be taken towards making the programme a sustainable one such that the

¹PwC analysis as part of ongoing project on “Development and Implementation of Energy Efficiency Labelling Program in Maldives”. As part of ongoing project the analysis work was submitted to Ministry of Environment and Energy

² Reference as above

programme supports purchase of energy efficient appliances and leads to recovery of capital through operational energy cost savings.

Scope of work

We have divided the entire scope of work mentioned in the ToR as per three implementation phases, tasks and sub-tasks, as tabulated below, for better understanding of assignment and structuring our Approach and Methodology accordingly.

Tasks and Sub-tasks	Scope of Work and Activities
Inception Phase – Setting the Blueprint	
Task 1.0	Review reports on existing financing mechanisms developed under the LCEI project and other reports – desk research and preliminary consultations with stakeholders,
Task 2.0	Conduct 1-day inception workshop to understand present relevant findings of Task 1, identify existing policy, gaps, identify appliances, discuss possible financial strategies, case studies
Research and Development Phase – Extensive stakeholder consultation and programme development	
Task 3.0	Develop financial strategy and financial programme
Sub-task 3.1	Propose financial and risk mitigation instruments and propose business model and interaction between stakeholders (providers – financial entity – government-others) <i>(Covers Subtasks a, b and c under Task 3 of ToR)</i>
Sub-task 3.2	Financial Strategy – Identify stakeholders involved, develop concept note defining financial strategy, identify forecasted benefits by implementation of financing schemes in terms of investments and impacts (GHG emissions avoided as a result of EE potential)
Sub-task 3.3	Programme Development – Define activities for the financial model like MRV, disposal, resources needed, implementation work plan, and identify international financing sources to strengthen and co-finance the financial programme
Task 4.0	Conduct consultation workshops and meetings with key stakeholders in order to establish the financial programme and strategy as covered in Task 3.0. Consultation workshops will be performed in parallel with Task 3
Implementation Phase – Demonstrating the programme and capacity building of stakeholders	
Task 5.0	Implementation of the financial strategy and financial programme
Sub-task 5.1	Development of toolkit, guide and documents to support implementation of financial schemes by any financial institute (templates for calculation, formats, etc.). This shall include operational process, operational guidelines, financial strategy, entities involved in scheme, eligibility criteria, and other aspects. Also, develop marketing and communication strategy with supporting presentations.
Sub-task 5.2	Implementation of MRV, piloting demonstration of developed financial strategy and programme, facilitate overall implementation of financial programme.
Sub-task 5.3	Build Capacity of stakeholders – Conduct training programs and develop relevant training material. Conduct 1-day awareness workshop on developed financial strategy and programme, and at least 2-day training workshop on implementation of financial strategy and programme.

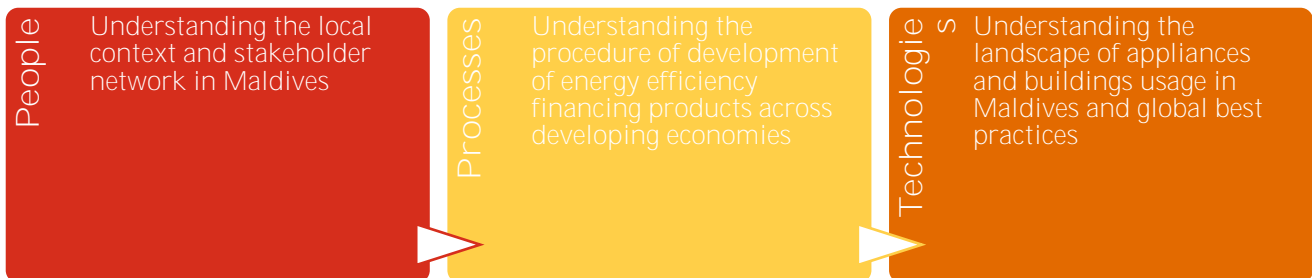
The detailed description of our Approach and Methodology to cover the above-mentioned Scope of Work is presented in following sections.

2.1. Approach for the assignment

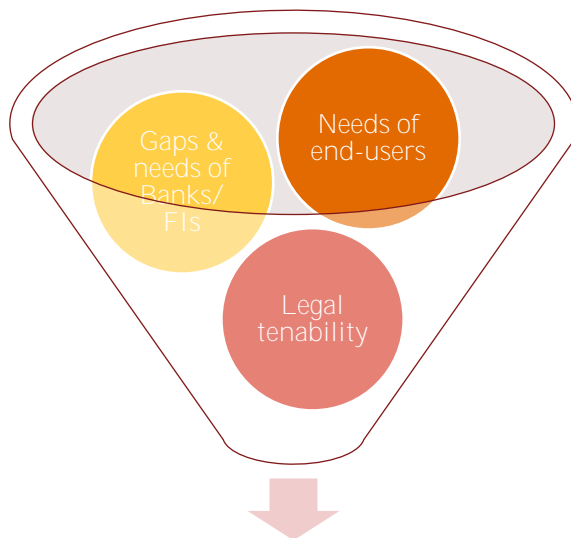
PwC will use a proven approach which has been very successful globally to execute many such transformation assignments. At the same time, we will be flexible and agile to adapt to local requirements in terms of assignment requirements and stakeholders' landscape.

Leveraging our experience of similar assignments

PwC brings in rich experience relating each of following three key areas necessary for successful implementation of this assignment, namely.



In our experience, development of financial programme for energy efficient appliances will be based on a three-pronged strategy to achieve the desired outcomes, as illustrated below:



Locally Adapted Financial Programme for EE Appliances

Our approach involves identification of appliances suitable for the programme, identification of end users of appliances across sectors like residential, professional (commercial, industrial), government, understanding their financing needs, assessing the financial infrastructure, alignment with legal framework. This will enable us to identify areas that the financial programme shall address for each type of end user. Based on a consultative approach throughout the development phase, our team would then arrive at a possible strategy and the financial scheme which would be piloted to demonstrate the effectiveness and finetuning of procedures.

The six key elements of the approach are illustrated next.



objectives and interest, consensus on decisions and stakeholder buy-in to achieve the intended goals. This

approach will be useful for successful execution of the assignment. This approach has several advantages and allows the assignment executing agency to understand and provide a wide multitude of perceptions and highlight barriers and opportunities.

We have identified below list of stakeholders who will be consulted right at the inception stage of the assignment.

As per our understanding of the assignment, we have prepared a list of relevant stakeholders. The team will be able to arrive at a more comprehensive list that is acceptable in consultation with Ministry of Environment to finalize the same. Meetings will be organized in close consultation with Ministry of Environment (ME). Consultations will involve collecting feedback and information specific to project objectives. The project team assess the key available International financing sources to co-finance the selected programme.

Figure 2 List of stakeholders for consultations

Policy makers and regulators	Other Relevant Govt. Agencies	International Development Agencies	Banks	Beneficiaries
Ministry of Environment	Male and other City Councils	Asian Development Bank	Bank of Maldives	End-users
Ministry of Finance	National Bureau of Statistics	World Bank	Maldives Islamic Bank	Bulk-procurers
Ministry of Economic Development	Maldives Customs Service	UNDP/ UNIDO	Other Key Banks and NBLCS	Importers, retailers, etc.
MMA and MEA		GIZ, JICA, other bi-lateralers in Maldives	STO	Any other ?

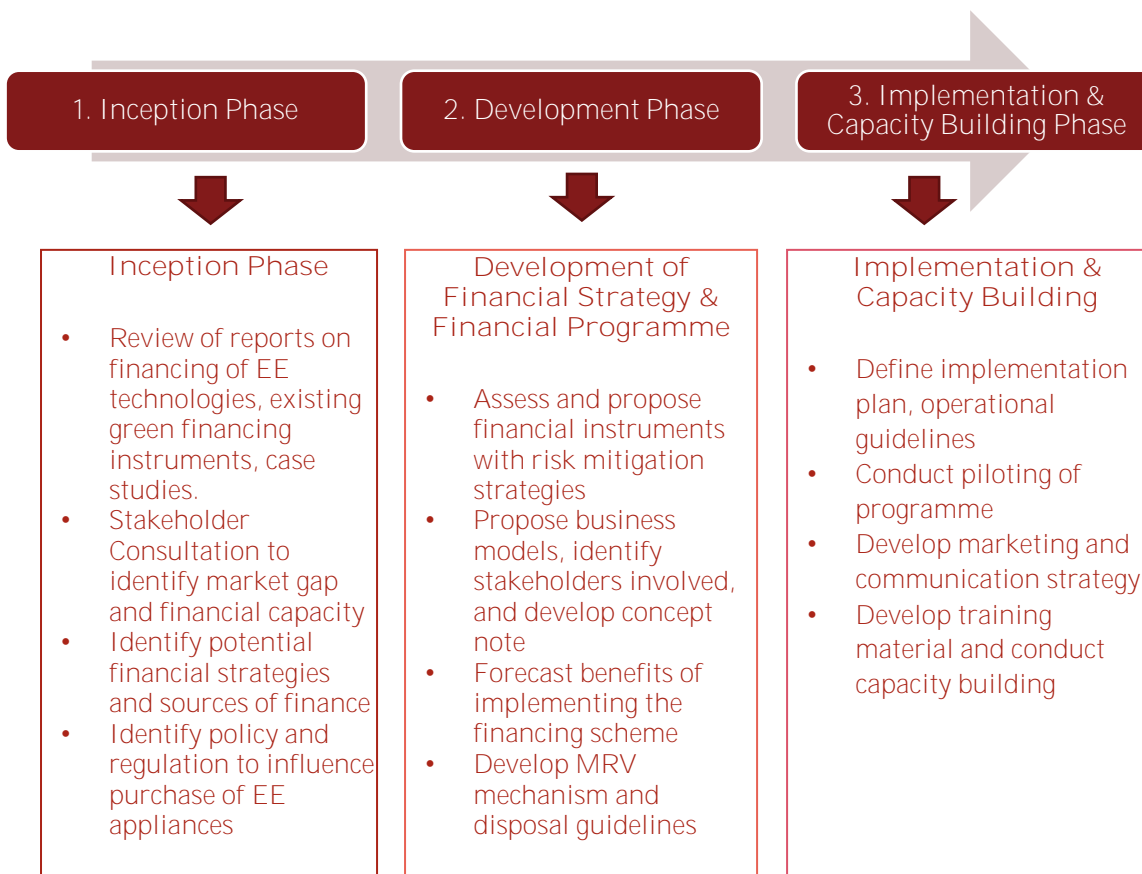
Open, adaptive and flexible

Our experience shows that execution of such assignments cannot be narrowly restricted to declared deliverables but needs to be open, adaptive and flexible. These kinds of initiatives are often evolutionary and there is a need to respond with flexibility, speed and an open approach. We will conduct monthly review meetings (over Skype) in addition to the visit to PwC India team members at key stages/ events of the assignment, in order to continuously monitor the progress, value created for stakeholder and course-correction, as required.

2.2. Methodology and key steps for the assignment

The assignment is divided into three key phases that will lead to development and implementation of financial programme. Across these phases, the project team will consult ME and other key stakeholders. The phases of project's methodology are shown below.

Figure 3 Project methodology



Inception Phase – Setting the Blueprint

Task 1 - Inception Workshop for the Stakeholders

The aim of the inception workshop was to gather information on existing market conditions enabling financing of energy efficient appliances, apprise the stakeholder on the assignment objectives, disseminating information related to international case studies, understanding the roles of key stakeholders, seeking inputs from their mandates, and understand local market in terms of preparedness and gaps leading to development of a robust financial strategy.

The inception workshop was conducted on 9th March 2020, and the below figure provides a brief indication on the activities performed during the same. The detailed workshop findings are discussed in subsequent chapters of the report.

Figure 4 Activities performed during inception workshop



Task 2 – Review of existing information

The team reviewed existing information for the assignment under the following three headings:

Reports developed by the LCEI project team on assessment of finance sector of Maldives

Existing green financing instruments and international case studies

Strategic Action Plan aspects that compliment 'Energy Efficiency Financing'

The review of reports shared by LCEI project team of ME includes report on existing financing mechanisms, international case studies on financial mechanisms on EE, and strategic action plan of the government of Maldives. The workshop enabled the project team to engage with the stakeholders and gain initial insights on the existing financing mechanisms, infrastructure and organizational framework involved, etc. The key findings from review of existing information is provided next.

Existing Energy Efficiency Financial Schemes in Maldives

An initial review of documentation developed by the project team and stakeholder consultation during the inception workshop shows the below list of financial instruments and EE financing schemes in Maldives.

BML Green Loan by Bank of Maldives

It is a concessional loan product for individuals and businesses and was launched in 2016. BML Green Loan is targeted for individuals and businesses looking to invest and promote the use of green technology and resources. Eligible individuals or businesses have the opportunity of obtaining a loan value from MVR 50,000 to up to MVR 20 million. The total fund value was MVR 500 million. The Green Loan is available for individuals and businesses seeking to finance environmentally friendly green technologies such as solar panels for power generation, photovoltaic panels and systems, or energy efficient equipment and appliances.

FRESA

Targeted to support RE projects that can supply power and energy services. There is an allocation system within FRESA where funds are allocated for small standalone RE projects such as household biogas digestors, small PV, and wind systems and renewable energy supported livelihood projects. Loan size of more than MVR 50,000 and less than 50,000 MVR comprise of not more than 80 % and 20 % of the loan size under FRESA, respectively.

SREP:

This refers to “Scaling Up renewable Energy Program”. Developed by Government of Maldives, under the leadership of Ministry of Environment and Energy, SREP Investment Plan (IP) is targeted to transform the electricity sector and to develop renewable energies on a large scale. Through this IP, Maldives is seeking US\$ 30 Mn SREP funding together leveraging from other sources of a total investment of US\$ 138 Mn to design and implement projects, and to support transformation of the energy sector by scaling up RE in the country.

Even though the interest rates offered under existing energy efficiency financial schemes are low compared to conventional financing in Maldives, the demand for EE loan schemes has been low as per the expectations of the government **and government’s** effort to reduce carbon emissions.

Consumer financing is largely made available by Banks and NBFCs in Maldives in form of secured/ unsecured loans/ leases. Some of the other consumer appliance financing options identified in Maldives are summarized below:

Table 1 Summary of consumer finance options in Maldives

Bank/ NBFC	Product	Eligibility	Loan Amount (min – max), MVR	Products covered
Bank of Maldives	Lui Micro	Lui Micro. BML Lui Micro Loan is designed to support individuals without a regular income.	Up to MVR 25,000, Interest rates of 13 % Repayment period of 5 yrs. Loan Process time of 5 days	Business venture products for individuals working from home, freelance workers, to kick start their business.
	Lui Loans (Express)	Salaried Individuals with employment record	MVR 20,000 – 300,000 Repayment period of 5 yrs. Loan Process time of 5 days	Remodelling of home, overseas vacation, family planning
	BML Green Loan	Individuals and businesses	MVR 50,000 – 20 Million	Green technologies such as solar panels, energy efficient equipment, etc.
Maldives Islamic Bank	Consumer Goods Financing	Employment history with listed employers	As per repayment capacity, capped at 34% of confirmed income	Furniture, electronics and home appliances from listed dealers
	Murabaha General Asset Financing	To be checked	As per repayment capacity, capped at 50% of confirmed gross income	Locally acquired movable assets

Bank/ NBFC	Product	Eligibility	Loan Amount (min – max), MVR	Products covered
Maldives Finance Lease Company	Easy Lease	Employees in government and private sector	As per repayment capacity, capped at 50% of confirmed gross income	Consumer durables and motorcycles
	Lifestyle Lease	Employees of government and government related organizations	MVR 15,000 – 100,000	Motorbikes, furniture, computers, electronic items

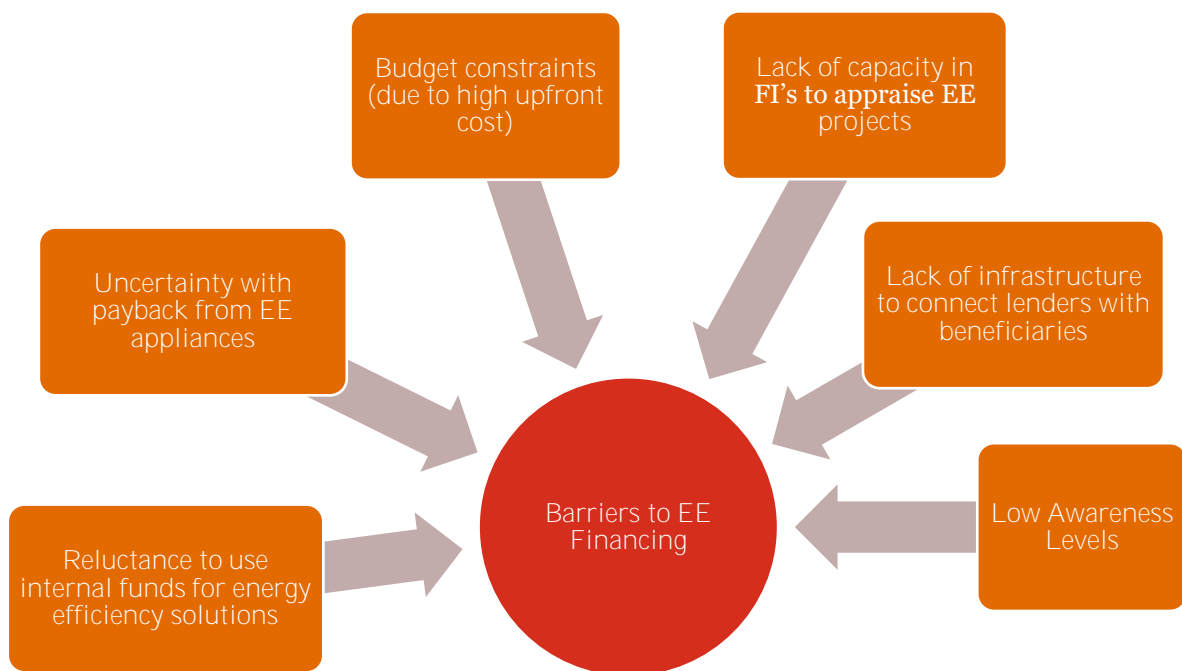
Barriers to EE Financing

Barriers are mainly centered around issues related to unavailability of incentivised financing whereas, non-financial barriers relate to the gaps in the technical know-how and availability of standards. Existence of barriers is evident from the following situations:

- Lack of EE based financing instruments, except for a few such as BML Green Loan. Much of the low cost financing options are available for renewable energy related projects, whereas only a small portion of the fund is allocated for purchase of energy efficient appliances.
- Lack of uptake from existing EE based financing instruments.

The reasons for low uptake of green loans were found to be associated with less awareness amongst the end users of energy efficiency alternatives and absence of mechanisms that identify an energy efficient appliance from a conventional one. Some of the barriers to energy efficiency financing in the context of Maldives are illustrated in below figure.

Figure 5 Barriers to EE Financing



Willingness of Financial Institutions towards Energy Efficiency Financing

In the past and in the recently held consultations with financial institutions, the institutions have shown interest in adopting energy efficiency financing schemes for appliances provided there are government mechanisms to reduce their risk. Some of the possible incentives and de-risking measures were found to be as below:

- Sustainable business models for financial institutions for operation of EE financial mechanisms
- Selecting technologies/appliances which are validated for minimum level of performance
- Provision of incentives strategically to move efficient technologies up and less efficient technologies down the demand curve
- Leverage incentive funds to match the incremental costs of energy efficient appliance
- A robust measurement and verification system in place that tracks the effectiveness and success rate of the financial scheme.
- Capacity building and awareness creation among financial institutions on successfully operating the EE financing scheme.

Supporting Mechanisms & Enablers for Energy Efficiency³

Figure 6 Enablers & supporting mechanisms for EE financing



Below are six supporting mechanisms and enablers identified for EE financing

- Standards and regulations, such as Minimum Energy Performance Standards (MEPS), energy conservation laws (voluntary or mandatory), building codes with energy performance standards, can successfully deter investments in less efficient technologies, and encourage investments in more efficient technologies. These mechanisms can help define which products can be sold, and those that should be blocked from the market. Standards and regulations are an important part of energy efficiency programmes.

³ Manual of Financing Mechanisms & Business Models for Energy Efficiency, March 2019, Report by BASE (Basel Agency for Sustainable Energy) for UN Environment

- Supporting policies such as labelling are necessary to ensure the smooth implementation of standards and regulations, and to increase public awareness and acceptance of energy efficiency and energy efficiency programmes
- Raising awareness about the benefits and opportunities provided by energy efficiency is important to ensure buy in from all parties. Information, education and communications campaigns
- Behaviour change programmes, such as those that make use of energy efficiency ambassadors, or benchmark households or energy users against their peers, have also proven an effective way of changing energy consumption behaviours and product choices
- Effective implementation of energy efficiency standards and regulations also requires monitoring, verification and enforcement systems to ensure compliance
- Replaced inefficient energy systems should not find a way back into the market as second-hand equipment. Effective systems should also be in place for the proper disposal, and recycling of equipment as well as the management of hazardous waste and of ozone depleting substances.

Types of Financing – Findings Summary

Debt, Equity, Grants and Risk Mitigation are four financing options broadly used. Several variations of these types are applicable for energy efficient appliances. Number financing options were discussed during the inception meeting. The below financing options broadly cover the EE financing options commonly found globally.

Table 2 Globally used EE financing options

Financing Options	Applicability
Demand Aggregation	Applicable for all appliances across sectors such as residential, commercial municipal, transport, industry, etc. Availability of a robust demand aggregator is the key requirement here
On Bill Financing	For household, commercial and public sector. Central entities willingness for OBF as a demand reduction measure is critical for this measure. Utilities generally incur the capital cost of EE intervention, and repays through savings achieved. At times a 3 rd party agency may take the responsibility of incurring capital cost and utility acting as a conduit for repayment to original lenders.
Performance Based Financing	For industrial, commercial, institutional (government departments, municipality and non-government). Not so effective for consumer financing for household appliances.
List Based Finance	Predominantly applicable for residential, commercial and industrial sectors, but can be extended to other sectors also. This can also take the arrangement of dealer financing model where the dealer of EE appliance facilitates loan application by collecting information from customer and forwards information to lender (FI). The involved FI maintains the list-based finance portfolio of appliances.

The international case studies are attached in Annexure 3. Above table presents the summary of the review of international case studies depicting the most common financing options in the context of EE appliance financing in Maldives. Consumer oriented list-based financing was identified as the most suitable option of financing during the inception workshop. The project team shall further engage with ME and key stakeholders to further develop the financial strategy using the shortlisted financing option.

Strategic Action Plan Supporting EE Financing

Strategic Action Plan of the Government of Maldives provides central policy framework and planning guidelines for the overall development of Maldives over the course of 5 years (2019 – 2023). It outlines the developmental targets and priorities of the Government for the five-year period 2019 – 2023. It sets out realistic strategic goals to achieve key developmental milestones. The key sectors of the SAP are:

- Blue Economy – outlining economic priorities to be delivered in sustainable manner.
- Caring State – outlines priorities related to social progress at a national level
- Dignified Families – priorities related to social progress in the context of communities and households.
- Jazeera Dhiriulhun – outlines priorities relevant to community infrastructure and services
- Good Governance – outlines key governance reforms

Among the key sectors, the key aspects of Strategic Action Plan providing thrust to energy efficiency are further elaborated.

Economic Diversification has been identified as a key pillar for driving economic priorities in Maldives. As an island state, Maldives does not have its own conventional energy resources such as oil, coal or natural gas. Hence the nation is dependent on imported fossil fuels and is vulnerable to price fluctuations⁴. Energy efficiency is a low hanging enabler for economic diversification as it can help in reducing the import bills of fossil fuels, and thus meet the energy demand in an affordable way. Energy efficiency interventions thus result in diverting the government expenditure to other infrastructure development projects that can boost the economy, thereby contributing to national development.

Jazeera Dhiriulhun outlines priorities relevant to community infrastructure and services and their development. Decentralisation of services, clean energy, environment protection and conservation, waste as a resource, water and sanitation, resilient communities, efficient transportation are some of the important sub-sectors within this sector which positively drives the process of awareness among the communities on resource conservation of which energy efficiency is a key part.

It sets targets for the below key priority areas that positively impact the success of EE financial programme for appliances:

- Sets the target by 2023 for implementation of green labelling for energy sector which shall result in reduced fuel usage for electricity generation by 40 million litres. Already the draft S&L for selected appliances has been developed and their implementation shall complement the effectiveness of EE appliance financial programme. The target set under Jazeera Dhiriulhun calls for provision of market incentives for appliances that achieve highest grade in the energy labelling scheme.
- Leveraging at least 10 million USD in the form on new investments for low emission and adaptation measures. It also targets to mobilize at least 50 million USD of climate finance through direct access modality.
- Increase affordability of electricity to reduce economic burden on all citizens. This can be achieved due to DSEE interventions. The additional funds due to offset of generation capacity can thus be diverted for other infrastructure development activities.
- Policy initiative on strengthening institutional and regulatory framework of energy sector. It aims to establish utility regulatory authority (URA) for integrated utility services and decentralise utilities at local levels, and establishment of processes for measurement and reporting of utility operations and their reporting to regulatory body. The organisational structure for integrated utility service providers will ensure seamless operation of energy efficiency mechanisms where utilities are involved.

⁴ MEE (2016,) State of the Environment Report

- Develop a mechanism for reliable energy data collection and access by 2023 – This is to be achieved by having systems in place for monitoring statistics of energy use, information sharing among stakeholders, by establishing central data acquisitions systems.

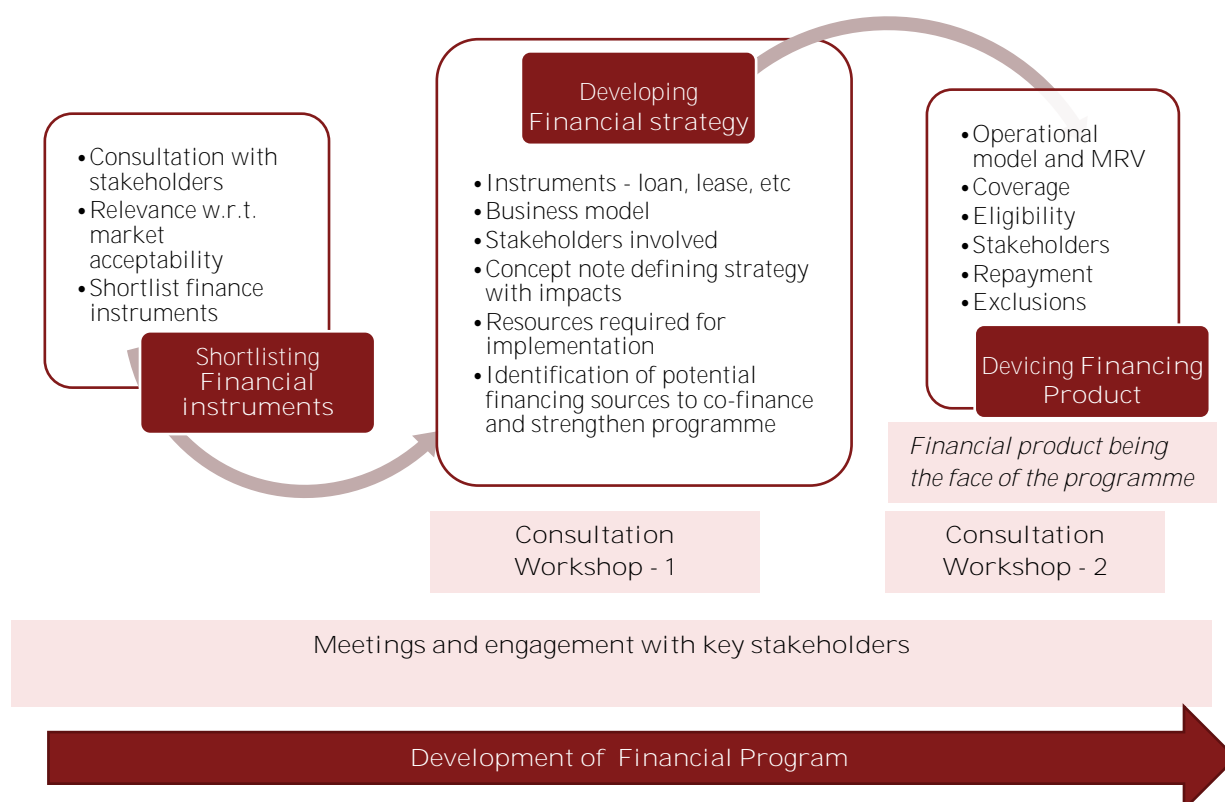
The next sub-sections describe the methodology of the remaining phases required to develop and implement the financial programme for energy efficient appliances in Maldives.

Research and Development Phase – Extensive stakeholder consultation and programme development

Task 3 - Development Phase of Financial Strategy & Financial Programme

Development of financial strategy and programme is the crux of the assignment wherein the maximum resources will be utilized to span out extensive stakeholder consultation and development of a financing programme that is ready for pilot implementation. Therefore, the activities under Task 3 are divided into three sub-tasks as illustrated next.

Figure 7 Activities for developing the financial strategy & financial programme



It is important to mention here that the activities of Task 4 (Consultation Workshops and Meetings with the key stakeholders) will be implemented in parallel with Task 3, so that necessary inputs from important stakeholders are brought-in at the development stage itself. We will continuously engage with stakeholders (identified earlier) as part of primary research for financial programme development.

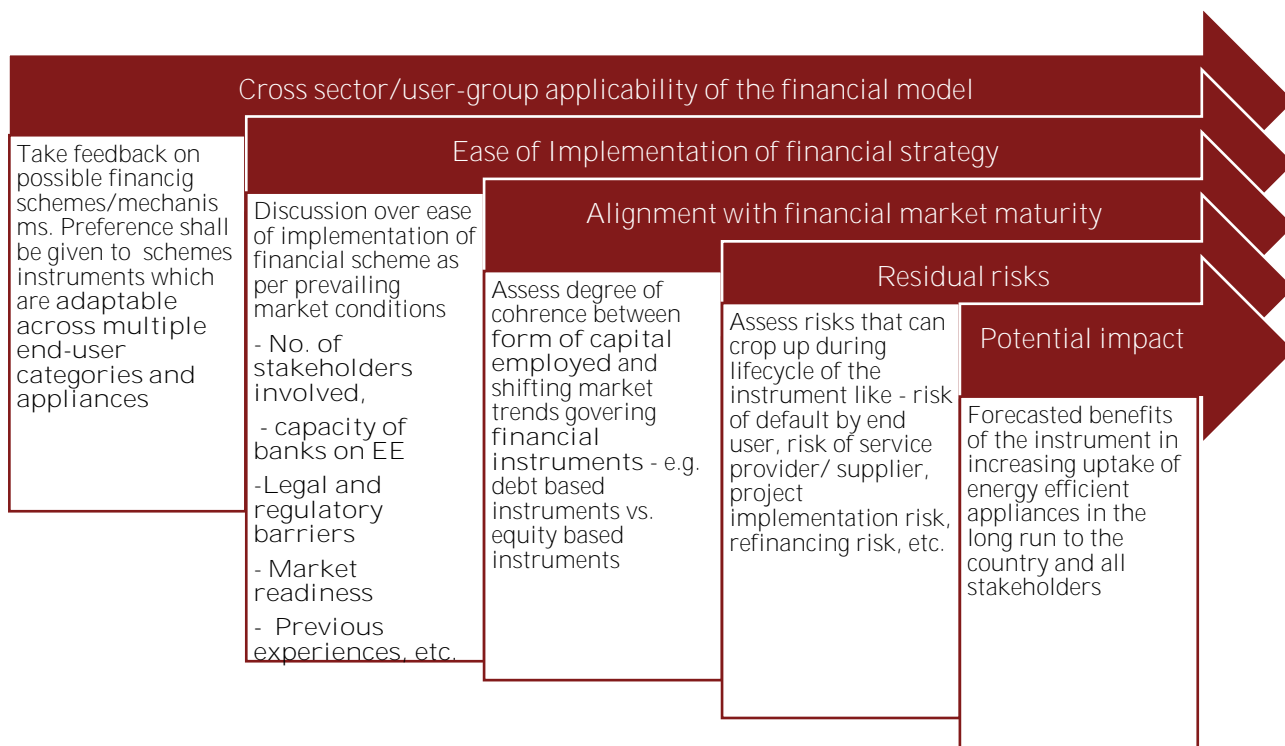
Sub-task 3.1: Financial & Risk Mitigation Instruments

Financial Instruments

Outcomes from Task 1 and Task 2 will enable us to define suitable financial schemes taking reference of several international case studies and comparing their suitability/adaptability to local context. A long list of financial

instruments, and their suitability to local situation will be prepared after our in-depth analysis as part of the assignment. We will also consider inputs from the policy assessment and institutional infrastructure assessment while preparing the list of financial instruments. A framework approach will be adopted to shortlist the financial instrument(s) best suited for development of financial strategy. The framework for proposing a financial scheme to stakeholders will involve discussions on key aspects concerning selection of potential financial strategy, as illustrated here:

Figure 8: Framework for proposing a financial scheme



List of possible financial instruments

Various financing model options (instruments) will be suitably explored for appliances in consultation with stakeholders. A sample list of some of them is provided next:

Table 3 List of possible financial instruments

Parameters	ESCO Financing	List based finance	Demand aggregation	On-bill financing	Others like: Leasing
EE Technical competence required by Banks	High	Low to Medium	Low to Medium	High	High
Understanding among stakeholder institutions	TBD	TBD	TBD	TBD	TBD
Understanding among end-users	TBD	TBD	TBD	TBD	TBD
Availability of regulations	TBD	TBD	TBD	TBD	TBD

Alignment of policies and legal framework	TBD	TBD	TBD	TBD	TBD
Repayment risk	TBD	TBD	TBD	TBD	TBD
Institutional capacity to implement	TBD	TBD	TBD	TBD	TBD

The finance models in the long list will be suitably explored and assessed by our team. Most appropriate financing instruments (up to two) will be shortlisted for development of risk mitigation instruments and development of financial strategy and programme during the subsequent phases with inputs from ME, financial institutions, and other key stakeholders. A brief description of above-mentioned instruments is presented below for reference.

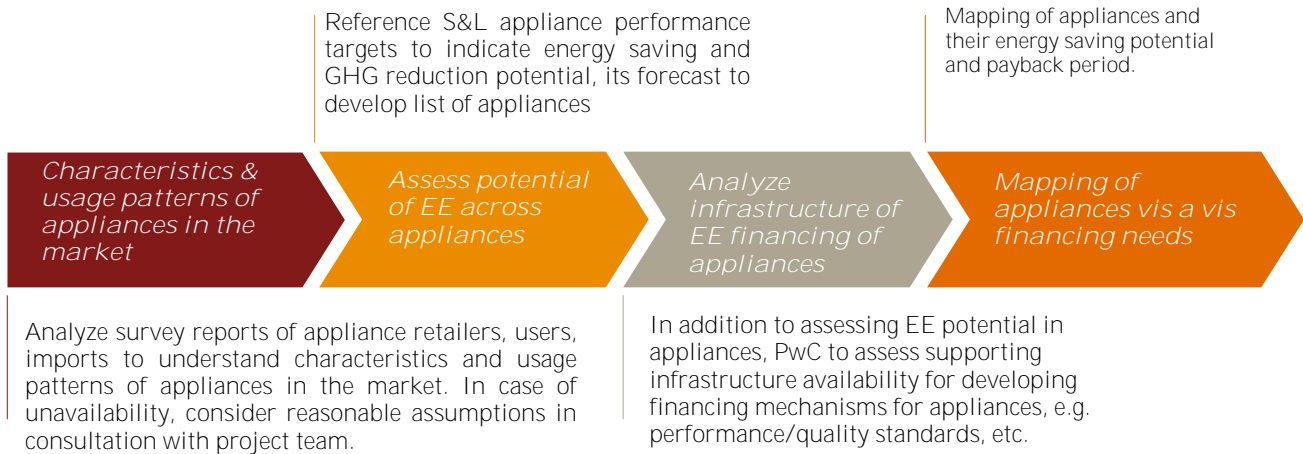
Table 4 Description of potential financial instruments

Finance Instruments	Definition
ESCO Financing	In this model an Energy Savings Company (ESCO) provides financing options on capex and/or an operating lease to achieve energy savings at buildings/ facilities, by charging a fee to deliver energy savings on the owner's utility payments. The ESCO may also take on the performance risk of these projects.
List Based/Technology Based Financing	Several markets in Europe, and in India, have demonstrated a list-based approach for financing, wherein covered appliances and minimum eligibility requirements are pre-listed for use by banks. Examples of such lists are Energy Technology List (EU), JICA SIDBI EE List (India), etc.
Demand Aggregation	In this model the similar consumer demands are combined to seek finance through a third party/SPV funding by reducing individual risk. Promoters/developers join up in energy cooperatives to aggregate their energy demand and access finance. This can overcome some of the challenges, reducing both risk and cost of finance, and tackling market barriers.
On-Bill Financing	It refers to a loan made to a utility customer, the proceeds of which would pay for energy efficiency improvements. Regular monthly payments are collected by the utility on the utility bill until the loan is repaid. On-Bill financing programs are a promising way for utilities to help their customers invest in energy efficiency improvements, such as upgrading to a high-efficiency air conditioner, refrigerator, etc.

Apart from the four instruments discussed here, there are other instruments which may apply to energy efficient appliances (such as, Revolving Loan Fund, Stranded Project Financing Facility, etc.). These will be explored by the team in due course.

In tandem with the selection of financial instruments, it is advisable to identify and shortlist the initial set of appliances that will be covered as part of the financial programme. We will adopt a similar framework-based approach for selection of initial set of appliances for which the financial strategy and programme will be developed, as illustrated next.

Figure 9 Approach for selection of appliances



Risk Mitigation Strategy

Based on experience, the project team would enlist the parameters, which lead to conflict in roles and responsibilities of the performance contract abiding parties. Once the risks and corresponding conflict related issues have been identified and evaluated, the project team would draw up a list of measures. This will show specific areas of weakness of any business interruption in a systematic way. Shown below is an example of a risk mitigation matrix.

Table 5 Illustrative example of a risk mitigation matrix

Risk Identification			Risk Evaluation		Risk Reduction			Risk Control	
No	Risk Category	Cause	Amount of Loss	Probability of Occurrence	Measure	Effectiveness	Priority	Cost	Responsibility
1									
2									

Each identified risk will be assessed to determine the root cause behind its occurrence. The project team will also assess the performance of similar projects (in Maldives/other countries-contingent information available in public domain) to evaluate if and to what extent these and other risks have affected their performance. The project team will also document any mitigation measures that were employed. These mitigation steps will be developed in consultation with partner banks.

Sub-task 3.2: Financial Strategy

The financial strategy will revolve around the financial instruments and appliances shortlisted based on a framework approach. The key elements of the financial strategy are illustrated below.

Figure 10 Elements of the financial strategy



The detailed explanation of these attributes in the context of energy efficient appliances has been provided below:

Table 6 Attributes of components included in the financial strategy

Strategy element	Description
Stakeholders/ entities involved	<p>This attribute describes the primary stakeholders involved in the various stages of the programme implementation. These entities can be sub categorised into four:</p> <ol style="list-style-type: none"> <u>The Financier</u>: The financier in any instrument would be the entity, which directly provides the fund required for the successful implementation of the instrument. The instrument might be self-financed, or require no external source of financing, or the instrument might also require government support. <u>The Programme Manager / Service Provider</u>: A programme manager would be an entity, which performs all the operations required for the successful implementation of the programme. Involvement of a programme manager would be imperative in case the implementation phase requires a complex operation procedure. <u>The Beneficiary</u>: The beneficiary would be an entity, which receives the direct benefits of the EE financing instrument. This would be an entity, the benefit of whom the instrument focusses on. The beneficiary can be the end user or the customer, and the ESCO or the service provider in certain cases. <u>Policy makers and regulators</u>: to ascertain the financial programme is within the existing financial and legal framework, and to review the framework for accommodation of new and upcoming business models, if required.
Type of funding	<p>This attribute would consider whether the capital required for the instrument is provided in the form of debt, or equity or a mixture of both. In case the government provides the capital and/or seed funding, it may be in the form of grant/ subsidy/ loan/ co-financing, etc.</p>
Form of capital	<p>This attribute would represent the financial stake in the instrument held by the financier for the capital provided by them. This can be in the form of common shares, preference shares, long-term loans, mezzanine debt, etc.</p>
Instrument Objective / Expected Direct Benefits in EE investment	<p>This attribute would entail the direct or the first benefit due to the investment made by the programme manager. This may be defined as the first objective the instrument seeks to achieve by the application of funds.</p> <p>A top-down approach is usually adopted for forecasting such impact and setting targets.</p>
Application of Capital in Implementation Phase	<p>This attribute would define the way in which the capital is expected to be applied by the programme manager. The implementation phase of the project would start after this investment.</p>
Primary Repayment Mechanism (between end user and service provider)	<p>After investment made for the EE improvement measure, the beneficiary is expected to repay the financier for the benefits enjoyed by them. Primary payment mechanism defines the financial agreement for repayment between the beneficiary and the service provider (or programme manager). This attribute has been further sub-divided into two components:</p> <ol style="list-style-type: none"> Whether transferable: This refers to the clause when the repayment liability of the end user or the beneficiary is transferable to another entity, without any change in the payment terms. Modes of Repayment: This defines the mode of repayment by the end user to the service provider for the EE investment.
Secondary Repayment Mechanism (between service provider and financier)	<p>This is defined as payment terms for the cash flow from service provider to the financier. This attribute would define the return on investment for the financier</p>

Risk Mitigation	This attribute describes if any risk mitigation strategy is present in the working model of the instrument.
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It is to be noted here some of these elements may at times be clubbed together, or dropped, or new specific elements added to the strategy, based on local context, legal framework and stakeholders’ inputs.

Disposal Strategy

In the context of sustainability, it is important for the financial strategy to have a mechanism for disposal of conventional appliances in order to enhance uptake of energy efficient appliances in the market. A mechanism that incentivizes/encourages users and other stakeholders in the supply chain of appliances to replace their stock of conventional appliances with energy efficient alternate will be the focus of ‘Disposal Strategy’.

Our recommendations on disposal strategy will involve the below workflow:



Project team will conduct meetings with key stakeholders to present and discuss various options for each of these elements, and how they will be brought together under the strategy. The parameters governing the financial strategy will be formulated in consultation with all the stakeholders and Banks/ FIs. Development and fine-tuning of these are largely dependent on the business case and stakeholders’ inputs, wherein our consultative and flexible approach will come into play.

Our experience suggests that this is an important juncture in the overall assignment implementation and will provide direction to all downstream activities. Hence, it may be required to revisit and review the developments for several times at this stage in order to come up with the best possible solution. We are agreeable for this and our team members will patiently and flexibly engage with key stakeholders in order to achieve the desired outcomes of this task.

Development of a concept note for the financial strategy

A concept note will be prepared for initiating consultation with the stakeholders on the financial strategy. The illustration below describes the aspects of the key components of our Financial Strategy.



The concept note will be shared by ME with all stakeholder prior to the first stakeholder consultation workshop, for informed consultation process during the workshop. PwC will apply a consultative approach to conclude on the same, post consultation with ME and other stakeholders. The draft financial strategy will be finalized after incorporating stakeholders’ comments and follow-up action, if any, for the same. The final strategy document will be submitted to ME within two weeks from the first stakeholder consultation workshop.

Sub-task 3.3: Financial Programme

Development of financial programme will ensure receiving comments and inputs from ME and stakeholders on the draft financial strategy. The key elements of the financial programme design are illustrated alongside for reference. Once again, it is to be noted that some of these elements may at times be clubbed together, or dropped, or new specific elements added to the programme, based on choice of instruments, local context, legal framework and stakeholders' inputs. A brief snapshot of these elements is provided next for better understanding of the proposition.

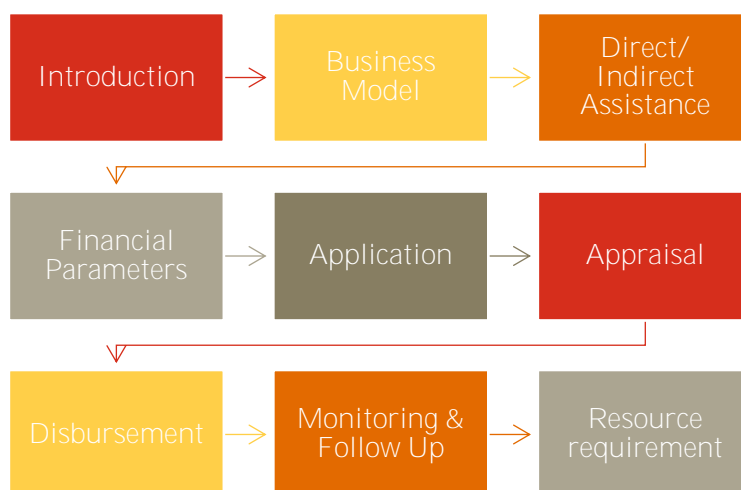
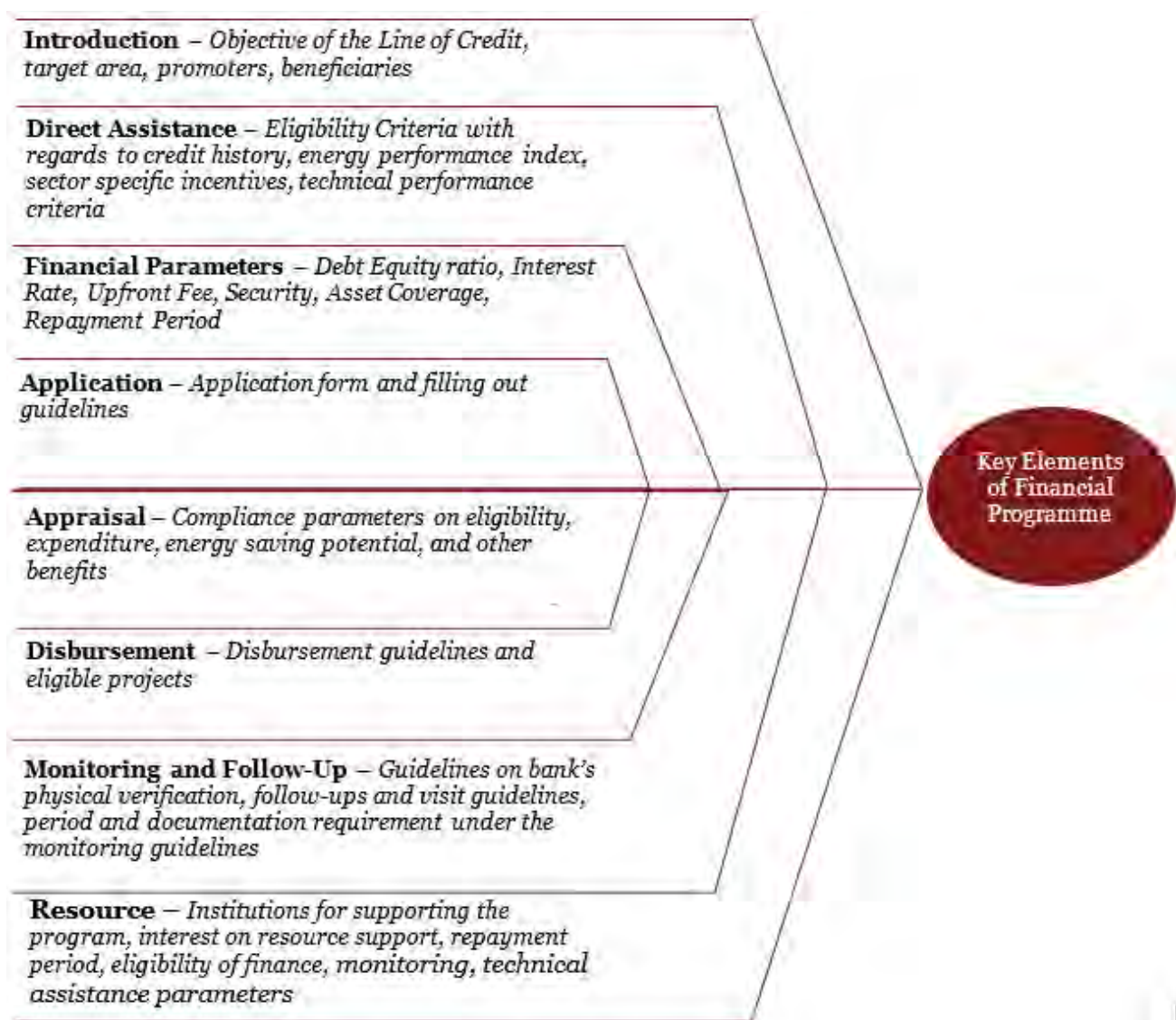


Figure 11 Key elements of the financial programme



Developing business model

Post evaluation of the various aspects of financial instruments with risk mitigation, and various consultations, Project Team will present the most suited business model(s) to ME, financial institutions and other relevant stakeholders for further consultation. Components of the Business model will be as follows:



Consultations to identify risk profile or possible beneficiaries

As per our understanding of the assignment, we have identified possible beneficiaries with their risk profile in the context of development of a financial programme.

Table 7 Mapping of beneficiaries and the risk profile

Sector	Beneficiary/ Customer	Risk Profile	Remarks
Commercial	Large Organizations	Better Creditworthiness, Good technical know-how and high retained earnings	Large organizations usually possess the capital and technical knowledge to undertake energy efficiency projects and their dependence on external factors is minimum. These organization can be made to comply with energy efficiency standards by imposing obligations to maintain a minimum level of energy efficiency. This can be true in case of energy efficient appliances.
	Small firms	Low Creditworthiness, Poor technical know-how and low retained earnings	Smaller firms generally have little/ no retained earnings to support investments in energy efficiency. Moreover, they do not have additional collateral to pledge against loans provided by banks for undertaking energy efficiency projects – for appliances, etc.
Residential	Home/ Apartment Owners	Low to medium to high credit worthiness, technical know-how and retained earnings.	Homeowners typically represent a pool of beneficiaries having varied levels of credit worthiness and per capita income. Since, the value of an appliance will only depreciate with time, they cannot be pledged against loans for investing in energy efficiency. Policies/ instruments targeting this segment also suffers from high transaction costs, if the number of beneficiaries is less.
	Builders/Developers (Residential Complex)	Low to medium to high credit worthiness, low technical know-how	Builders can generally not be motivated to build energy efficient homes with energy efficient appliances (air-conditioning, lighting etc.) as this would increase the cost for the home buyers. However, incentivizing home buyers and builders and putting obligation may provide the much needed thrust.
Government	Government Departments, Local Government Entities	Generally low to medium credit worthiness, low technical know-how and low/no capital	Municipal corporations/ other local bodies are generally perceived as high-risk borrowers due to their poor credit worthiness. Government entities generally do not have their own source of earning and are largely dependent on aid from central government to implement energy efficiency-based procurement for appliances.

A good understanding of the creditworthiness, credit systems and risks associated with different end-user categories will be developed by meeting Maldives Monetary Authority, while understanding on technical know-how will be assessed by engaging with different end-user groups.

Activities for development of MRV

Effective setup of MRV for the financial programme will build confidence and trust among its partners/donors on how committed their funds are used and whether they are achieving their intended purpose. It will also enhance reporting of energy efficiency finance by key institutions.

PwC will develop the MRV guidelines based on below fundamental principles:

Accurate *M&V* reports should be as accurate as the *M&V* budget will allow. *M&V* costs should normally be small relative to the monetary value of the *savings* being evaluated. *M&V* expenditures should also be consistent with the financial implications of over- or under-reporting of a project's performance. Accuracy trade-offs should be accompanied by increased conservativeness in any estimates and judgements.

Complete The reporting of *energy savings* should consider all effects of a project. *M&V* activities should use measurements to quantify the significant effects, while estimating all others.

Conservative Where judgements are made about uncertain quantities, *M&V* procedures should be designed to under-estimate *savings*.

Consistent **The reporting of a project's energy effectiveness** should be consistent between:

- Different types of *energy* efficiency projects;
- Different *energy* management professionals for any one project;
- Different periods of time for the same project; and
- *Energy* efficiency projects and new *energy* supply projects.

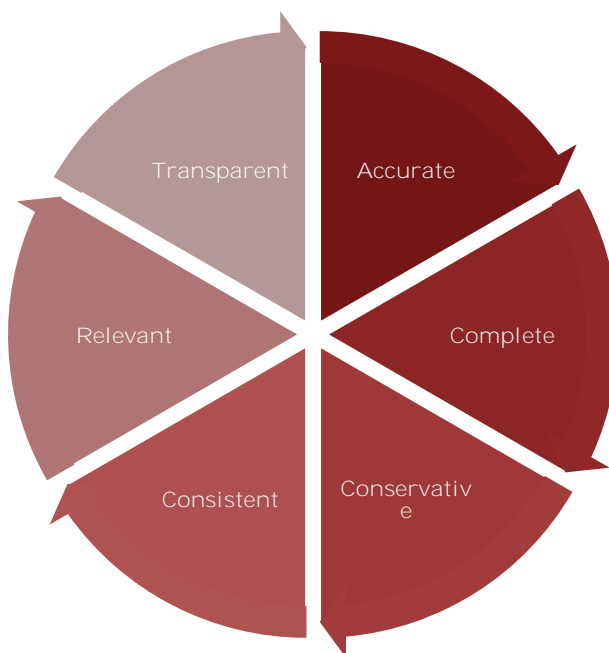
'Consistent' does not mean 'identical,' since it is recognized that any empirically derived report involves judgements which may not be made identically by all reporters. By identifying key areas of judgement, MRV helps to avoid inconsistencies arising from lack of consideration of important dimensions.

Relevant - The determination of impacts should measure the performance parameters of concern, or least well known, while other less critical or predictable parameters may be estimated.

Transparent - All *M&V* activities should be clearly and fully disclosed. Full disclosure should include presentation of all the elements defined in financial programme. The balance of this document presents a flexible framework of basic procedures and four options for achieving *M&V* processes which follow these fundamental principles. Where the framework is silent or inconsistent for any specific application, these *M&V* principles will be used for guidance.

MRV preparation will involve

- Designing a light-version of **Maldives'** MRV of finance architecture covering full spectrum of MRV functions (track, process, verify and report).
- Making practical recommendations on road map for implementation.



- Prepare templates and list of instructions on how to put the MRV system from functions to practice.
- Develop guidance note on how to improve on the functionality, suggest possible modification and the ways to integrate MRV into normal operations of various actors.
- Make proposals on the capacity and resource needs necessary for the effective implementation of the MRV of finance.
- Recommend ways and measures to create awareness on user utility of the MRV of finance system.

A few indicators for tracking by agencies involved in MRV will be identified. As per the structure of the financial programme, the MRV development will take place. PwC will also develop reporting formats, tools, and illustrations to describe the MRV mechanism of the financial programme.

PwC has many qualified M&V professionals (from EVO, US) and Certified energy auditors with relevant experience in framing the M&V documents for different areas in previous engagements. This experience will be strongly leveraged to create a robust MRV for this specific assignment. As per our experience and understanding of this project, we have defined the objectives for the MRV, that shall be fine-tuned in course of the project, after due consultation with ME and participating Financial Institutions.

Implementation work plan

Project team will seek inputs from ME on the prospective Banks/ FIs which will be considered by ME for the implementation phase. A detailed implementation work-plan will be developed in consultation with the ME and identified financing institution, aligning with the assignment timelines. It is important to mention here that any lead time taken for onboarding the financial institution by ME has not been considered in the assignment timelines proposed by us as per the terms of reference. The implementation workplan will consist of two-fold activities, i.e. project documentation and action plan for demonstrating one implementation cycle, as illustrated next.



The action plan will be developed in consultation with ME, partner FI and other stakeholders to bring in clarity on starting point of the program, target setting, etc. These details will also be sought through various meetings as part of the stakeholder consultation activity in order to have their buy-in during the implementation phase. Development and fine-tuning of implementation action plan are largely dependent on the business case and **stakeholders' inputs. Hence, PwC will adopt a consultative and flexible approach while proposing the same.**

Task 4 – Stakeholder consultation workshops and meetings with the stakeholders

This task will be carried out in parallel with Task 3 as per our methodology and the scheduling of workshops and objectives thereof have already been discussed as part of methodology for Task 3. For summarizing, two

stakeholder consultation workshops will be carried out in presence of key team members, ME officials and identified stakeholders, as per the following schedule:

- Stakeholder Consultation Workshop 1: to be organized after submission of draft financial strategy. The objective of the workshop is to gather inputs from stakeholders on the draft financial strategy and to finalise the same.
- Stakeholder Consultation Workshop 2: to be organized after submission of draft financial programme. The objective of the workshop is to gather inputs from stakeholders on the draft financial programme, ascertain their roles, seek additional feedback and to finalise the same.

In line with the ToR requirements, the logistical arrangements for the workshop will be made by the ME and the cost towards the same has been excluded from our proposal. We also seek ME's support in inviting and coordinating with the government and institutional stakeholders, in terms of sending out invitation letters to appropriate personnel, on ME's letter head.

This brings us to the conclusion of research and development phase for financing strategy and programme. The key outcomes, tasks covered, timelines and deliverables submitted during this phase are presented next.

Research and Development Phase of Financial Strategy & Programme – Task 3 and Task 4

Timeline: To be completed by 26th July 2020

Outcomes of activities in this phase:

Sub-task 3.1: Financial instruments and risk mitigation instruments;

Sub-task 3.2: Financial strategy - Stakeholder map, Benefits assessment – investment, energy savings and GHG emissions reduction, identification of initial set of appliances for financing programme

Sub-task 3.3: Financial programme - Business model, MRV and disposal plan, implementation workplan

Task 4: Two stakeholder consultation workshops – gathering inputs from stakeholders on financial strategy and programme, insights from meetings with key stakeholders to develop the final programme

Deliverable as per ToR:

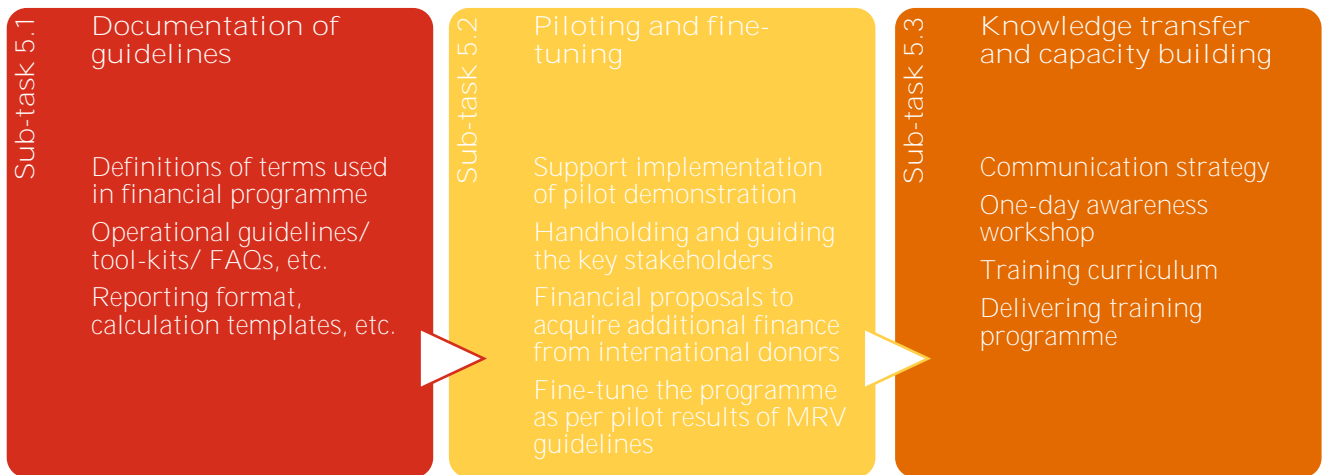
2. *Draft financial strategy*
3. *Stakeholder consultation workshop – 1*
4. *Final report on financial strategy for energy efficient appliances*
5. *Draft financial programme*
6. *Stakeholder consultation workshop – 2*
7. *Final report on financial programme for energy efficient appliances*

Implementation Phase – documentation, piloting and capacity building

Task 5 – Implementation of Financial Strategy and Financial Programme

Implementation of financial strategy and programme is an important phase of the assignment wherein the maximum resources will be utilized to document, pilot, fine-tune the programme and enhance the capacity of stakeholders through a dedicated training programme. Our methodology looks at this task by dividing it into three sub-tasks, as illustrated next.

Figure 12 Methodology for implementation of financial strategy and financial programme



These sub-tasks are discussed in detail in upcoming sub-sections.

Sub-task 5.1: Documentation of Financial Programme guidelines

The operational guidelines of financial programme will be developed in detail to assist the participating financing institutions to institutionalise/internalise the programme and keep track of the workflow. The guides, tools and calculators would serve the purpose of detailing the various aspects and structure of the programme. This will be important for the stakeholders and anyone who wants to extract reports as per MRV criteria and other operational aspects of the financial programme. The guidelines would empower the involved financial institutions or other entities to know their responsibilities and the structure for the flow of information when a financial programme is operated.

Some of the guidelines/ tools/ formats to be developed for the financial programme are provided as an example here. This list will be reviewed and compared with the existing documents/ SOPs of the participating financial institution.

Figure 13 Examples of guidelines/ tools/ formats to be developed for the financial programme



The draft guidelines will be shared with ME and participating FI for feedback and review. The guidelines and documents will be finalized after incorporating the feedback from ME and FI.

Sub-task 5.2: Piloting and Fine-Tuning

The pilot testing of financial programme will be undertaken in a controlled environment by operationalizing the guidelines developed so far. Piloting becomes the litmus test for the planned financial programme and the assignment. Specific roles will be assigned to the participating entities (borrower, programme manager/ financier, etc.) and the guidelines/ templates/ calculators will be pilot tested. It is expected that up to three iterations will be required for pilot testing and results sharing as per the MRV guidelines. The results of pilot testing will be fed into the operational guidelines/ format and calculators as a finetuning mechanism. It is important to note here that pilot testing of financial programme and associated guidelines/ calculators, etc. will

be carried out in a dummy environment with real stakeholders, i.e., without any financial transactions taking place into effect. The end-to-end pilot testing shall also cover implementing the overall MRV guidelines for the programme.

We would make use of the below principles for a successful time-bound piloting of the project:



Financial proposals to acquire additional finance

Our team will regularly engage with international donors in Maldives as well as the participating FIs to explore possibilities of additional financing. The funding resources of international donors are usually guided by the year-on-year layout as well their respective priorities for the energy efficiency related interventions with appliance financing focus. We will undertake a matchmaking of FIs needs vis-à-vis available funding from international donors and submit a report to ME on the same. In case of a positive response from both the parties, we will assist **the FI to develop a proposal as per donor agencies' format. The necessary information from financing programme side will be provided by PwC.**

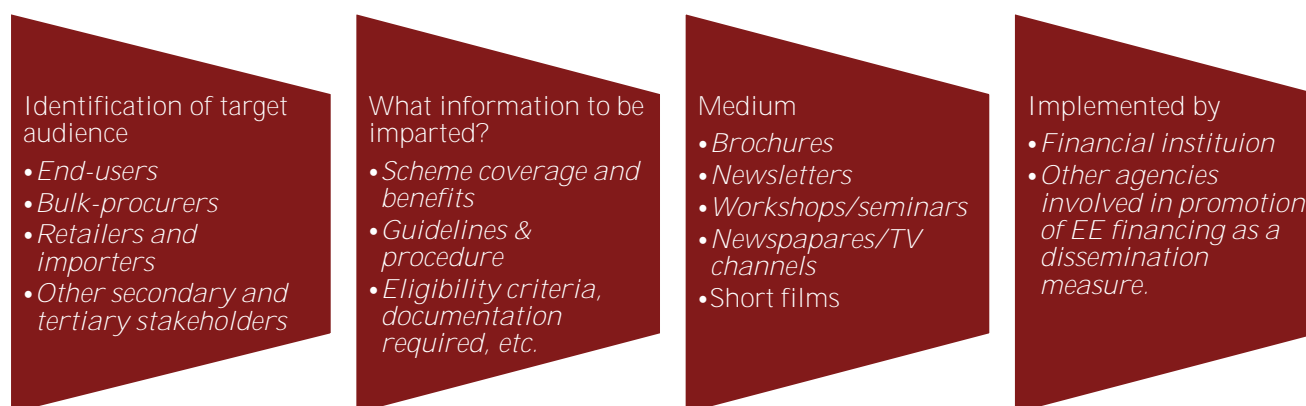
Sub-task 5.3: Knowledge transfer and Capacity Building

The objective of knowledge transfer and capacity building is to develop guidance material and train the representatives of financial institutions involved in the operationalisation of the financial programme. This will ensure that once the piloting and finetuning is complete, the responsible entities can operate the program to the best of their capabilities. PwC has carried out several capacity building workshops and trainings on financial programs and the experience would certainly help us engage with the stakeholders in a fruitful manner.

Marketing and Communication Strategy

Once the business model is finalized, it is imperative to conduct dissemination program for promoting the same. For promoting any activity, integrated and dynamic com/mar plan is essential element. In the pursuit of developing com/mar plan, the project team would adopt the following approach.

Figure 14 Approach for marketing and communication of financial programme



As part of the communication strategy, PwC will assist the financing institution to identify and profile the target audience and prepare presentations for various promotional and marketing avenues to disseminate the financial programme. The comprehensive communication/marketing plan would include details of each step as shown in the approach to promote the business model in the country. It would be noteworthy to mention that PwC has good experience in preparing and executing of media plan under the assignment titled “**Marketing and General Outreach on EE Schemes**” awarded by Bureau of Energy Efficiency, India.

Awareness workshop for stakeholders

A one-day awareness workshop will be conducted for the key stakeholders of the assignment. Similar to the methodology for conducting workshops in the assignment, our team will assist ME in identification of stakeholders, developing workshop agenda, inviting external speakers and moderating the open-house sessions. We shall seek support from ME in finalising the invitees list and sending out invitations to government and institutional stakeholders on ME letterhead.

Training and capacity building of finance professionals and stakeholders

Development of guidance and training material

The training materials would be developed with the aim of imparting basic knowledge and know-how of the financial programme and its operation. We will design the training material in a way that it captures the step by step aspects of the financial strategy and programme. The guidance material will comprise of illustrations related to operation of the financial programme, flow of work, from generation of a query to assessment of requirements, implementation of the programme protocol and tracking savings and impacts.

List of training topics would materialise as per the development of financial programme in consultation with key stakeholders. Training materials will have a modular structure as per topics. They shall be designed in a way that the trainer will be able to disseminate information in the given timeframe. Also, the length of the timeframe for each module shall be planned to ensure optimum level of attention from the participants. The material would be designed to cover the course material for subsequent reference (copies of slides used, exercises, solutions, manuals, etc.). For easy understanding, the manual would include an index where important key words can be looked up training brochures, reference materials, slides and other auxiliary training materials.

The Training Modules shall be developed with inputs from subject matter experts on banking and project finance, credit and risk assessment.

Auxiliary training material

PwC would develop exemplary case studies and hands-on exercises on financing energy efficient appliances in the context of the programme, including the following (but not limited to):

- Calculating cash flows generating out of energy savings
- Financing models based on enlisted approved appliances, and/or energy savings per unit investment, etc.
- Significant changes in project viability arising out of energy savings and associated incentives with financing energy efficient appliance purchase or use.
- Specific cases where application has been rejected for failing to comply with environmental, legal, social obligations.

In addition to case-studies, PwC will develop calculation-based tools with illustrations in guidance material on their use calculation procedures. Other supporting and marketing materials will be designed involving – training brochures, reference materials, presentation slides, etc.

The training module shall serve as a ready reckoner for bankers to assess/vet energy savings vis-a-vis incremental cost of the project and assess EE benefits.

Designing programme format

The programme format shall be designed in a way that it addresses specific needs of the target participants and achieve the desired objective of the programme.

- Conference, roundtable, seminar or webinar
- Timeframe for the programme (one/half day, first/second half of the day, etc.)
- Scheduling of event while considering local cultural factors, etc.

An expert shall ideally lead each session. We shall adopt a consultative approach with local groups, associations and opinion leaders to finalize the programme format and schedule for individual events.

Training delivery

Training delivery has a big role to play in influencing the level of interest of the audience and their learnings. One of the most popular and proven adult learning approaches used for a variety of training and capacity building for adult professionals is the 70:20:10 model.

Based on the model, the entire training curriculum and learners’ time will be divided in the ratio 70:20:10 as illustrated next - 70% focused on experiences, group-activities, problem-solving, concept-application, relevance to core business; 20% focused on developmental relationships and feedback from the trainers on evaluation of group activities/exercises, etc.; and 10% focused on formal training through learning of theoretical concepts.

Table 8 Approach for delivering of trainings

Method	Useful for	Advantages
Case study	<ul style="list-style-type: none"> • Solving problems • Changing Attitudes • Building analytical skills 	<ul style="list-style-type: none"> • Involves learners actively • Allows sharing of leaners’ experiences with others

Role playing		<ul style="list-style-type: none"> Stimulates ideas and discussions of concrete subject
	<ul style="list-style-type: none"> Developing interactive knowledge and modifying attitudes Introducing humour and liveliness into training 	<ul style="list-style-type: none"> Stimulates interest Keeps participants active Uses participants' experiences
Group Exercise	<ul style="list-style-type: none"> Team building Developing interactive skills Studying group dynamics 	<ul style="list-style-type: none"> Facilitates high participation of motivated learners
Brainstorming	<ul style="list-style-type: none"> Stimulating creative thinking Generating positive solutions Consolidating past learning Providing diversion 	<ul style="list-style-type: none"> Promotes active participation of learners Uses learners' experiences and ideas
Demonstration	<ul style="list-style-type: none"> Showing correct procedures and required standards 	<ul style="list-style-type: none"> Stimulates lot of interest Can be used for large groups

Training session format

A training programme schedule covering about 12 hours duration would be developed. The programme schedule will cover three-day training sessions of 4 hours each with breaks in between for refreshments and Q&A discussions. The tentative schedule of the sessions will be as follows:

Session 1 (Day 1)

The first session will be aimed at interest and awareness creation for a larger audience (diverse stakeholders including general public), and will cover:

- Introduction to financial programme for energy efficient appliances
- Scope, need, benefits and objective of financial programme
- Energy efficient appliances and Standards & Labelling in appliances – local and global perspective
- Impact of EE appliances on energy demand in Maldives

Elements of group activities will be initiated in the first session itself by organizing a small quiz at the conclusion of the session.

Session 2 (Day 2)

Session 2 will be aimed at specific finance professionals and sector experts (reviewers) from financial institutes including but not limited to banks, Ministry of Finance, Ministry of Environment. Session will introduce the participants to the structural, legal, and operational nuances of financial programme in the context of financial programme implementation:

- Brief review of session 1
- Structuring of financial programme and its overview – including financial instruments involved, their operational procedure from generation of a query to assessment of requirements,
- Risk mitigation application procedures
- Regulatory and policy framework for selection of a project

Session 3 (Day 3)

Session 3 will focus on operational aspect of the programme, institutional structure and aspects of measurement of key indicators at various stages, their verification, validation and reporting across different stages of financial programme and at institutional level. These will include:

- Measurement of indicators for appraisal of requests, from identified stakeholders in the value chain
- Reporting of key indicators in the designed formats with knowledge on tools involved
- Verification of the reported indicators,
- Responsibility of individual institutions and their operations and responsibility in MRV process
- Calculations of energy savings, their impacts, in realising operational cost savings will be a key part of the operational structure of the financial programme.

This session would familiarize the participants with the nitty gritty of operational chain for financial programme and measurement, reporting and verification of operations at different stages. *Training programme feedback shall be collected at the end of each day and session to improve the content and make it relevant as per the understanding level of local stakeholders.*

Implementation of the programme – Task 5

Timeline: To be completed by 26th December 2020

Outcomes of activities in this phase:

Sub-task 5.1: end-to-end documentation of operation guidelines, MRV guidelines, format, calculators, etc.;

Sub-task 5.2: Pilot testing and fine-tuning of the programme, pilot results as per MRV implementation, assistance to FI for funding proposals to donor agencies

Sub-task 5.3: Workshop presentations, Awareness workshop for stakeholders, delivery of training programme for finance sector professionals

Deliverable as per ToR:

8. *Draft documents for implementation of financial strategy and financial programme*
9. *Draft documents for capacity building of key stakeholders*
10. *Final documents for implementation of financial strategy and financial programme*
11. *Final documents for capacity building of key stakeholders*
12. *Report on one-day awareness workshop for stakeholder*
13. *Report on training programme for finance sector professionals*
14. *All final documents and reports*

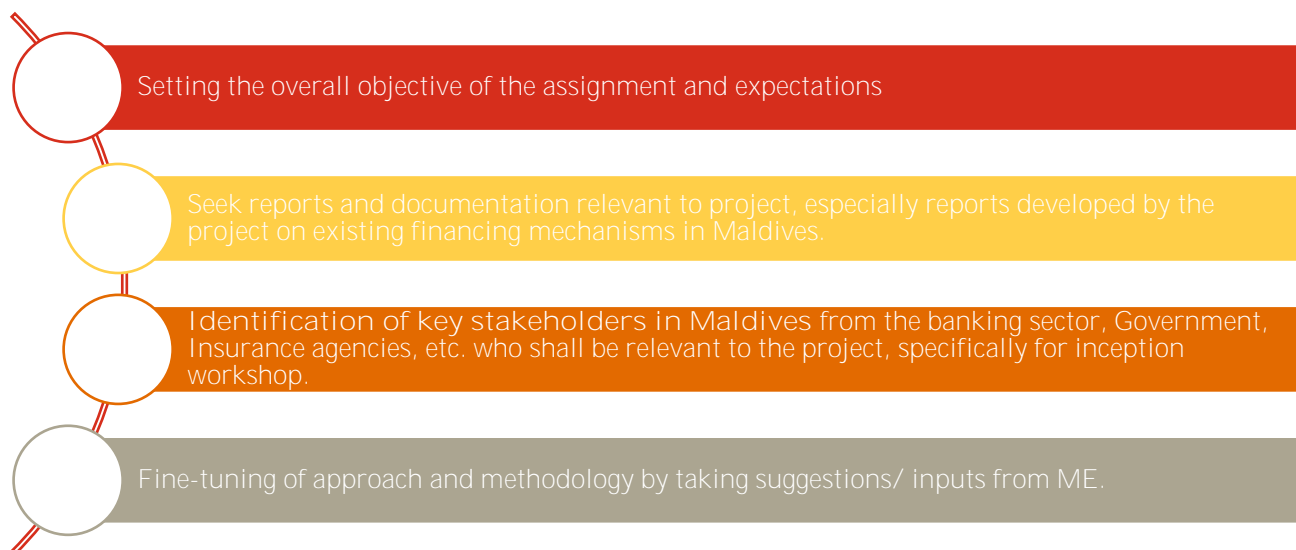
2.3. Work plan

The finalized work plan for completion of activities and submission of deliverables are given below:

Deliverable	Timeline from Contract Signing (February 26, 2020)	Due Date
1. Inception report with findings of the inception workshop	1 month	March 26, 2020
2. Draft financial strategy for energy efficiency appliances 3. Stakeholder consultation workshop	1 month	April 26, 2020
4. Final report of financial strategy for energy efficiency appliances	1 month	May 26, 2020
5. Draft financial programme for energy efficiency appliances 6. Stakeholder consultation workshop	2 months	July 26, 2020
7. Final report of financial programme for energy efficiency appliances	1 month	August 26, 2020
8. All draft documents for the implementation of the financial strategy and financial programme 9. All draft documents/materials for capacity building of key stakeholders	2 months	October 26, 2020
10. All final documents for the implementation of the financial strategy and financial programme 11. All final documents/materials for capacity building of key stakeholders	1 month	November 26, 2020
12. Report on one-day awareness workshop to all stakeholders on the developed the financial strategy and financial programme. 13. Report on training for 10 professionals in the finance sector to implement the financial strategy and financial programme. 14. All final documents and reports	1 month	December 26, 2020
Total	10 months	

3. Findings of the Inception Workshop

Inception workshop on Development of Financial Programme on Energy Efficient Appliances was conducted on March 9th, 2020, at Hotel Champa Central, Male, Maldives. The workshop was attended by various key stakeholders from policy makers, regulators, financing institutions, banks, non-banking finance companies (NBFCs) and other representatives from the private sector. The list of attendees with the attendance sheet is provided in Annexure 1 with this report. The below points were covered during the kick-off meeting:



3.1. Agenda of the meeting

The workshop was conducted with support from Ministry of Environment to achieve the following objectives:

- Introducing the project on financial programme for energy efficient appliances and its need to the participants.
- Sharing global case studies and examples on financial programmes to promote uptake of energy efficient appliances.
- Stakeholder consultation on existing financial capacity of FIs to run a financial programme, understanding the present gaps in access to financing schemes for appliances, to identify potential financial strategies, and policy framework and regulation to influence purchase of energy efficient appliances.

The workshop presented an opportunity for the stakeholders to discuss the assignment objectives, respective roles, ongoing activities on EE financing and upcoming activities of the assignment along with timelines and expected outcomes. The key points of the proceedings and stakeholder consultation are presented next. The detailed workshop agenda is provided as Annexure 2 with this report.

3.2. Discussion Points

3.2.1. Introductory remarks by Ministry of Environment

Mr. Ajwad Mustafa, Permanent Secretary (PS), ME, addressed the gathering by welcoming the participants and briefed them on the need of the project. The PS emphasized the need for energy efficient appliances with verified **energy savings over the product's useful life** leading to reduced energy demand and benefit from operational cost savings. He pointed out the challenge of increasing generation capacity to meet the increasing demand for electricity and how the present project/programme can address the same. This will be achievable due to the implementation of energy efficiency standards and labelling programme in the Maldives which the government

is committed to implement for air conditioners, refrigerators and washing machines. He further added that as the upfront cost of energy efficient appliances is higher than their conventional alternatives, there is a need to introduce a financial mechanism to lower the initial cost of investment.

He further enunciated the objective of the workshop, was to consult stakeholders on such mechanisms, gather feedback and identify the appropriate approach that can be implemented in the Maldives.

3.2.2. Presentation on Introduction to Financial Programme for Energy Efficient Appliances

Mr. Manish Soni, Associate Director, PwC, greeted the dignitaries and complimented the Maldivian Government for pursuing active initiatives towards achieving energy efficiency. He then presented the project background, international case studies, and the approach & methodology for developing the financial programme.

The following were the key topics covered in the detailed presentation.

Setting the Context

This section elucidated the economic growth that Maldives has experienced over the past years vis-à-vis energy demand. As Maldives imports fuel to meet its entire energy demand, its import bills have increased considerably over the years. As energy demand is expected to grow at 8.5%, the related carbon emissions are also expected to grow at 9% due to the dependence on fossil fuels.

The presentation mapped existing consumer appliance financing options while buying various household appliances, offered by Bank of Maldives, Maldives Islamic Bank and Maldives Finance Lease Company. These included mostly secured and unsecured loan and lease-based products like Lui Express, BML Green Loan, Easy Lease, Murabaha General Asset Financing, Consumer Goods financing among the others. So far, there is no definition or a validation procedure to identify an energy efficient appliance or a product. With introduction of the S&L programme for ACs, Refrigerators and Washing Machines, identification of appliances for consideration in financial programme will be transparent and straightforward. This will encourage consumers to choose energy efficient appliances and as a result the demand for energy efficient appliances will increase. This will also increase the repayment capacity of people who borrow money to buy these appliances as they will be saving money on their bills. This shall also lead to an increase in number of subscriptions for the above-mentioned financing options in case of appliances.

Project Background

It was indicated that globally and in the case of Maldives, the upfront cost of energy efficient appliance is higher and hence there is a need to develop an innovative financial programme to increase the demand of Energy Efficient appliances. The programme would offset higher upfront cost as a result of bulk adoption by end users and would increase the asset quality for financiers by quantifying savings due to energy efficiency. Several barriers to EE financing and low uptake of EE based financing instruments in the case of appliances were discussed to gain insights into the reasons for the same. Initial increase in the cost of purchase, no assurance of payback with energy savings were among the few perceived barriers. A list of suggested stakeholders for the development of financial programme was also discussed during presentation.

International Initiatives

The presentation also covered some of the financial programmes for uptake of EE appliances in developing and developed countries around the world. It covered the programmes initiated by Thailand, China, Mexico and India. The type of financing schemes typically included demand aggregation, on bill financing, performance-based financing, and list-based financing. He further deliberated that on bill financing allows consumers to buy appliances with very little to no upfront cost and helps utilities reduce their peak demand. Banks prefer list-based financing, which is very straightforward, but one needs to have a very robust list that reflects the efficient appliances in the market. Performance based model is more suitable for industries and commercial buildings and may not be much relevant in the context of Maldives. Demand Aggregation through a robust demand aggregator can play a key role in driving the financial programme in Maldives.

3.2.3. Presentation on Approach and Methodology for development of financial programme

The presentation continued in the next session to cover the upcoming activities as part of the approach and methodology of the assignment, as presented next.

Development of financial programme for energy efficient appliances – Key Steps, Description and timelines

The section highlighted the approach and methodology towards the development of innovative financial programme for energy efficient appliances in Maldives. The inception phase of the programme will cover review of existing policies and case studies and identify appliances which can be included in the scheme. The next phase will cover the financial strategy and programme development and to shortlist financial mechanisms and develop a strategy around it.

During the third and final phase for implementation and capacity building, the project team will document guidelines based on which the programme will function and its resource requirements. Post piloting, training and capacity building initiatives will be conducted for participants from banks and NBFCs. The timeline of implementation will depend on the willingness of agencies to implement the programme and procedures. The development of the programme will involve the below stages:

Inception Phase

- Review of reports on financing of EE technologies, existing green financing instruments, case studies.
- Stakeholder Consultation to identify market gap and financial capacity
- Identify potential financial strategies and sources of finance
- Identify policy and regulation to influence purchase of EE appliances

Development of Financial Strategy & Financial Programme

- Assess and propose financial instruments with risk mitigation strategies
- Propose business models, identify stakeholders involved, and develop concept note
- Forecast benefits of implementing the financing scheme
- Develop MRV mechanism and disposal guidelines

Implementation & Capacity Building

- Define implementation plan, operational guidelines
- Conduct piloting of programme
- Develop marketing and communication strategy
- Develop training material and conduct capacity building

3.2.4. Stakeholder Consultation & Discussions

After covering the above topics, Ministry of Environment, opened the floor for discussion on the topics presented. The session was moderated by Mr. Mohamed Inaz, ME and Manish Soni, PwC. The key points highlighted by the stakeholders were as follows:

❖ Bank of Maldives (BML)

- BML has Lui Micro and Lui Loans which also cover household electrical appliances other than a wide variety of purchases. Rebranding of the vehicle loan was recently completed and the interest rates in this **product are 4% lower. ‘Green Loans’ are mostly applicable** for purchases related to renewable energy (RE systems, products, power plant) and were developed to finance country’s electricity utilities, businesses

or individuals looking to invest in RE. It is also applicable for energy efficient products (though no cases are available) and resellers of **solar panels**. **Lowest interest rate on offer is 11 % (with only 15 % owners' equity)**, however, despite incentivized rate of interest there is limited uptake for renewable energy related purchases by state electricity utilities, businesses or individuals.

- Other eligible products for the Green Loan are Electric Vehicles, however, the demand is limited due to higher upfront cost of such vehicles. In addition, the programme managers have limited technical expertise and hence BML was not able to aggregate the demand in the market.
- As of now, there is no 3rd-party based validation procedure for qualifying the purchase of energy efficient (fuel efficient) vehicles, and appliances for innovative financing. Manufacturer's specifications are referred by BML. In case of a 3rd party verification system, BML would ask the customer to pay for the validation charges. It was also expressed by BML that the portfolio of appliance financing under Lui loans is less as compared to other products.
- In the case of Lui Loans, BML directly pays to customers and not vendors. There is a possibility wherein the vendors are unable to communicate the details of the loan scheme when a consumer approaches them for a purchase.

❖ Maldives Islamic Bank (MIB)

- The green segment of financial products by MIB started with Addu City Council where financing was provided for solar panels (PV). The loan tenure was increased from 3 to 5 years, yet it did not pick up.
- MIB has consumer goods financing products like Ujaalaa Dhiriulhun. The financing rates for consumer financing for green products is reported to be low and even after extending the tenure of the loan to 5 years, there were less takers.
- Ujaalaa financing covers consumer goods including green products (mostly RE related). The cost of construction in Maldives was reported to be expensive but still the demand for green financial products has been low.

❖ Other remarks

- Bank of Ceylon (BOC) is more focused on the commercial sector and does not have a programme for retail sector consumers. They are open for consideration of green financing products for retail consumers.
- Housing Development Finance Corporation (HDFC) specializes in housing sector loans, but not for products or appliances financing for retail consumers.
- Maldives Finance Leasing Company (MFLC) – Presently the company does not have any schemes for energy efficient products, but a scheme does exist for hybrid cars. There are internal consultations within the company on developing financing products for energy efficiency appliances and will be launched in the future.
- Ministry of Economic Development (MED) – The Ministry agreed with the objectives of the assignment. However, at present, there are no funds for appliances financing and/or any programmes aligned with the present assignment.
- Maldives Monetary Authority (MMA) – MMA is the regulator for financing sector in Maldives and is interested to facilitate such a programme through banks, once the direction and plan is initiated by the **government**. **So far, green financing or funding for energy efficient appliances is not part of MMA's strategic plan.**

❖ Key take-aways from the stakeholder discussion

- As suggested by BML, the Maldivian consumers are more concerned about the upfront payment while purchasing a commodity and **they do not mind paying EMI's for a longer duration** despite the higher interest rates. Consumers in the past have taken loans with interest rates of up to 18 % where the equity has been very low or none.

- MIB also supported the case of acceptance of high interest rates by the consumers against increase in EMI by down-payments and/or shorter tenure loan.
 - A general agreement was that the difference in EMIs/ tenure due to innovative financing programme for EE appliances should be significant enough to drive consumers towards energy efficient products.
 - There is also agreement on list-based approach as the most effective and easy to implement strategy for the banks and NBFCs. Currently, there is lack of any standard to appraise what is energy efficient and what is not. Some of the banks, such as MIC and MBL already have lists for approved vendors, etc. for their consumer loan products.
 - Financing for green, energy efficient and eco-friendly products forms part of priority lending for majority **of banks, and hence, there shouldn't be any issue for banks to participate in the** financing programme development, provided there are measures to enhance internal capacity of appraising officers.
 - STELCO, FENAKA and MWSC, are the public utility electricity distribution companies in Maldives in different locations. Demand aggregation approach by utility companies may be explored, however, the underlying challenge is customer identification norms, as majority of electricity meters are used by building tenants. There is also an issue of mandate with respect to demand aggregation of appliances, as the companies are largely dependent on state funds for operation.
 - Some other suggestions included duty exemption on energy efficient appliances, mandatory regulation for installation of energy efficient appliances by hotels/resorts, etc. as a measure to increase the demand of energy efficient appliances and driving the importers/ retailers towards stocking such appliances.
- ❖ Responses to suggestions and points raised during the stakeholder consultation
- Project team shall formulate a model wherein the degree of offsetting the incremental cost of appliance can be demonstrated with different scenario options.
 - ME and MEA are working to implement a S&L programme. Initially, ME will notify the programme washing machines, refrigerators and ACs on a voluntary basis. Long term mission is to make it mandatory to buy these appliances, **so that only appliances which meet MEA's certification** will enter the market. Customs will eventually ban **products which do not meet MEA's requirement**. Once S&L programme is notified by the Government of Maldives, it would be simpler for banks and NBFCs to consider the labelled product/appliance for financing. More products will be added to the S&L programme in coming years.
 - ME is also working with Ministry of Finance (MoF) to make energy efficient appliances mandatory in public procurement. ME is also working towards seeking import duty concession for 5-star products.
 - ME is in the process of making building guidelines for hotels and guesthouses and are working with MNPI to implement this. For resorts, ME will need to involve Ministry of Tourism.
 - From research conducted for the standards and labelling programme, it is evident that most of the appliances are being imported in Maldives. The percentage of appliances that qualify for labelling shall depend on the financial programme.
 - The global experience shows that it is possible to reduce the price of a product through demand aggregation and bulk procurement. However, the same needs to be studied in detail for Maldivian context due to limited demand.
 - In case of on-bill financing and where there is a tenant using the facility, there is an understanding on who pays the EMI for the financed appliances. The electricity bill shall clearly show the breakup of energy use and EMI attributable to installed appliances.

3.2.5. Next Steps

After the conclusion of the inception workshop on financial programme for energy efficient appliances, the next step includes the following tasks:

-
- The project team will develop a model will assess sensitivity of incentivized finance vis-à-vis incremental upfront cost of energy efficient appliances with a few scenarios with achievable pricing levels.
 - Propose financial strategy and finalize as per inputs from all key stakeholders.
 - Financial programme development.
 - Conduct stakeholder consultations (at least 2 workshops) with the concerned department of public offices to take feedback and inputs throughout the development of financial programme
 - Implementation Phase – documentation, piloting and capacity building to start post August 2020.

At the end of the session, the organisers expressed gratitude for the participation and highly interactive discussion for development of financing programme for energy efficient appliances. The meeting ended with vote of thanks to the participants and organisers.

Annexure 1

Attendance sheet



Date: 08th March 2020		Time: 09:30 - 12:15		Topic: Climate Change Adaptation Plan		Sector: Climate Change Department	
Institution Workshop - Development of Financial Programme on Energy Efficient Appliances							
Strengthening Low Carbon Energy (Low-Carbon) Project							
No.	Name	Organization	Designation	Phone No.	Email Address	Signature	Remarks
1	Mohamed Muan	Manager, Banking Supervision Section	Monetary Secretary Authority	7797226	mohamed.muan@mba.gov.mv		
2	Maryam Shaha	Relationship Manager, SME Banking Department	Bank of Maldives	7774348	shaha@bom.gov.mv		
3	Nishal Mithal Gade	Junior Executive Officer (Credit Team)	Bank of Ceylon	7978496	cmithal@boc.lk		
4	Ali Waail	Chief Finance Officer	Maldives Islamic Bank	601125	aliwaail@mb.com.mv		
5	Mohamed Rafeeq Nazeem	Executive Officer	Housing Development Finance Corporation	600101	rfaheeq@hdfc.com.mv		
6	Moosa Alim	Accounts Officer (Technical Officer)	Housing Development Finance Corporation	600110	moosa@hdfc.com.mv		
7	Maryam Hanifa	Head of Corporate Finance	MPL	642126	maryam@mpl.com.mv		
8	Maryam Shaha Ahmed	Financial Officer	Ministry of Economic Development	7744110	maryam.shaha@trade.gov.mv		
9	Nafisath	Accounts Officer	Maldives Energy Authority	7740704	nafisath@ema.gov.mv		
10	Mariam Shaha	Manager	SECO	6745267	maryam.shaha@seco.gov.mv		
11	Rungani Ibrahim	Senior Research & Development Engineer	MWSC	7930020	rungani@mwsc.com.mv		
12	Asimul Hakeem Ali	Senior Financial Reporting Officer	MWSC	760796	asimul@mwsc.com.mv		
13	Ahmed Akram	Director, Business Development Department	FEHKA	7776116	ahmed.akram@fehka.com.mv		
14	Zainab Ghouseen	Programme Officer	Climate Change Department - MI		zainab.ghouseen@environment.gov.mv		
15	Abdul Khameed Ali	Assistant Engineer	Energy Department - MI	6019466	abdul.khameed@energy.gov.mv		
16	Faharitha Mera	Director	Primebank House Cooperatives Private Limited	7824480	faharitha@primebank.com		
17	Mariah Zain	Assistant Director	Primebank House Cooperatives Private Limited	7821172	mariah.zain@primebank.com		
18	Mariah Fawaz Saif	Director - Energy Utilization & Saving	Primebank House Cooperatives Private Limited		mariah.fawaz@primebank.com		
19	Mohamed Imad	Project Manager	LEI - ME	7705809	mohamed.imad@environment.gov.mv		
20	Fathimath Rifaqat Noora	Monitoring and Evaluation Officer	LEI - ME	7777842	fathimath.rifaqat@environment.gov.mv		
21	Moosa Afiya	Communication & Knowledge Management Officer	LEI - ME	7903692	moosa.afiya@environment.gov.mv		
22	Aishath Aishana	Officer	LEI - ME	7870177	aishath.aishana@environment.gov.mv		
23	Shahar Mohamed	S&L Officer	LEI		shahar.mohamed@environment.gov.mv		
24	Asimul Hakeem	Programme Officer	Ministry of Environment	916096	asimul.hakeem@environment.gov.mv		
25	Ashath Mithal Niyas	Asst. Dir.			ashath.mithal@environment.gov.mv		
26	Mungana Abu Yusuf	Asst. Dir.			mungana.abu@environment.gov.mv		
27	Mohamed Shafeeq	Consultant	PWC	999999	mohamed.shafeeq@pwc.com		
28	Muhammad Yaseen	Asst. Dir.	PWC	999999	muhammad.yaseen@pwc.com		
29	Ashath Mithal	Asst. Dir.	PWC	999999	ashath.mithal@pwc.com		

List of participants

Sr No	Name	Designation	Office
1	Mohamed Muaz	Manager, Banking Supervision Section	Maldives Monetary Authority
2	Mariyam Shaba	Relationship Manager, SME Banking Department	Bank of Maldives
3	Wasiu Abdul Gadir	Junior Executive Officer (Credit Team)	Bank of Ceylon
4	Ali Wasif	Chief Finance Officer	Maldives Islamic Bank
5	Mohamed Rukham Nasheed	Executive Officer	Housing Development Finance Corporation
6	Moosa Aleem	Accounts, Senior Technical Officer	Housing Development Finance Corporation
7	Mariyam Suhana Ahmed	Financial Officer	Ministry of Economic Development
8	Haifa Aslam	Accounts Officer	Maldives Energy Authority
9	Mariyam Shaanaz	Manager	STELCO
10	Furugaan Ibrahim	Senior Research and Development Engineer	MWSC
11	Ibrahim Hasham Ali	Senior Financial Reporting Officer	MWSC
12	Ahmed Azleem	Director, Business Development Department	FENAKA
13	Zainab Gulisthan	Program Officer, Climate Change Department	Ministry of Environment
14	Mohamed Inaz	LCEI, Project Manager	Ministry of Environment
15	Fathimath Raufa Moosa	LCEI, Monitoring and Evaluation Officer	Ministry of Environment
16	Moosa Rilwan	LCEI, Communication and Knowledge Administration Officer	Ministry of Environment
17	Aishath Azleena	LCEI, Project Assistant	Ministry of Environment
18	Shara Mauroof	S & L Officer	Maldives Energy Authority
19	Aishath Thaufeeq	Programme Officer	Ministry of Environment
20	Aishath A. Niyaz	A.D.	Ministry of Environment
21	Mariyam Anaa	A.D.	Ministry of Environment
22	Prasanta Misra	Director	PwC Maldives
23	Manish Soni	Associate Director	PwC India
24	Mohamed Shafeeq	Consultant	Riyan Ltd
25	Hussain		MFLC
26	Ahmed Hailam		MFLC

Annexure 2

Agenda of the Workshop

Development of Financial Programme on Energy Efficient Appliances

Strengthening Low Carbon Energy Island Strategies (LCEI) Project

Workshop Agenda

Date: March 9, 2020

Venue: Champa Central Hotel

Time	Topic	Speaker(s)
8:30 AM – 9:00 AM	Registration	
Session 1: Inauguration		
9:00 AM – 9:15 AM	Opening statement by Ministry of Environment	
9:15 AM – 9:45 AM	Tea break	
Session 2: Introduction to Financial Programme		
9:45 AM – 10:00 AM	Introduction of participants	
10:00 AM – 10:30 AM	Introduction to Financial Programme and global examples.	PwC
Session 3: Financial Programme for Energy Efficient Appliances in Maldives		
10:30 AM – 11:30 AM	Development of Financial Programme for Energy Efficient Appliances in Maldives– key steps, description and timelines (45 minutes)	PwC
	Stakeholder Discussion: <ul style="list-style-type: none">• What is the financial capacity of FIs to run a financial programme for EE appliances?• What are the current financing practices for appliances in Maldives?• What are potential financial strategies and sources to finance uptake of EE appliances?• What is the policy framework and regulation to influence purchase of energy efficient appliances?	Moderated Discussion
11:30 AM – 12:00 PM	Summing up, next steps and Vote of Thanks	ME/ PwC
12:00 PM onwards	Lunch	

Annexure 3

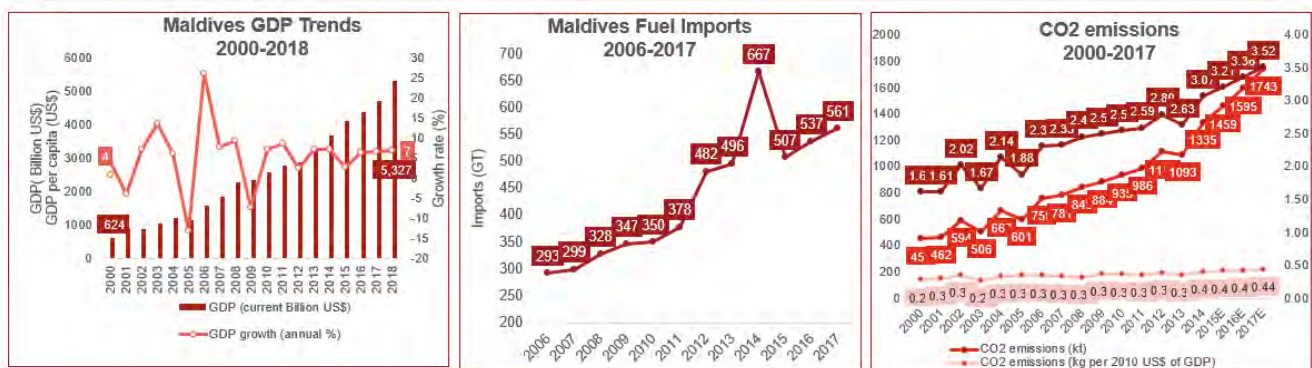
Inception workshop presentation

Setting the context

Slide 1

Maldives has emerged as the second fastest growing economy in the South Asia region, growing at an average GDP growth rate of 6.2% since 2010

Maldives has been a development success; enjoying robust growth coupled with considerable development of the country's infrastructure and connectivity. Maldives' current development challenges stem from risks from climate change, disaster resilience and environmental sustainability.



Energy demand is expected to grow at more than 8.5% per annum, with heavy dependence on fossil fuels, CO₂ emissions have grown at an average rate of 9% between 2010-2017

Slide 2

Existing consumer appliance financing options in Maldives

Consumer financing is largely made available by Banks and NBFCs in Maldives in form of secured/ unsecured loans/ leases, few examples among the available products in Maldives are listed below :

Bank/ NBFC	Product	Eligibility	Loan Amount (min – max), MVR	Products covered
Bank of Maldives	Lui Loan	Individuals with regular incomes	Up to MVR 15,000	Home improvement purchases, household electrical appliances
	Lui Express	Individuals with employment record	MVR 20,000 – 50,000	As above
	Lui Professional	Employed individuals, salary > MVR 10,000	MVR 50,000 – 100,000	Project finance, capital item purchase
	BML Green Loan	Individuals and businesses	MVR 50,000 – 20 Million	Green technologies such as solar panels, energy efficient equipment, etc.

Existing consumer appliance financing options in Maldives

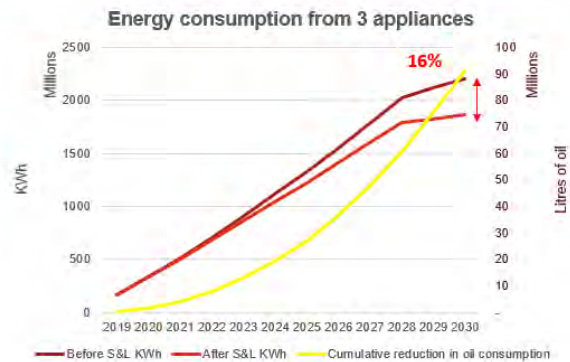
Consumer financing is largely made available by Banks and NBFCs in Maldives in form of secured/ unsecured loans/ leases, few examples among the available products in Maldives are listed below :

Bank/ NBFC	Product	Eligibility	Loan Amount (min – max), MVR	Products covered
Maldives Islamic Bank	Consumer Goods Financing	Employment history with listed employers	As per repayment capacity, capped at 34% of confirmed income	Furniture, electronics and home appliances from listed dealers
	<u>Murabaha</u> General Asset Financing	To be checked	As per repayment capacity, capped at 50% of confirmed gross income	Locally acquired movable assets
Maldives Finance Lease Company	Easy Lease	Employees in government and private sector	As per repayment capacity, capped at 50% of confirmed gross income	Consumer durables and motor cycles
	Lifestyle Lease	Employees of government and government related organizations	MVR 15,000 – 100,000	Motorbikes, furniture, computers, electronic items

Maldives has taken initial steps in developing Energy Efficiency ecosystem with 3 appliance S&L Program

Through the strengthening 'Low Carbon Energy Islands Strategies' (LCEI) project, Ministry of Environment is working to implement energy efficiency standards and labelling program in Maldives.

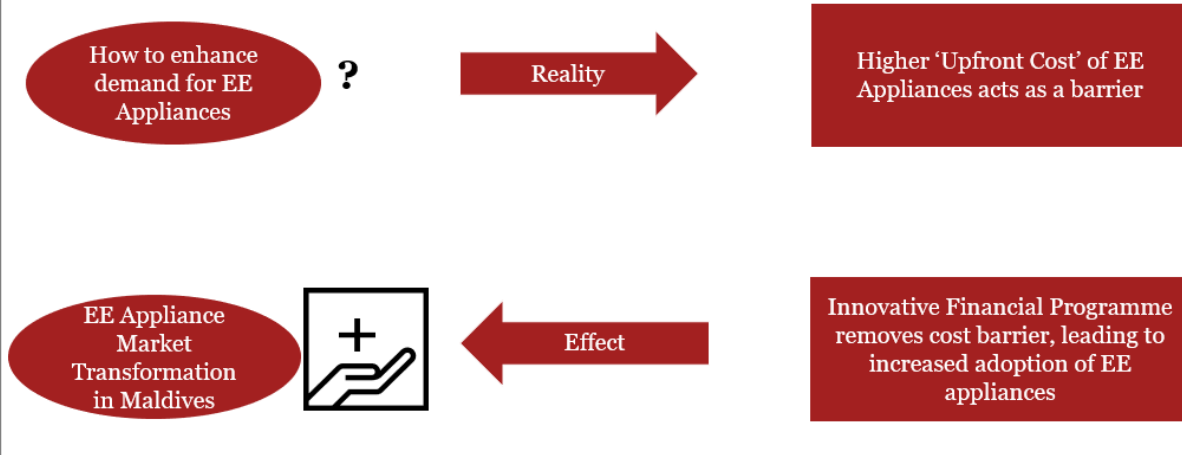
Air-conditioners			Refrigerators			Washing machines		
Country	% by country of shipping	% by country of manufacture	Country	% by country of shipping	% by country of manufacture	Country	% by country of shipping	% by country of manufacture
China	20%	46%	China	17%	36%	China	44%	58%
Singapore	31%	-	Singapore	43%	7%	Singapore	22%	-
Hong Kong	16%	-	UAE	17%	-	UAE	19%	-
Malaysia	12%	32%	Thailand	10%	37%	Thailand	4%	17%
India	11%	-	India	8%	8%			
Thailand	-	11%						



It is estimated that the S&L program for the three appliances will result in overall reduction of energy consumption of 1,326 million kWh, and reduction in 147 MW of generation capacity by 2030. Most of these savings will be accrued from the residential and commercial sector, **subject to demand for EE appliances propelled by innovative financing mechanisms.**

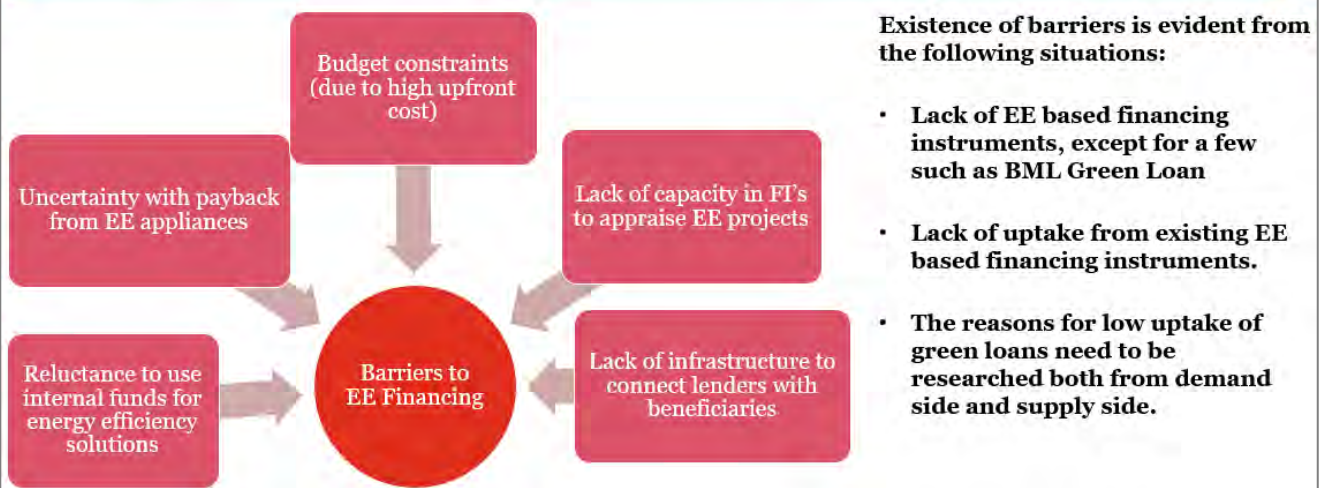
Need for Financial Program for EE Appliances

An innovative financial Programme is required to enhance demand of Energy Efficient appliances by offsetting higher upfront cost as a result of bulk adoption by end users, and increasing the asset quality for financiers by quantifying savings due to energy efficiency



Barriers to EE Financing – Why Innovative Financial Programme

Barriers are mainly centered around issues related to unavailability of incentivised financing whereas, non-financial barriers relate to the gaps in the technical know-how and availability of standards



Benefits of Increased Uptake of EE Appliances

Successful Implementation of Innovative Financial Programme leading to greater uptake of EE appliances contributes to the energy security of the nation

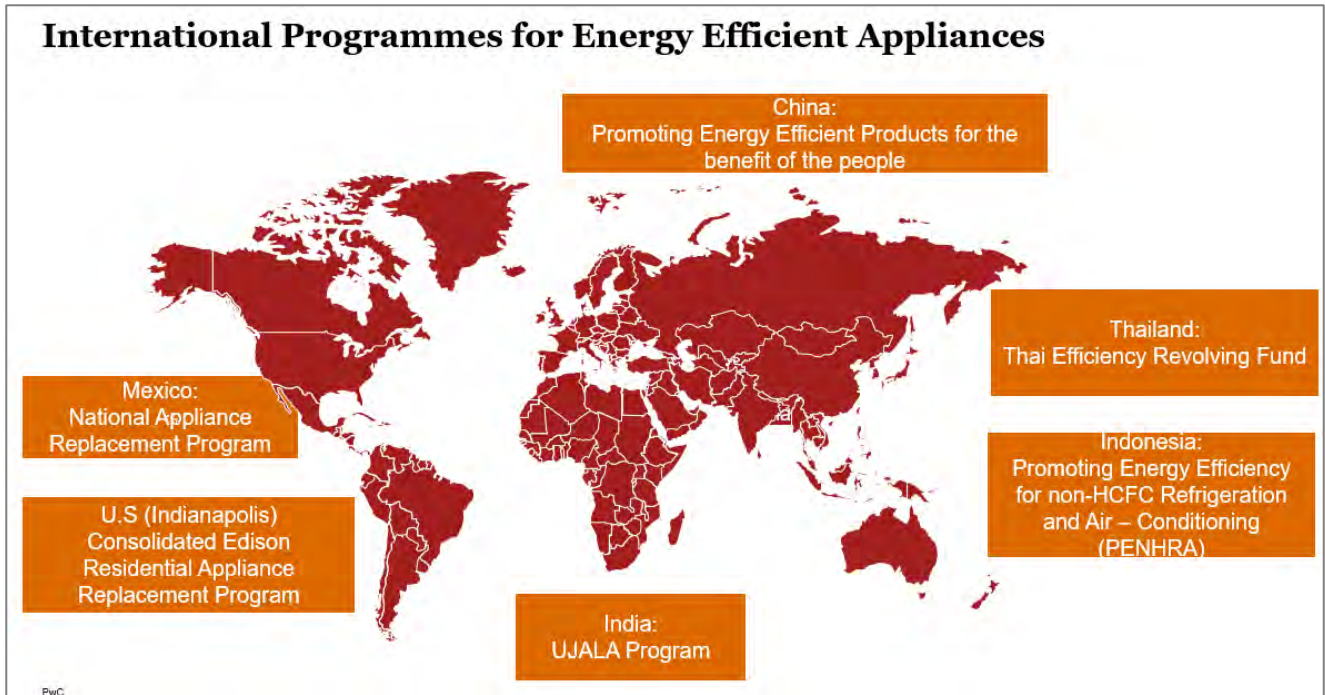
Direct Benefits	Indirect Benefits
Cost savings due to long term energy savings for users.	Contributes significantly to meeting carbon commitments and NDC targets
Leads to cost reduction of EE appliances due to economies of scale as a result of increased demand.	Drives energy efficiency innovation in the market
Energy security and reduced need for energy imports in future leading to reduced government expenditure.	Higher disposable income for end-use sectors
Enhanced repayment capacity of borrowers due to savings in energy cost	Better asset quality for lenders

Suggested list of stakeholders for consultations

Policy makers and regulators	Other Relevant Govt. Agencies	International Development Agencies	Banks/ Lessors	Beneficiaries
Ministry of Environment	Male and other City Councils	Asian Development Bank	Bank of Maldives	End-users
Ministry of Finance	Nationa Bureau of Statistics	World Bank	Maldives Islamic Bank	Bulk-procurers
Ministry of Economic Development	Maldives Customs Service	UNEP	Key banks and NBFCs in consumer financing	Imporers, retailers, etc.
MMA and MEA		GIZ, JICA, other bi-lateterals in Maldives	Others - STO	Any other ?

International Initiatives

Slide 9



Slide 10

Financial Programme focused initiatives in EE observed in International markets

Country	Programme	Year	Features	Impact
Thailand	Thai Efficiency Revolving Fund (EERF)	2003	<ul style="list-style-type: none"> Replacements of conventional chillers with high performance chillers Biogas and power generation from waste Co-generation power plants using biomass 	<ul style="list-style-type: none"> 1170 Mn kWh/year electricity savings 0.98 Mn tons of CO₂ savings 294 projects executed between (2003 – 2011)
China	“Promotion of Energy-Efficient Products to the Benefit of the People”	2009	<ul style="list-style-type: none"> Boosting sales of home appliances Upstream subsidy to manufacturers as refunds for incurred sales 	<ul style="list-style-type: none"> 34 million EE AC's sold Energy Savings of 80 – 100 billion kWh over life time of ACs Revision of existing energy performance standards
Mexico	PNSEE	2004	<ul style="list-style-type: none"> Appliance replacement program with on bill financing Mandatory replacement and recycling of old units 	<ul style="list-style-type: none"> More than 150,000 participants Replacement of 1.7 million old, inefficient Refrigerators and ACs 10,041 GWh of electricity saved over 5 yrs. of program
India	Demand Aggregation with multiple mechanisms	2002	<ul style="list-style-type: none"> LED Distribution program EE Programs for AC, etc. 	<ul style="list-style-type: none"> Reduced energy demand and price of appliances

Thai Efficiency Revolving Fund

About the programme

- Fund's initial capital was solely derived from Thailand's government budget via the revenues from a petroleum tax that were channeled via the ENCON Fund. Department of Alternative Energy Development & Efficiency (DEDE) was the agency for its implementation.
- There were 11 participating banks. DEDE allocated budget for PBs. Banks then lend to clients (**@ low interest rates**) for EE & RE projects. Post project implementation clients pay back the banks and banks further pay back to DEDE. PBs are responsible for monitoring and evaluation of loans. Energy savings are compared to baseline scenario and are monitored by DEDE.
- Program helped increase share of water cooled chillers with better performance achieving 0.68 MWh/year as avg. electrical savings and cost savings of 2.37 Million Baht/year. **Pay back period was 3.90 year.** .

Benefits

294 projects executed

Energy savings	1170 Mn kWh/year
Total Investment	15959 Mn Baht
Monetary Energy Savings	5423 Mn Baht/year
GHG Emission Reduction	0.98 Mn tons of CO2 eq.

Promotion of EE products to the benefit of the people- China

About the programme

- Appliances were subsidized according to energy efficiency performance. Subsidy in the form of refunds were allocated in the upstream for manufacturers.
- Products with subsidy had a separate label for identification by end users.
- Program helped increase share of tier 1 and 2 AC units and led to upgradation of existing MEPS. Incentive program ensured sale of energy efficient appliances
- Market share of efficient products (tier 1 and 2) increased from 5 % to 70 % from 2009 to 2010 post implementation of the incentive scheme.

Benefits

34 million EE AC's sold

Energy savings	10 TWh
Annual energy savings (tons)	80 – 100 billion kWh
Lifetime (months)	18
Annual cost savings (USD)	200 million

Efficient Lighting & Appliance Project (PNSEE) - Mexico

About the programme

Government of Mexico conducted mass scale replacement project for old refrigerators and air conditioners with energy efficient models using on-bill financing model.

How they implemented the programme?

- Mandatory replacements of appliances in working condition with selection criteria for scheme were defined.
- Old appliances were collected from consumers and sent to scrapping centres for dismantling and recovery of refrigerants. Participating retailers were in charge of logistics. Budget of 30 USD/unit was allocated for collection and recycling.
- Program focused at improving ability of low-income households owning less efficient appliances to purchase efficient ones
- Innovative feature of PNSEE was that participants could finance their appliance purchases through their utility bills. 150,000 end users

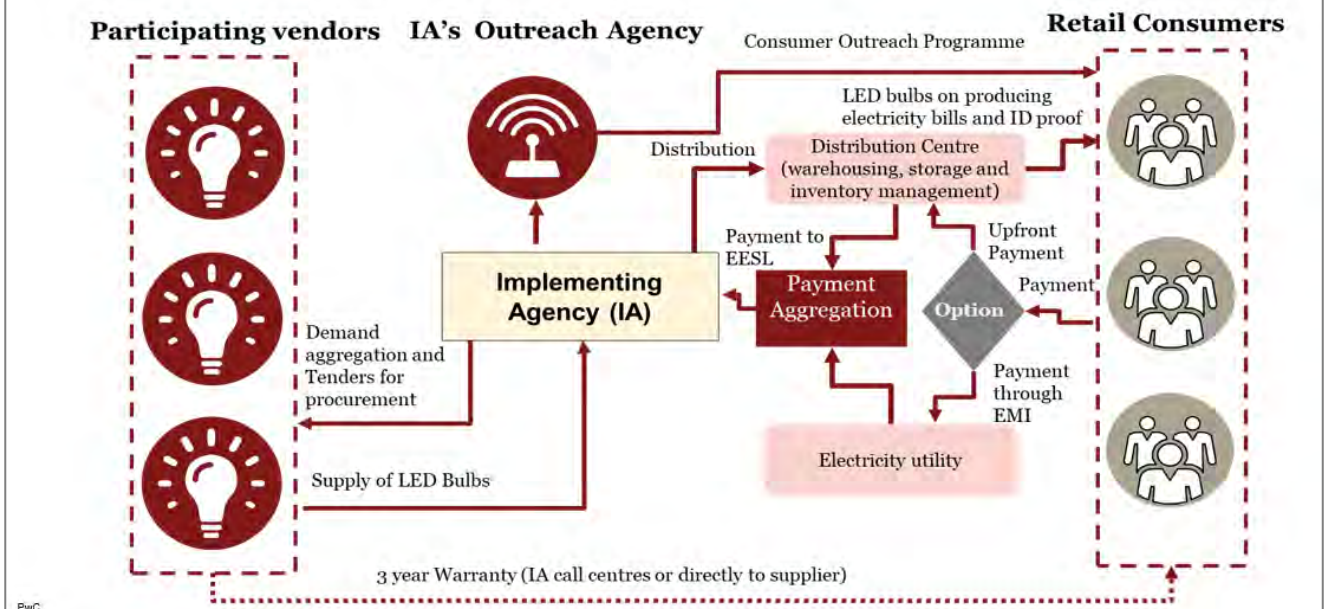
Benefits

Recycling of AC's and refrigerators by 150,000 participants (retired refrigerants)

Replacement of 170,000 AC's and 1.5 million refrigerators

GHG savings	1.7 million tCO ₂ e
Energy savings	NA
Lifetime (Yrs.)	5
GHG savings	5.1 million tCO ₂ e
Energy savings	10,041 GWh
Lifetime (Yrs.)	5

Case Study of Government LED DSEE implementation: UJALA – The national LED distribution program of Indian Government supported by ADB



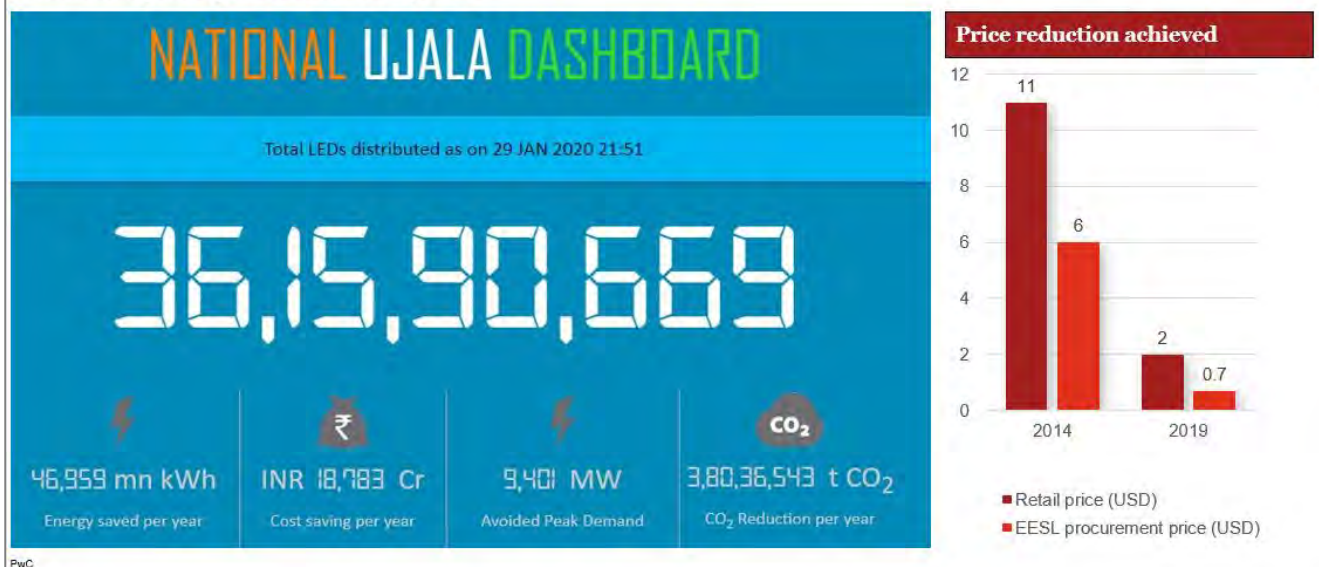
EESL's business models have played an important role in achieving the larger objectives of scaling up EE across the country

The EESL business models have been designed to enable easy adoption of energy efficient solutions at large scale that does not require public funds. EESL typically aggregates demand, and procures the energy efficient equipment by competitive bidding, thus creating economies of scale for the suppliers. This leads to price reduction as evident in all programmes of EESL. The upfront investment, and hence, the financial risk is borne by EESL.

Energy Services Company (ESCO) Model	Project Management Consultancy (PMC) model	Revenue Based Energy Services Company (RESCO) model	Trading model
<ul style="list-style-type: none"> EESL installs energy efficiency services at no upfront cost to the beneficiaries. EESL supplies, installs, commissions, and maintains the system. EESL recovers its investment through monetized shared energy savings. 	<ul style="list-style-type: none"> The upfront investment is done by the client and EESL assists in implementation and maintenance over the term of the contract. EESL provides the expertise and skills and charges a mark-up (2% to 12%), over the procurement price achieved through competitive bidding. 	<ul style="list-style-type: none"> There is zero upfront cost of installation of the energy efficiency equipment. Energy produced and supplied is charged on monthly or annual basis to the beneficiary. 	<ul style="list-style-type: none"> EESL procures the Energy Efficient Appliances and sells directly to the end consumers. EESL employs various channel partners – suppliers, marketing and awareness agencies, distribution agencies, and service / replacement agencies.

Impact of LED distribution scheme

UJALA has resulted in energy saving, cost saving, avoided peak demand and reduction of CO₂ emissions, which are monitored and tracked on a real time basis using a dashboard; Procurement prices of LEDs have reduced substantially compared to market prices



Type of Financing - Summary

Debt, Equity, Grants and Risk Mitigation are four financing options broadly used. A number of variations of these types are applicable for energy efficient appliances. Indicative list is summarized based on global examples.

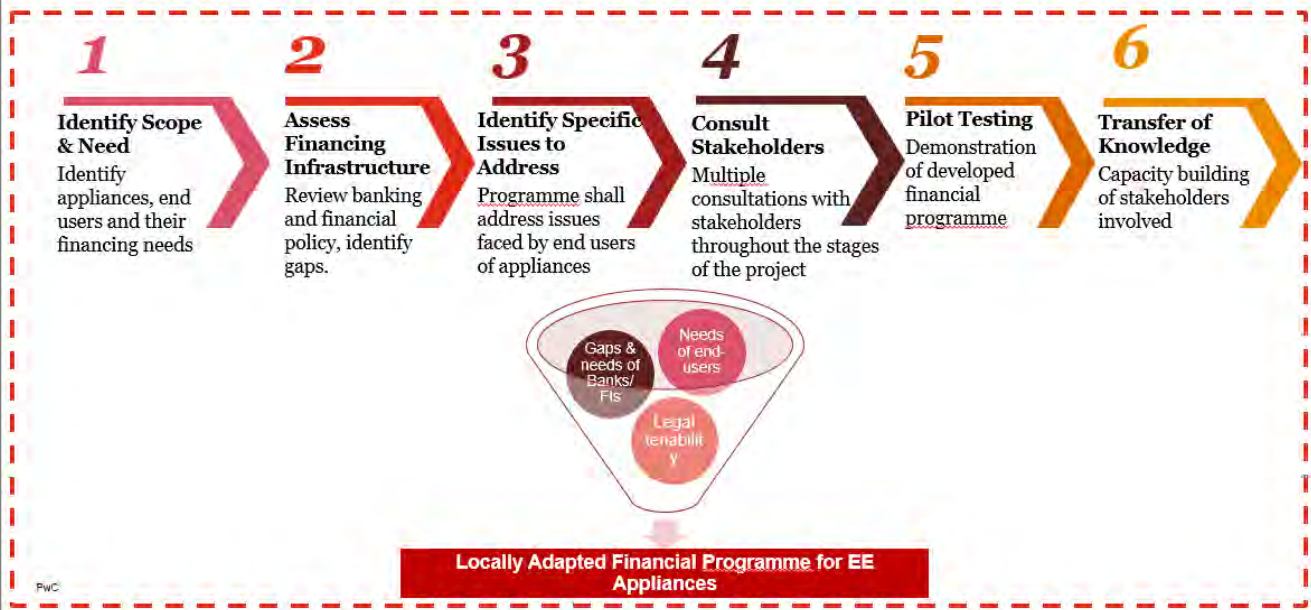
Financial Instruments	Applicability
Demand Aggregation	Applicable for all appliances across sectors such as domestic, municipal, transport, industry, etc. Availability of a robust demand aggregator is the key requirement here
On Bill Financing	For household and commercial establishments (hospitality, and other commercial establishments). Central entities willingness for OBF as a demand reduction measure is critical for this measure.
Performance Based Financing	For industrial, commercial, institutional (government departments, municipality and non-government). Not so effective for consumer financing for household appliances.
List Based Finance	Predominantly applicable for residential, commercial and industrial sectors, but can be extended to other sectors also.

PwC

PwC's Approach & Methodology

Our Approach to develop financing programme for EE Appliances

Open, Adaptative, Flexible and Consultative Approach



PwC

Phases of Development of Financial Programme

Inception Phase

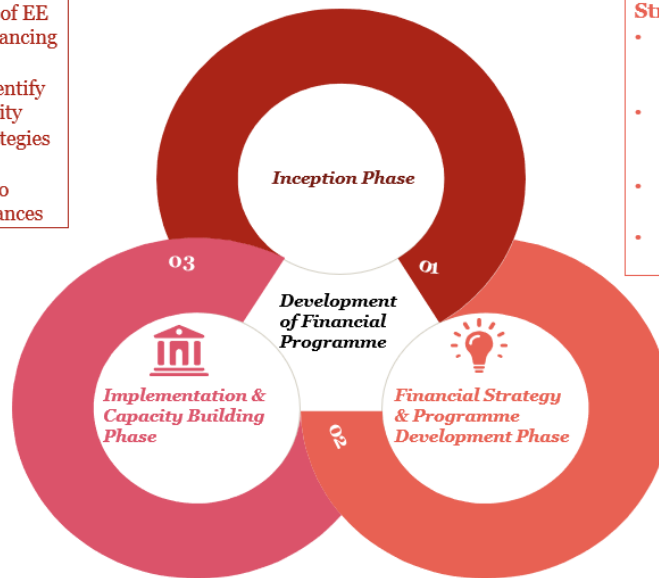
- Review of reports on financing of EE technologies, existing green financing instruments, case studies.
- Stakeholder Consultation to identify market gap and financial capacity
- Identify potential financial strategies and sources of finance
- Identify policy and regulation to influence purchase of EE appliances

Implementation & Capacity Building

- Define implementation plan, operational guidelines
- Conduct piloting of programme
- Develop marketing and communication strategy
- Develop training material and conduct capacity building

Development of Financial Strategy & Financial Programme

- Assess and propose financial instruments with risk mitigation strategies
- Propose business models, identify stakeholders involved, and develop concept note
- Forecast benefits of implementing the financing scheme
- Develop MRV mechanism and disposal guidelines



PwC

Inception Phase

The inception phase focuses on establishing the assignment blueprint through a consultative process with stakeholders. The aim here is to conduct initial research, document review and consultations to identify potential strategies, policies, regulation, capacity, and gaps for developing financial programme.

Review existing financing situation, financing policies, case studies in the context of EE and appliances in Maldives.

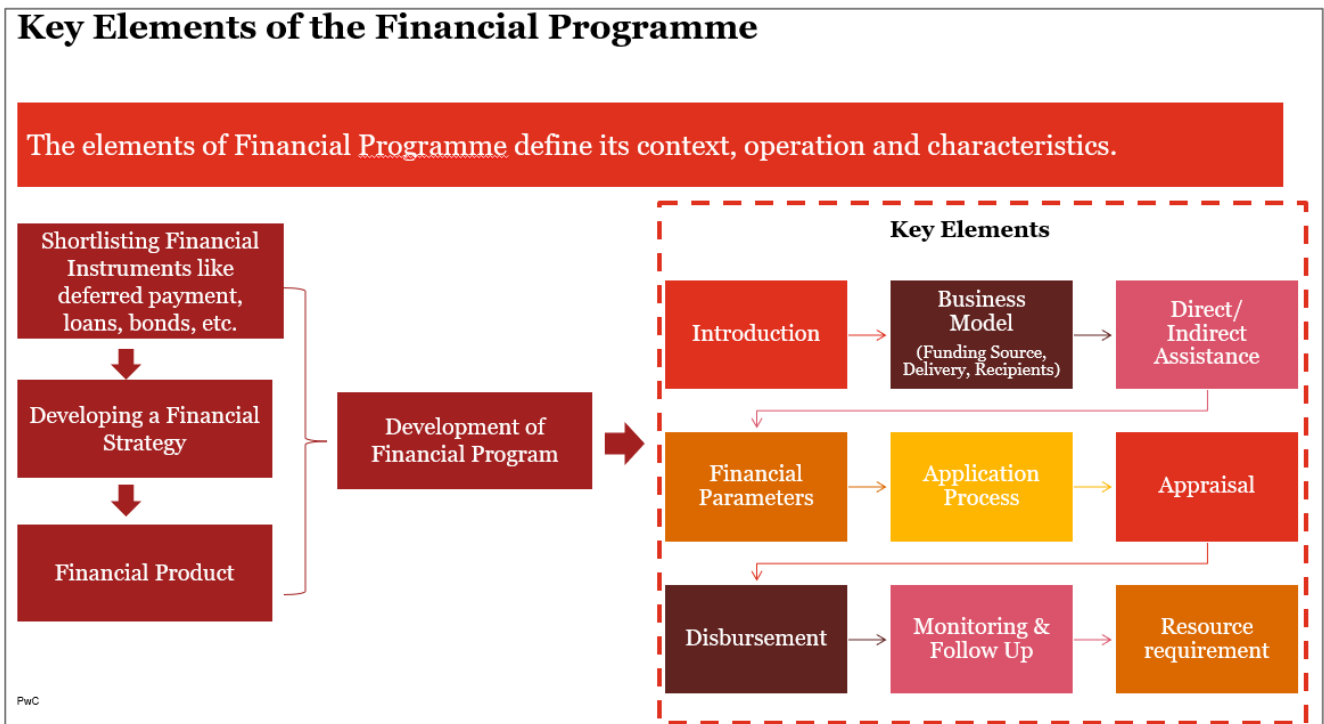
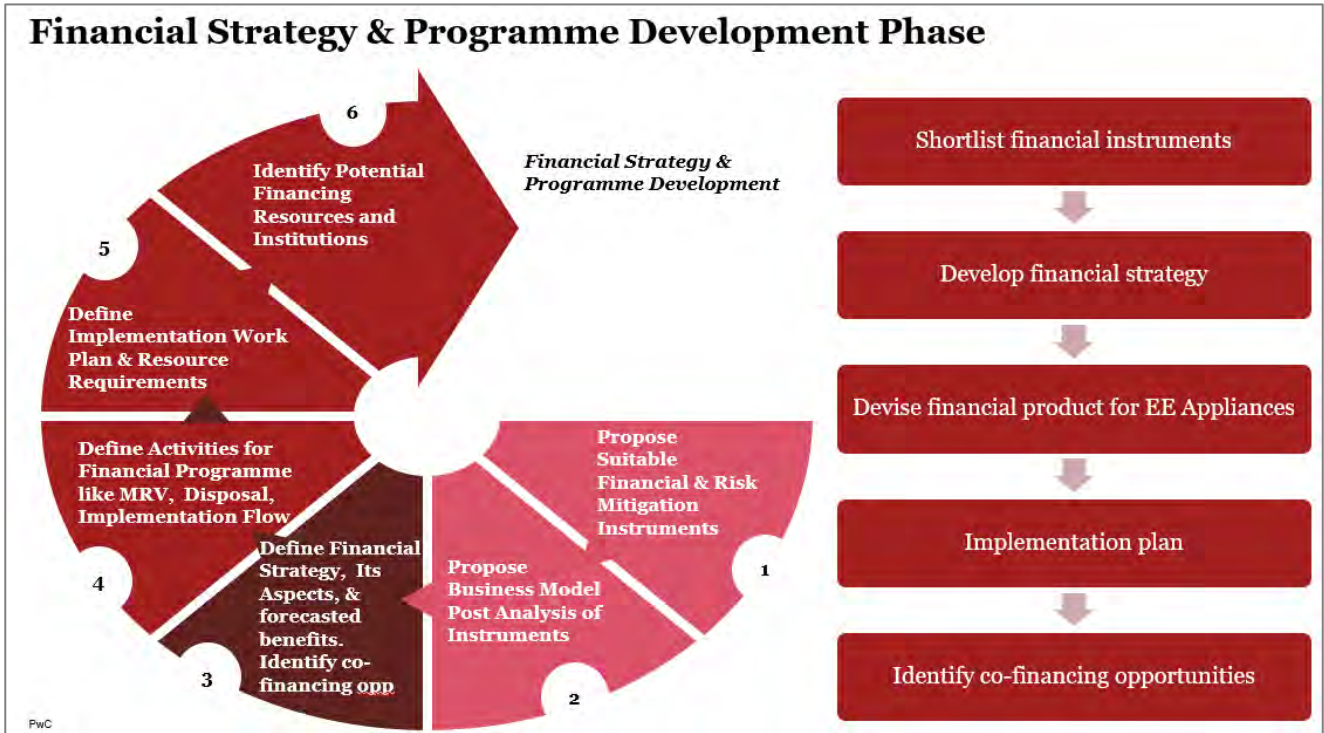
Based on a framework for estimating potential impact of appliances, rank them in order of preference for financial program with the gathered data during inception phase



Discussions on work done under the project, Identify Stakeholders, Finetune Approach & Methodology

Consultation meetings with stakeholders:

1. Ownership levels of appliances in market (retailers, distributors, importers)
2. Understand financing needs of end users – residential, professional, govt. sectors
3. Understand financing opportunities and gaps in present case from FI's



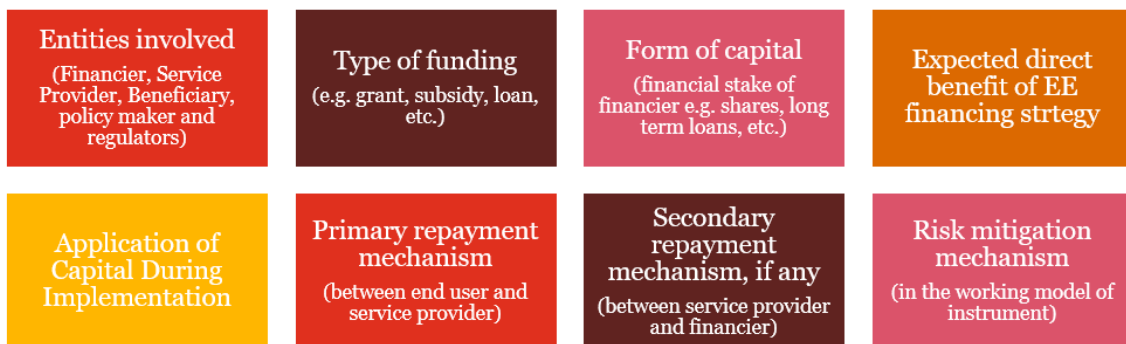
Selection of Potential Financial Scheme

Framework for Financial Scheme Selection & Examples of Possible Instruments

Framework for Scheme Selection		Illustrative List of Possible Instruments				
	Parameters	ESCO Financing	List based finance	Demand aggregation	On-bill financing	Others like: Leasing
Cross sector/user-group applicability of financial model	EE Technical competence required by Banks	High	Low to Medium	Low to Medium	High	High
Ease of implementation of financial strategy	Understanding among stakeholder institutions	TBD	TBD	TBD	TBD	TBD
Alignment with financial market maturity	Understanding among end-users	TBD	TBD	TBD	TBD	TBD
Assess risks that can crop up during lifecycle of financial instrument	Availability of regulations	TBD	TBD	TBD	TBD	TBD
Forecast benefits of instrument in increasing uptake of EE appliance	Alignment of policies and legal framework	TBD	TBD	TBD	TBD	TBD
	Repayment risk	TBD	TBD	TBD	TBD	TBD
	Institutional capacity to implement	TBD	TBD	TBD	TBD	TBD

Defining the Financial Strategy – Key Elements

Financial strategy will provide insights into overall structuring of the financial programmes and its key functional domains.



Some of the above elements may at times be clubbed together, or dropped, or new specific elements added to the strategy, based on Maldivian context, legal framework and stakeholders' inputs.

Implementation & Capacity Building Phase

- Implementation of financial strategy and programme will involve documenting operational guidelines of the programme, its piloting and fine-tuning. This will be followed with training the stakeholders involved.
- The outcomes of this phase will result in enhanced capacity of participating banks in implementing the financial programme on their own.
- Dedicated 2 – 3 days training programmes will ensure addressing the issues identified during piloting of the programme
- The team will also seek inputs from other funders/ donors to support the financial programme, in consultation with the participating FIs and ME.



Financial Programme Guidelines

Operational guidelines of financial programme will be developed to assist participating financing institutions to institutionalise/internalise the programme and keep track of the workflow.

Guidelines would empower involved financial institutions or other entities to know their responsibilities and the structure for the flow of information during operation of programme.



Above list to be reviewed and compared with the existing documents/ SOPs of the participating financial institutions. The guidelines and documents will be finalized after incorporating the feedback from ME and FIs.

Development of Marketing and Communications Strategy

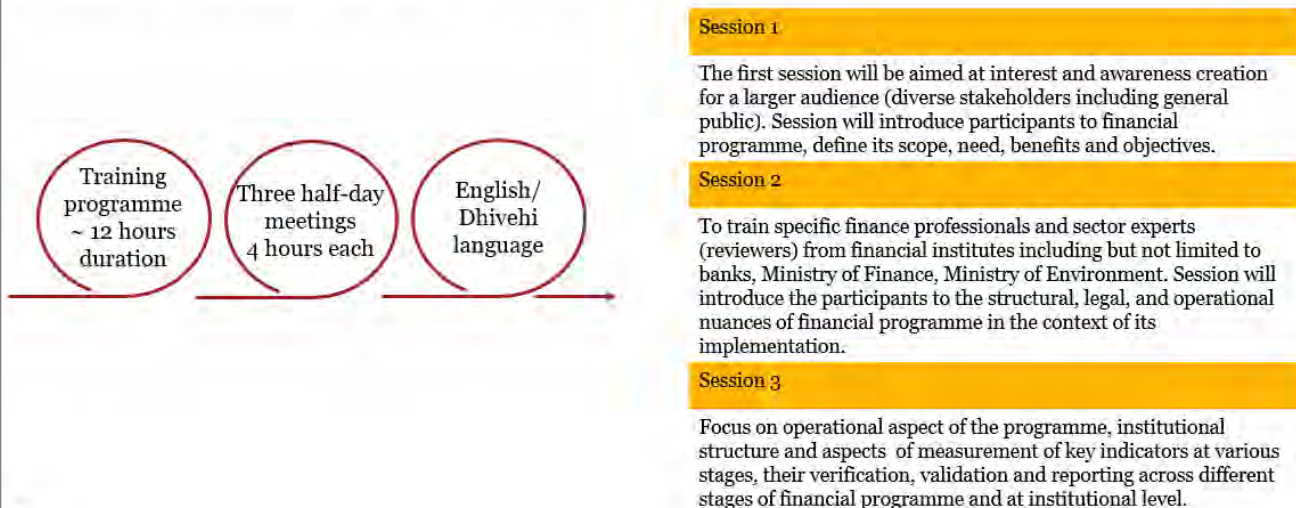
PwC will assist the financing institution(s) to identify and profile the target audience and prepare presentations for various promotional and marketing avenues to disseminate the financial programme.



Above approach for developing the marketing and communication plan will be discussed with ME and stakeholders involved to best suit the local needs and the developed programme. Accordingly, the medium of delivery and information to be imparted will evolve during the course of the project.

Training & Capacity Building of Stakeholders

Training materials would be developed with the aim of imparting complete knowledge and know-how of the financial programme and its operation. Training topics would materialise as per the development of financial programme in consultation with key stakeholders.



Project Timelines

Project Activities	Months from contract award									
	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10
Inception Phase – Setting the Blueprint (Task 1 and Task 2)										
Task 0: Kick-off meeting with ME	█									
Task 1: Review Relevant Reports & Preliminary Consultations	█									
Task 2: Inception Workshop for Stakeholders	█									
Research and Development Phase - Financial Strategy & Programme										
Task 3: Development of Financial Strategy and Programme		█								
Sub-task 3.1: Propose Financial & Risk Mitigation Instruments		█								
Sub-task 3.2: Financial Strategy Development		█								
Sub-task 3.3: Financial Programme Development			█	█	█					
Task 4: Consultation Workshops 1 & 2		█			█					
Implementation Phase – documentation, piloting & capacity building(Task 5.1, 5.2)										
Sub-task 5.1: Develop Guidelines & Toolkit for Implementation						█	█	█		
Sub-task 5.2: Piloting of Financial Programme							█	█	█	█
Sub-task 5.3: Capacity Building & Knowledge Transfer						█	█	█	█	

Project Update

Project update

Sr. No.	Task	Status
1	Inception Workshop and presentation	Current
2	Review of existing information <ul style="list-style-type: none"> • Reports developed by project on financing of EE technologies • Analysis of existing green financing instruments/ case studies in local context • Existing financial mechanisms of appliances (conventional) • Existing policies and regulation 	Work in Progress

Points for discussion

Market size and portfolio

1. What are your new and innovative products for appliance financing?
2. Do you have energy efficiency as a criteria in any of your consumer financing products?
3. What is the approx. size of your total portfolio for household financing?

Incentives for Energy Efficient/ Green Assets

1. What kind of incentives may work for influencing consumer decisions towards buying efficient appliances?
2. Is there any product in your portfolio/ policy-pool that incentivises any particular buying behaviour?
3. How do you undertake checks for fake appliances in the market from entering your asset books?

Current gaps and ways to address

1. What, in your opinion, will be the foremost challenges in developing and implementing such energy efficiency based lending programme?
2. What, in your opinion, is the best approach towards developing energy efficiency based lending programme?
3. What support requirements do you foresee in undertaking such a programme on your own?

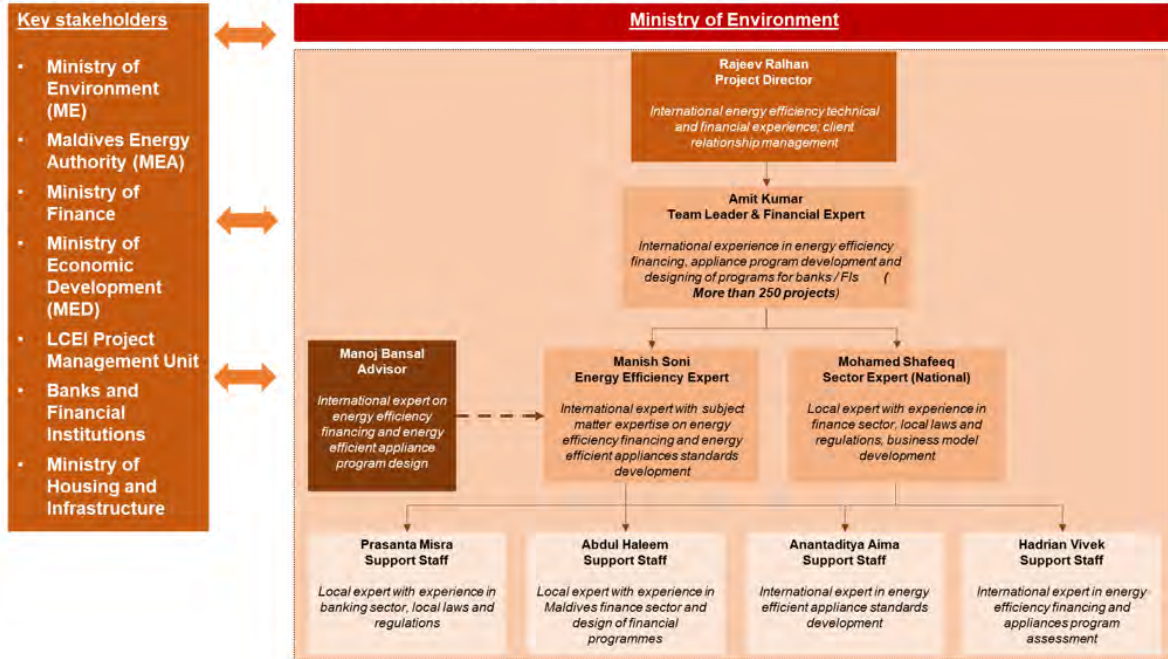
About PwC – How We Are Aligned?

For a successful regional and global best practices driven execution PwC, Maldives has tied up with Riyan Pvt Ltd and PwC, India as consortia partners

Alliance Members	Maldives region	Financial Programme Development	Energy efficiency	Exp. With ME	Responsibility
PwC Maldives (Lead firm)					<ul style="list-style-type: none"> •Overall coordination with Ministry of Environment •Planning and design of consultation workshops and training programs •Data collection from local stakeholders •Coordination of stakeholder meetings
PwC India					<ul style="list-style-type: none"> •Overall project management and execution of activities •Development of financial programme •Development of detailed guide for financial programme •Design of training programs and knowledge material •Conducting the training program
Riyan Private Limited					<ul style="list-style-type: none"> •Participation in stakeholder consultations and workshops •Assist in development of reports and workshop material •Review of project deliverables •Assist in development of financial programme •Provide inputs to the development of operational manual for financial programme

Core experience Particular strength Project experience

PwC has identified a cross sectoral mix of multi competency and senior experienced staff for the assignment



Thank you

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**Ministry of Environment, Climate Change and
Technology**

Development of Financial Programme for Energy Efficient Appliances

Financial Strategy Report

**Promoting Energy Efficient Buildings through
Strengthening Low Carbon Energy
Island Strategies (LCEI) Project**



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1. Project Background

The Republic of Maldives is highly dependent on imported fossil fuels to meet its energy needs. Furthermore, as a Small Island Developing State, it also relies on fossil-fuel based transport for the imports that provide the needs and wants of the population. As a result, the cost of energy generation and energy dependent appliances is both high and unreliable, causing financial constraints on national budget and individual finances.

Government of Maldives has initiated the “Strengthening Low Carbon Energy Island Strategies Project (LCEI)”, which is designed with a goal of market transformation for energy efficient technologies in buildings and the built environment in the Maldives to promote energy efficiency investments in buildings. The project not only targets energy efficient technologies but also encourages the use of emerging low carbon energy technologies for the building sector. LCEI Project is funded by the Global Environment Facility (GEF) and implemented by the Ministry of Environment with support from UN Environment. It aims to reduce greenhouse gas (GHG) emissions through energy efficiency in the building sector. Appliances and their use in building sector has been identified as the focus area for energy efficiency as per the National Energy Policy and Strategy (2010). As part of the LCEI project, some of the initiatives already taken by Ministry of Environment (ME), Government of Maldives, are:

- *Development of Standards and Labelling (S&L) programme for air-conditioners, refrigerators, and washing machines. The regulation is expected to be implemented that shall shift market to high quality, low impact appliances.*
- *Energy efficiency guidelines for buildings are being developed that shall lay the minimum energy efficiency requirements for buildings in Maldives.*
- *Life cycle cost based public procurement guidelines thereby promoting energy efficient products and technologies*
- *Establishment of the ‘Green Loan’ under Bank of Maldives Green Fund for increasing investment in energy efficiency and renewable energy solutions*

These initiatives indicate that Maldives is on a path of a transformational journey towards building its climate resilient capacity. It is anticipated that in near future the market will have higher share of energy efficient products and technologies.

One of the key barriers identified in uptake of energy efficient appliances is higher upfront capital expenditure. This calls for a need to develop an innovative financial programme such that it can compensate for incremental cost of purchase by offsetting the higher upfront cost of purchase as a result of bulk adoption by end users, and lead to greater uptake of energy efficient appliances. At the same time, the financial programme needs to be robust and easy to operate. *On account of above listed foreseen challenges and to bring in energy efficiency market transformation with introduction of S&L regulation for appliances, it is necessary for Maldives to have a robust and locally adapted financial programme to promote greater adoption of energy efficient appliances across sectors and market segments.* At the same time, utmost care shall be taken towards making the programme a sustainable one such that the programme supports purchase of energy efficient appliances and leads to recovery of capital through operational energy cost savings. The scope of the assignment includes:

1. Inception workshop and review of existing financing mechanisms to identify stakeholders and workable financing mechanisms as per the local context.
2. Develop draft financial strategy and draft financial programme
3. Finalize draft strategy and programme after stakeholder consultations
4. Conduct consultation workshops and meetings with stakeholders for establishing financial strategy and financial programme.
5. Implementation of financial strategy and financial programme.
6. Capacity building and training of stakeholders.

Ministry of Environment engaged a consortium comprising of PwC Maldives, PwC India, and Riyan Pvt Ltd. to carry out the activities as per scope of the project on ‘Development of financial programme on Energy Efficient Appliances’. As a first step in the assignment (as mentioned in scope of the assignment), the project team organized an inception workshop. The approach and methodology for the project with key findings during inception phase, and detailed proceedings and agenda of the workshop are presented subsequently.

1.1. Need of financial programme for energy efficient appliances

Ministry of Environment (ME) has developed the S&L programme for 3 appliances: air-conditioners, refrigerators, and washing machines, and a regulation stating the same shall be notified by the Government of Maldives. It is estimated that the S&L programme for the three appliances alone will result in reduction of energy consumption of 1,326 million kWh (~16 % projected to 2030), GHG emission reduction of 980,321 tCO₂ equivalent and reduction in 147 MW of generation capacity by 2030¹. Most of these savings will be accrued from the residential and commercial sector. However, there can exist other appliances and energy consuming technologies that may further add to realization of energy efficiency in the long run. Below figure provides projection of energy saving potential estimate based on our analysis².

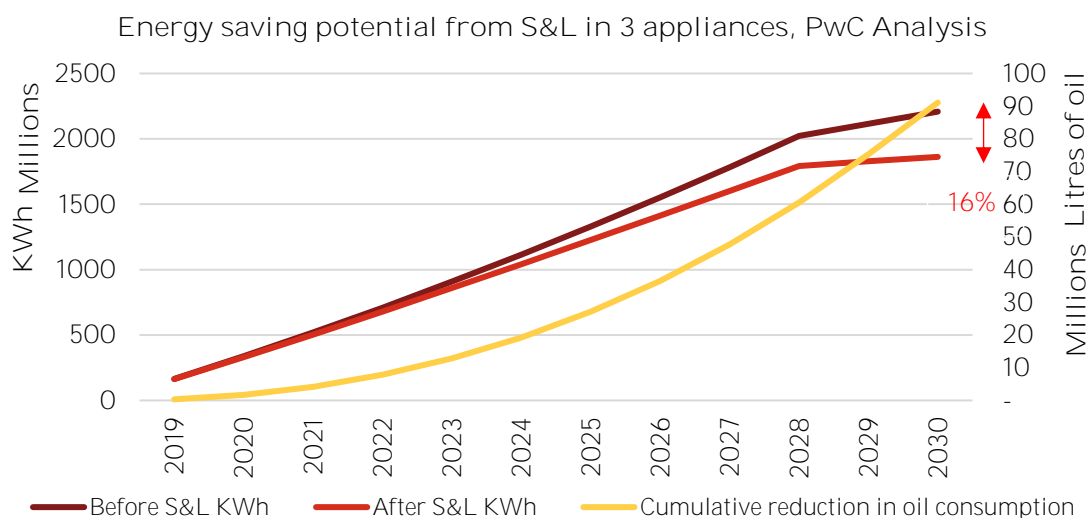


Figure 1 Energy saving potential from S&L in 3 appliances

Above findings, and other initiatives in the country indicate that Maldives is on a path of a transformational journey towards building its climate resilience capacity. Appliances like air-conditioners, refrigerators, fans, lights etc. are used by varied types of end users including – residential, commercial, industrial, government sectors, and with progressive energy efficient guidelines, it is anticipated that in near future the market will have more energy efficient products and technologies.

Adoption of efficient appliances would require comparatively higher upfront capital expenditure. Consumer behavior, preferences, and buying capacities across end users thus needs to be assessed in the context of increasing the uptake of energy efficient appliances. This calls for a need to develop an innovative financial programme such that it can compensate for higher cost of purchase by *offsetting the higher upfront cost of purchase as a result of bulk adoption by end users*, and lead to greater uptake of energy efficient appliances. At the same time, the financial programme needs to be robust and easy to operate. *On account of above listed foreseen challenges and to bring in energy efficiency market transformation with introduction of S&L regulation for appliances, it is necessary for Maldives to have a robust and locally adapted financial programme to promote greater adoption of energy efficient appliances across sectors and market segments.*

¹PwC analysis as part of ongoing project on “Development and Implementation of Energy Efficiency Labelling Program in Maldives”. As part of ongoing project the analysis work was submitted to Ministry of Environment and Energy

² Reference as above

At the same time, utmost care shall be taken towards making the programme a sustainable one such that the programme supports purchase of energy efficient appliances and leads to recovery of capital through operational energy cost savings.

1.2. Scope of work and work status

Project team has divided the entire scope of work mentioned in the terms of reference (ToR) as per three implementation phases, tasks and sub-tasks, as tabulated below, for better understanding of assignment and structuring our Approach and Methodology. The inception phase has been completed successfully and this report details out the draft financial strategy for the development of financial programme. The scope of work and activities with their status highlighted in color code is provided below:

Table 1 Scope of Work & Activities

Tasks and Sub-tasks	Scope of Work and Activities
Inception Phase – Setting the Blueprint	
Task 1.0	Review reports on existing financing mechanisms developed under the LCEI project and other reports – desk research and preliminary consultations with stakeholders,
Task 2.0	Conduct 1-day inception workshop to understand present relevant findings of Task 1, identify existing policy, gaps, identify appliances, discuss possible financial strategies, case studies
Research and Development Phase – Extensive stakeholder consultation and programme development	
Task 3.0	Develop financial strategy and financial programme
Sub-task 3.1	Propose financial and risk mitigation instruments and propose business model and interaction between stakeholders (providers – financial entity – government- others)
Sub-task 3.2	Financial Strategy – Identify stakeholders involved, develop concept note defining financial strategy, identify forecasted benefits by implementation of financing schemes in terms of investments and impacts (GHG emissions avoided as a result of EE potential)
Sub-task 3.3	Programme Development – Define activities for the financial model like MRV, disposal, resources needed, implementation work plan, and identify international financing sources to strengthen and co-finance the financial programme
Task 4.0	Conduct consultation workshops and meetings with key stakeholders in order to establish the financial programme and strategy as covered in Task 3.0. Consultation workshops will be performed in parallel with Task 3
Implementation Phase – Demonstrating the programme and capacity building of stakeholders	
Task 5.0	Implementation of the financial strategy and financial programme
Sub-task 5.1	Development of toolkit, guide and documents to support implementation of financial schemes by any financial institute (templates for calculation, formats, etc.). This shall include operational process, operational guidelines, financial strategy, entities involved in scheme, eligibility criteria, and other aspects. Also, develop marketing and communication strategy with supporting presentations.
Sub-task 5.2	Implementation of MRV, piloting demonstration of developed financial strategy and programme, facilitate overall implementation of financial programme.
Sub-task 5.3	Build Capacity of stakeholders – Conduct training programs and develop relevant training material. Conduct 1-day awareness workshop on developed financial strategy and programme, and at least 2-day training workshop on implementation of financial strategy and programme.
Color Code	Task Status

	Tasks Completed
	Tasks Covered in this report
	To be covered in subsequent stages of the project

Brief on Activities Completed Thus Far & Findings from Inception Phase

On road to develop a robust financial strategy and a financial programme for Energy Efficient Appliances in **Maldives, a number of activities were initiated in the inception phase and subsequently in the ‘Research & Development Phase’.** The following activities have been completed:

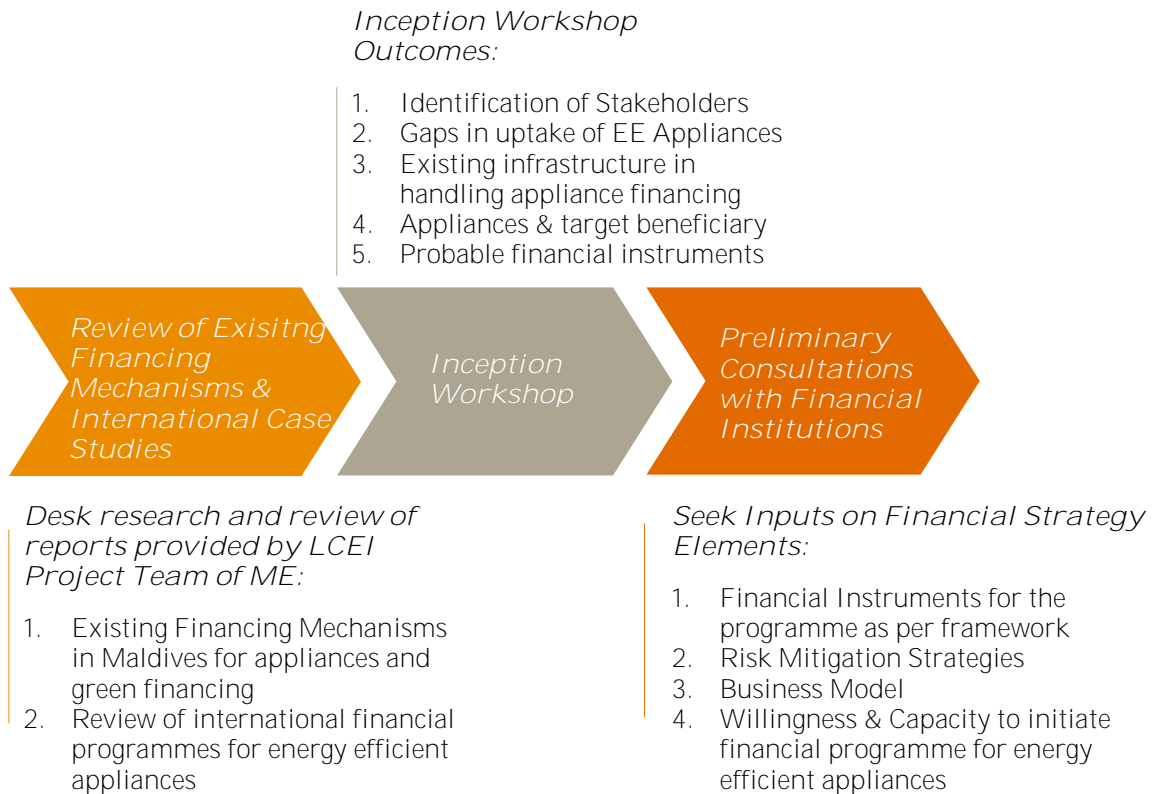


Figure 2 Activities Completed Thus Far

The findings up to the inception phase were presented in detail in the “Inception Report” that precedes this report. This report presents an in-depth analysis of the development of draft financial strategy which is one of the major activities of ‘Research and Development Phase’ of Financial Programme development. ‘Financial Strategy’ is a plan of action to develop a financial programme. The strategy shall enable one to assess financial need, resources, and supporting structure that includes key actors and flow of information to fulfill the needs of the financial programme. Project team’s approach and methodology to develop a financial strategy are elaborated next in subsequent section.

2. Introduction to report on Financial Strategy

The outcome from inception phase resulted in deriving the key financial elements that are required for further study, such as, the need for reducing upfront payment for purchasing a commodity, relevance of a concessional list-based financing approach as the ideal strategy and the possibility of enforcing a mandatory regulation to promote energy efficient appliances. Draft financial strategy report thus enunciates the findings for drafting a robust financial strategy.

This phase comprises of secondary review of existing financial schemes (Maldives and globally practiced), shortlisting of instruments³ applicable to Maldives & appliance sector, proposing the relevant instrument and the business model and forecasting of benefits associated with implementation of the strategy. It also important to note that consultations with stakeholders were conducted to identify the relevant instrument and the underlying risk mitigation measures that need to be deployed for safeguarding the stakeholders from any failure. To develop the financial strategy, a step-wise approach was adopted and the illustration of the same is shown below:

Table 2: Approach and methodology for developing the financial strategy and programme

Step	Description
Desk research	<ul style="list-style-type: none"> Review of existing appliance and consumer financing schemes in Maldives Review of globally endorsed energy efficiency financing schemes Shortlisting of potential financing schemes applicable for an appliance programme
Stakeholder consultations	<ul style="list-style-type: none"> Consultations with stakeholders to validate the findings from desk research and also identify the most relevant instrument based on a scoring framework Consultations with banks and NBFCs to understand the existing financing schemes, procedures for assessing the consumers and other risk mitigation processes adopted for consumer financing
Propose financing instrument and business model	<ul style="list-style-type: none"> Based on findings from the consultation, propose the appropriate financing instrument and business model For the identified model, propose key elements that could form the strategy and develop the outline of the model including flow of funds and lending process Identify the supporting mechanisms, stakeholders to be involved in the strategy and the underlying benefits & challenges of this strategy
Propose risk mitigation measures	<ul style="list-style-type: none"> Conduct review of existing risk mitigation measures prevalent in Maldives financial sector Propose risk mitigation instruments for the proposed financing instrument

³ A 'Financial Instrument' is a monetary contract that gives rise to a financial asset of one entity and a financial liability or equity instrument of another entity. Financial instruments may be categorized by "asset class" depending on whether they are equity-based (reflecting ownership of the issuing entity) or debt-based (reflecting a loan the investor has made to the issuing entity). In this context, this study was initiated with the objective to develop an innovative financial programme for scaling up investments in energy efficiency appliances thereby reducing the associated energy use and emissions arising from appliances.

Forecasting benefits

- Conduct scenario testing of the financing instrument
- Assess investment requirement and forecast benefits
- Quantify energy savings and associated GHG emission reductions from the financial programme

In line with above, this report presents the detailed outline of the draft financial strategy (comprising of the instrument and business model) and the underlying steps that were conducted for arriving at the strategy. The report also presents a detailed outline of the forecasted benefits, both from a financing perspective (increase of sales of energy efficient appliances vis a vis the budget requirements) as well as from the energy efficiency perspective (energy savings and emission reductions).

The proposed instrument would be validated through discussions with the Ministry of Environment (ME) and other key stakeholders before finalizing the strategy for implementation. The implementation stage would involve developing the guidelines, pilot demonstration to study the effectiveness of the strategy and conducting capacity building for stakeholders to implement the strategy. These would be presented in the subsequent reports.

3. Development of financing strategy and programme

3.1. Review of Secondary Data to Analyze Financing Situation and S&L in Appliances

As a first step, a review of the national financing practices in Maldives, the green financing schemes offered by existing banks, the draft documentation developed as part of Standards and Labelling programme, assessment reports on appliances developed by international development institutions⁴, trade data of appliances⁵, and a review of international case studies on energy efficiency financing was conducted. In addition, reports shared by LCEI project team of ME were also reviewed. These included:

- Globally used financing mechanisms and business models for energy efficiency projects and energy efficient appliances
- Assessment of finance sector to analyze consumer finance options in Maldives including financing for clean energy purchases, conventional appliances.

Based on the secondary research, the compiled list of existing financial schemes to promote clean energy in Maldives is presented in the table below:

Table 3: Financing schemes to promote clean energy in Maldives

Scheme	Programme
BML Green Loan by Bank of Maldives	It is a concessional loan product for individuals and businesses and was launched in 2016. BML Green Loan is targeted for individuals and businesses looking to invest and promote the use of green technology and resources. Eligible individuals or businesses have the opportunity of obtaining a loan value from MVR 50,000 to up to MVR 20 million. The total fund value was MVR 500 million. The Green Loan is available for individuals and businesses seeking to finance environmentally friendly green technologies such as solar panels for power generation, photovoltaic panels and systems, or energy efficient equipment and appliances. Concessional loans offered at Interest rates of 11 %.
FRESA (Fund for Renewable Energy System Applications)	Targeted to support RE projects that can supply power and energy services. There is an allocation system within FRESA where funds are allocated for small standalone RE projects such as household biogas digestors, small PV, and wind systems and renewable energy supported livelihood projects. Under the scheme 80 % allocation is for Loan size of more than MVR 50,000 and 20% allocation is for loan size of less than 50,000 MVR.
SREP	This refers to “Scaling Up Renewable Energy Program”. Developed by Government of Maldives, under the leadership of Ministry of Environment and Energy, SREP Investment Plan (IP) is targeted to transform the electricity sector and to develop renewable energies on a large scale. Through this IP, Maldives is seeking US\$ 30 million SREP funding together leveraging from other sources of a total investment of US\$ 138 million to design and implement projects, and to support transformation of the energy sector by scaling up RE in the country.

Even though the interest rates offered under some of the existing concessional financial schemes are comparatively lower (11 % on green technology purchase under BML, 14 % on electric vehicles in comparison to 18 % on conventional vehicles⁶) than conventional financing rates in Maldives, the demand for clean energy loan

⁴ UNEP ‘United for Efficiency’ Country Assessment on appliances for Maldives, https://united4efficiency.org/wp-content/uploads/2019/09/MDV_U4E-Country-Saving-Assessment_All.pdf

⁵ UN Comtrade database for selected appliance trade in Maldives (Air conditioners, Household Refrigerators, Washing Machines), <https://comtrade.un.org/db/mr/daCommoditiesResults.aspx?px=H2&cc=270900>

⁶ Interest on loan for electric vehicles offered by Bank of Maldives, <https://www.bankofmaldives.com.mv/>

schemes has been lower than **expectations of the government and government’s effort to reduce carbon emissions**⁷.

The assessment finds that most of the green financing products are directed towards investment in green technology and renewable energy purchases and are not specifically for purchase of energy efficient appliances. For e.g. BML green loan has a limitation of minimum loan application of 20,000 MVR which is much more than a cost of a household appliance.

It was observed that consumer financing is largely made available by Banks and NBFCs in Maldives in form of secured/ unsecured loans/ leases. Some of the existing appliance finance options in Maldives are summarized below:

Table 4: Existing consumer finance options in Maldives

Bank/ NBFC	Product	Eligibility	Loan Amount (min – max), MVR, Interest Rates,	Products covered
Bank of Maldives	Lui Micro	Lui Micro. BML Lui Micro Loan is designed to support individuals without a regular income.	<ul style="list-style-type: none"> Up to MVR 25,000, Interest rates of 13 % Repayment period of 5 yrs. Loan Process time of 5 days 	Business venture products for individuals working from home, freelance workers, to kick start their business.
	Lui Loans (Express)	Salaried Individuals with employment record	<ul style="list-style-type: none"> MVR 20,000 – 300,000 @ Interest of 11.2% to 10.72 % Repayment period of 5 yrs. Loan Process time of 5 days 	Remodelling of home, overseas vacation, family planning
	BML Green Loan	Individuals and businesses	<ul style="list-style-type: none"> Loan Amount MVR 50,000 – 20 Million Repayment Period - 20 yrs., Interest rate - 11 % Equity - 15 % 	Green technologies such as solar panels, energy efficient equipment, construction projects, retrofits, etc.
Maldives Islamic Bank	Consumer Goods Financing	Employment history with listed employers	<ul style="list-style-type: none"> As per repayment capacity, capped at 34% of confirmed income, rate at - 15 % per annum 	Furniture, electronics and home appliances from listed dealers
	Murabaha General Asset Financing	To be checked	<ul style="list-style-type: none"> As per repayment capacity, capped at 50% of confirmed gross 	Locally acquired movable assets

Bank/ NBFC	Product	Eligibility	Loan Amount (min – max), MVR, Interest Rates,	Products covered
			income, rate at - 15 % per annum	
Maldives Finance Lease Company	Easy Lease	Employees in government and private sector	<ul style="list-style-type: none"> As per repayment capacity, capped at 50% of confirmed gross income interest rate between 18 - 20 % per annum 	Consumer durables and motorcycles
	Lifestyle Lease	Employees of government and government related organizations	MVR 15,000 – 100,000, interest rate between 18 - 20 % per annum	Motorbikes, furniture, computers, electronic items

3.1.1. Review of global energy efficiency financing options

Building on the review of domestically available options, a thorough review of globally practiced energy efficiency financing schemes and instruments were conducted. Different types of financing exist, and they provided access to end-users for investing in energy efficiency. The various categories of financing type are listed in the table below:

Table 5: Categories of financing type

Finance type	Description
Debt	Borrowers lay out commitment to pay principal and interest to lenders on an agreed schedule. To secure finance, borrowers use collateral as a means of reassurance to the lender. Conventional debt instruments include credit, mortgages, leasing.
Equity	Conventionally implies selling a stake in company receiving the funding from investors, who expect to share the profits of the company and the investment stake appreciation.
Grants	Non-repayable fund contributions (in cash or kind) provided by a grantor (e.g. government institution, multilateral / bilateral agencies, foundations, trusts) for a specified intervention. Grants are typically provided on a conditional basis against meeting certain objectives and might also call for proportional contributions by the recipient / other grant providing institutions.
Risk mitigation instruments	Instruments available in the market to mitigate risks of investing in energy efficiency. Beneficiaries of this instruments could be lenders, consumers, project developers and government. Common instruments include insurance, risk sharing and credit guarantee instruments.

The above mentioned financing types are made available to end-users through various types of mechanisms / schemes. Some of these include – blended loans, green/climate bonds, convertible debt, securitization, crowd financing, demand aggregation, performance-linked financing, on-bill financing and owner equity. In addition, the funding through these instruments are provided by banks, institutional investors, development banks, multilateral/bilateral banks, non-banking financial companies, equity funds and ESCOs amongst others. An overview of the globally accepted and endorsed financing schemes and business models is presented in the table next.

Table 6: Global EE financing schemes and business models

Instrument type	Key features	Applicable sector	Use cases from other countries
Popular Financing Schemes & Business Models			
<p>Concessional Loans (Green Credit Lines - Grant Financing or Soft Loans)</p> <p><i>These are generally combined with other financing instruments and act as upstream funding for existing financing mechanisms</i></p>	<ul style="list-style-type: none"> • End-users can secure direct loans from local financial institutions (LFI) for energy efficiency upgrades or equipment. • Loan is repaid to the LFI with interest within an agreed payment schedule (loan tenor). • Loans are provided based on credit worthiness of the end-user and in some case based on the project cash flow. • To attract users, LFIs are establishing green credit lines, concessional finance from multilateral funds and offer loans at concessional conditions lower than market rates. 	<p>Residential Commercial Industries</p>	<p>Mongolia: XacBank institutionalized a loan programme for residential energy efficiency improvements (include low-income household groups as well) at concessional rates and longer loan tenors by accessing funding from Green Climate Fund (GCF)⁸.</p>
<p>List Based Financing</p>	<ul style="list-style-type: none"> • Establishment of a list of sectors, sustainable technologies, or technology providers pre-approved for lending by financial institutions. • Financing institutions provide loans to end-users under the condition – funds to be used for projects / investments under the pre-approved list. • Standard credit check and due diligence processes are conducted before approving the credit line. 	<p>Residential, Commercial Industrial</p>	<p>Russia⁹: Russia Sustainable Energy Financing Facility (RuSEFF) was established through the assistance of EBRD who provided a credit line of USD 400 million to participating financial institutions in order to scale up EE and RE investments in the residential and commercial sector. This concessional facility was complemented through a list of pre-approved technologies that was made available to the borrowers in order to assist in selecting best-in-class technologies.</p>

⁸Basel Agency for Sustainable Energy (BASE) for UN Environment, *Manual of Financing Mechanisms and Business Models for Energy Efficiency (March 2018)*, p.16

⁹ https://ebrdgeff.com/russia_facilities/

Instrument type	Key features	Applicable sector	Use cases from other countries
	<ul style="list-style-type: none"> Positive lists also have the added benefit of being combined with revolving funds, microfinance or other schemes. 		<p>India¹⁰:</p> <p>Japan International Cooperation Agency (JICA) has extended a Line of Credit to Small Industries Development Bank of India (SIDBI) for financing Energy Saving Projects in MSME sector. Under this scheme, financing is provided through SIBBI as well as through refinance to banks/SFCs and NBFCs for encouraging MSMEs to invest in energy saving plant & machinery/production processes.</p> <p>MSMEs can choose the appropriate equipment from the pre-approved list published by SIDBI.</p>
On-bill financing	<ul style="list-style-type: none"> Innovative model where utility consumers are allowed to procure efficient equipment and pay for the equipment over time through monthly utility bills. Three approaches are practised under this model: <ul style="list-style-type: none"> Utility absorbs the capital investment of the energy efficiency upgrade and repays the capital thereby playing the additional role of a financing entity. On-bill repayment model where capital is provided by public / private financial institutions. Utility thereafter acts as a facilitator for collecting payments through utility bills for the lender. Tariff-based on-bill models where the cost recovery is tied to the energy meter rather than the property owner. Customers who occupy the property can continue to repay for the equipment in full or through monthly on-bill payments. 	Residential Commercial	<p>Mexico¹¹:</p> <p>Cambia tu Viejo por uno Nuevo (Replace old appliance with a new one) is an initiative coordinated by the Ministry of Energy and implemented by Trust for Saving Electricity (FIDE) in partnership with the National Development Bank (Nacional Financiera (NAFIN)).</p> <p>Concessional finance was secured from World Bank and Inter-American Development Bank to fund energy efficient refrigerators and air-conditioners for residential customers and payment was collected through electricity bills.</p> <p>By 2011, programme resulted in reducing 0.55 million tCO₂ emissions.</p> <p>India¹²:</p> <p>Under the ‘Domestic Efficient Lighting Program (DELP)’, EESL procured large quantity of LED bulbs to drive economies of scale and distributed them at a lower price to households. Investments were recovered through on-bill financing model where a portion of the energy cost savings incurred by the LED bulbs were transferred to EESL via the utility company. Started in 2013, the</p>

¹⁰ <https://sidbi.in/files/product/3.%20Financing%20Schemes%20for%20Sustainable%20Development.pdf>

¹¹ Basel Agency for Sustainable Energy (BASE) for UN Environment, *Manual of Financing Mechanisms and Business Models for Energy Efficiency (March 2018)*, p.25

¹² G20 Energy Efficiency Finance Task Group (EEFTG), *G20 Energy Efficiency Investment Toolkit – Case Studies (2017)*, p-34, available at <https://www.unepfi.org/wordpress/wp-content/uploads/2017/05/G20-EE-Toolkit-Case-Studies.pdf>

Instrument type	Key features	Applicable sector	Use cases from other countries
			programme was slowly scaled-up and resulted in drastically reducing the price of LED bulbs in India.
Demand Aggregation with Bulk procurement	<ul style="list-style-type: none"> No-subsidy demand-driven mechanism that provides economies of scale thereby enabling manufacturers reduce prices of products through successful bidding processes. Large tenders are rolled out by the government or private sector for procurement of large quantity of energy efficient products. Volume of the bid is then allocated to all manufacturers who agreed the match the lowest price. In some cases, this model also comes with annual maintenance services. <p>Repeated tenders have the advantage of reducing the price of product further and the benefits are passed to the end-users.</p>	Residential Municipal Industrial Commercial	<p>India¹³:</p> <p>UJALA is a nationwide appliance distribution programme that was implemented by Energy Efficiency Services Limited (EESL) in 2015. Under this programme, EESL procured bulk quantities of LED bulbs, Tubelights and fans. One of the notable impacts was the reduction in the price of LED bulb by 80% over the past 5 years. As of February 2019, the price of a 9W LED bulb was USD 0.41 as compared to over USD 3.9 in the preceding years. Over the last 5 years the programme has contributed to 790 million tCO₂ of emissions reduction. Similarly, in 2015 EESL launched the Street Light National Programme (SLNP) through the same model. In this programme, EESL partnered with the States, Municipal Bodies and Urban Local Bodies (ULBs) for replacing conventional streetlights with LEDs. Through the bulk procurement process, EESL was able to reduce the cost of lights and has been instrumental in replacing over 9.2 million lights in 4 years.</p> <p>In addition, this model has also been expanded to other household appliances such as fans and tubelights.</p>
Performance Contracting (ESCO Model)	<ul style="list-style-type: none"> An instrument where an Energy Service Company (ESCO) signs an EPC with the customer and implements energy efficiency projects. The cost savings achieved from these projects are used to repay the project costs. ESCO receives full payment upon satisfying the estimated energy savings thereby placing the risk on the service provider. Two contracting models exist: <ul style="list-style-type: none"> Shared savings model: ESCO invests in the project and cost savings from energy savings are quantified. ESCO receives a share of the savings resulting from project as remuneration. 	Commercial Industrial Municipal	<p>India¹⁴:</p> <p>ENCON a certified ESCO entered into 3-year performance contract with Mahindra & Mahindra for retrofitting one of their towers through an investment grade audit followed by implementation of the energy saving measures. The key features of the agreement included 50-50 sharing of the energy savings between the two parties, capital investment of retrofits by the ESCO that was entirely met through the cost of energy savings and calculation of savings based on a pre-determined baseline.</p>

¹³ <https://www.eeslindia.org/content/raj/eesl/en/Programmes/UJALA/About-UJALA.html>

¹⁴ https://tsredco.telangana.gov.in/PDFs/ECBC/5_Retrofitting_Mahindra_Towers.pdf

Instrument type	Key features	Applicable sector	Use cases from other countries
	<ul style="list-style-type: none"> o Guaranteed savings model: ESCO guarantees a level of energy savings and receives remuneration based on actual cost related to the energy savings. Customer is directly financed by an institution and repays the loan. 		<p>The benefits that were realised from this model included a monthly savings of USD 4,500 per month against overall EE investment of USD 25,000. The overall payback was realised in around 6 months.</p> <p>Thailand¹⁵:</p> <p>Through the ‘Shared Savings Model’, Grand China Princess (GCP) Hotel in Bangkok implemented chiller replacement and heat pump installations by partnering with ESCO Venture Co. Ltd. Under this model, investment for the equipment were financed by the ESCO firm resulting in annual energy cost savings of USD 30,000/year. The overall payback was realised in 3.5 years and the assets were transferred to GCP at the end of the contract period.</p>
Other Financing Schemes & Business Models			
Revolving funds	<ul style="list-style-type: none"> • Similar to commercial loans, this special purpose funds are established where fit for purpose commercial mechanisms are not available to a specific market sector such as micro, small or medium sized enterprises. • Through a fixed pool of capital, funds are provided to customers for energy efficiency projects and then repaid with lower interest back to the fund. The replenished money could be re-lent to new customers. • Such funds are typically managed by the Government, commercial financial institution (bank) and in some cases even by non-profit organisations. • Advantage of revolving funds are the lower interest rates and flexible collateral requirements as compared to commercial loans. Such a mechanism enhances access of the finance scheme to broader range of customers including MSMEs who struggle to secure such loans. 	Commercial (all sectors)	<p>Thailand¹⁶:</p> <p>Thailand Energy Efficiency Revolving Fund Thailand’s Government Budget was utilised to provide lending where loans were channelized through commercial banks (11) by DEDE, Thailand. Loan was meant for buildings, factories, ESCOs & Project Developers. Max loan period was 7 years.</p>

¹⁵ https://www.unece.org/fileadmin/DAM/energy/se/pp/gee21/Worshop_Bangkok_April_14/Session_7d_Vejakit.pdf

¹⁶ http://www.undp.org/content/dam/rbap/docs/Research%20&%20Publications/environment_energy/ncf/APRC-EE-2012-NCF-CaseStudy-Thailand.pdf

Instrument type	Key features	Applicable sector	Use cases from other countries
Leasing	<ul style="list-style-type: none"> An instrument where the lessor conveys the use of an asset (building, equipment) to the lessee for a specified period of time and for periodical payments. Leases can be offered by technology supplier (vendor lease), financial institution or by a third-party leasing company. Two model of leasing exist as given below: <ul style="list-style-type: none"> Operating lease is a model similar to equipment rental where the ownership and other risks remain with the lessor. The asset is returned by the lessee after the lease term. In this model, the lease payments are considered as an operating expense in the balance sheet of the lessee. Financing lease is similar to a loan where the equipment serves as the collateral. Ownership remains with the lessor and the lessee is given the option to buy the asset at the end of the lease term. In this model, the lessee absorbs all risks associated with the asset. 	Commercial Industrial	<p>Turkey¹⁷:</p> <p>Under the partnership between Clean Technology Fund (CTF) and IFC, the Commercializing Sustainable Energy Finance Program (CSEF) was established. The facility was financed with around USD 21 million of CTF funds blended with almost USD 100 million of IFC's funds. The program was primarily targeted at the commercial sector.</p> <p>IFC adopted a leasing model through three Turkish leasing companies to scale up investments in projects that reduced energy consumption by at least 15%. Predominantly the target group was SMEs and upon agreement, the leasing company would procure the equipment using CSEF funds and provide under a leasing agreement.</p> <p>Over a period of 4 years, leasing companies invested around USD 100 million in 50 EE projects and is expected to mitigate over 0.2 million tCO₂ of emissions per year.</p>
Dealer financing	<ul style="list-style-type: none"> A credit-based model where energy efficiency technology suppliers provided finance to end-users. End-users can procure products by paying low or more often, zero down payment and pay later based on an agreed schedule. Two models exist: <ul style="list-style-type: none"> Direct model – Technology supplier use their capital for purchase and secure repayment by offering a tenor period of 30-180 days. Indirect model – Technology supplier facilitates a loan application by acquiring information from the end-user and submits it to the lender. Lender assesses the credit profile of end-user and offers finance (e.g. credit card mode). 	Residential Commercial	<p>China¹⁸:</p> <p>Dealer Financing (Indirect)</p> <p>Under the “Promotion of Energy-Efficient Products to the Benefit of the People” programme, Government provided subsidy for Tier 1 and Tier 2 EE level household appliances, fiscal subsidies were passed on to manufacturers and they further transferred the benefits to consumers. Strict screening of EE appliances ensuring selected appliances meet national standard for EE.</p>

¹⁷ https://www.climateinvestmentfunds.org/sites/cif_enc/files/knowledge-documents/1506738_ifc_csef_turkey_v1_1_0.pdf

¹⁸ <https://c2e2.unepdtu.org/wp-content/uploads/sites/3/2017/06/good-practice-and-success-stories-on-ee-in-china.pdf>

Instrument type	Key features	Applicable sector	Use cases from other countries
Microfinance	<ul style="list-style-type: none"> Provide financial services through small transactions (i.e. microcredits, micro savings, micro insurance, micro transfers, micro equity) to low-income households Multilateral Development Banks (MDBs) provide grants / concessional loans to local banks who in turn lend to microfinance institutions (MFIs). MFIs thereafter disburse the funds to eligible borrowers for purchase of equipment and repay the loan through small and manageable payments. The model could ideally assist low-income and rural customers since MFIs have access to this customer base. 	Residential Industrial (SMEs)	Tajikistan ¹⁹ Country adopted The Climate Resilience Financing Facility (CLIMADAPT), a USD10 million credit line programme for increase access to technologies. Under this EBRD programme, funding was secured through the involvement of Govt. of Tajikistan, Climate Investment Funds and United Kingdom. Concessional loans are disbursed through five local MFIs to households, farmers and SMEs (loan amount varies from USD 500 to USD 300k). Loans are provided in local currency to ensure the customer is protected from foreign exchange risk. The MFIs also established a pre-approved list of technology providers to ease the due diligence process.
Savings group	<ul style="list-style-type: none"> Market-based savings-led financing mechanism where self-selected individuals combine their savings and take small loans from those savings, with interest, and share the profits among themselves. Mechanism provides members options to save frequently, access to credit on flexible terms and some form of insurance. Mechanism could be rolled out through a social fund that will eventually allow members to borrow interest free loans for purchasing products. Largely benefits rural communities wherein they could pool their savings to invest in energy efficiency systems and re-invest their energy bill savings to fund additional investments. 	Residential (low income households in urban and rural areas at a community scale)	Multiple countries ²⁰ : In the last 25 years, development organisations have trained around 750,000 savings groups comprising of over 15 million members across 73 countries. An average savings group comprised of 5-30 low income members with assets around USD 1,200.
Pay-per-service model: Equipment-as-a-service and District	<ul style="list-style-type: none"> Service-based model where end-users pay for the service received instead of paying for the product. Service provider installs and maintains the equipment and recovers costs through periodic payments from end-user. 	Residential Commercial Industrial	Singapore ²¹ : In the Singapore District Cooling System, chilled water is produced by plants and are distributed by pipes to commercial buildings. Such a facility assists businesses to operate at an increased energy

¹⁹ Basel Agency for Sustainable Energy (BASE) for UN Environment, *Manual of Financing Mechanisms and Business Models for Energy Efficiency (March 2018)*, p.20

²⁰ Basel Agency for Sustainable Energy (BASE) for UN Environment, *Manual of Financing Mechanisms and Business Models for Energy Efficiency (March 2018)*, p.22

²¹ https://www.k-cep.org/wp-content/uploads/2018/07/Cooling-as-a-service-Knowledge-brief-6.7.2018_Final_online_v1.pdf

Instrument type	Key features	Applicable sector	Use cases from other countries
service models: “Servitisation”	<ul style="list-style-type: none"> • These payments are fixed-cost-per-unit for the service delivered (for example, dollars per cubic meter of compressed air, per tonne of refrigeration, or hours of lighting), and are based on actual usage. Payment is not dependent on savings (e.g. ESCO model) and is pre-agreed in advance with the end-user. 		efficiency level of 30% due to the absence of cooling tower and associated assets.
Mortgage financing	<ul style="list-style-type: none"> • Also known as Green Mortgages, financing is offered for purchasing or refinancing a house that is already energy efficient or that might become one after refurbishment. • Lender conducts an inspection and assessment of the house through a certified energy auditor. The auditor provides a report outlining the energy performance levels, energy efficiency features, energy use and recommendations for improvement along with cost details. • Lender evaluates the report and assesses the quantum of financing based on the cost estimate and potential energy savings. For energy efficient homes, the lender can relax the debt-to-income qualifying ratio for the borrower. 	Residential	<p>Germany²²:</p> <p>KfW (Germany’s national development bank) has partnered with commercial banks to provide attractive finance for purchase of energy efficient houses, construction of energy efficient house and upgrades of existing houses.</p> <p>By adopting the minimum energy efficiency standards established by the German Energy Savings Ordinance (EnEV), KfW labels the house and provides line of credit to customers through banks either on attractive lending rates or as grants. This product is made available for both new and existing buildings.</p>
On-tax financing model – Property Assessed Clean Energy (PACE)	<ul style="list-style-type: none"> • On-tax financing mechanism for investing in building energy efficiency and distributed renewable energy installations. • Homeowners can access finance from third-party investors and repayment is facilitated through property taxes. • Scheme allows long-term financing and repayment could be transferred to new owner upon sale of property. • Scheme could also be clubbed under asset-backed green bonds through aggregation of similar PACE projects and can also secure some form of insurance / get linked national incentive programs. 	Residential Commercial	<p>USA²³:</p> <p>PACE is a model that was established for financing EE and RE solutions in commercial and residential properties. Property owner can finance the up-front cost for investments and the repay the costs over time (typical payment timeline is 10-20 years) through voluntary property assessments. The repayment is secured through the owner’s property tax bill.</p> <p>As of 2019, the residential sector has seen around USD 5 billion investments in EE and RE improvement projects, whereas the commercial sector has seen investments of around USD 800 million in similar projects.</p>

²² https://www.kfw.de/KfW-Group/Newsroom/Latest-News/Pressemitteilungen-Details_10591.html

²³ Basel Agency for Sustainable Energy (BASE) for UN Environment, *Manual of Financing Mechanisms and Business Models for Energy Efficiency (March 2018)*, p.33

Instrument type	Key features	Applicable sector	Use cases from other countries
Remittance based payment models	<ul style="list-style-type: none"> • Migrant workers living and working abroad have the option of directing part of their remittance towards small scale sustainable energy solutions for their homes. • The model involves working with local money transfer organisations (MTOs) to set up a business model that enables the MTO to sell sustainable energy products to migrant workers living and working aboard, that can then be collected by their families at home. • Model helps overcome upfront capital for such investments and can be extended to other products such as air-conditioners, refrigerators etc. • Model can also be complemented with microfinance loans and savings group schemes. 	Residential	Haiti ²⁴ : Model was piloted with migrant workers living and working in USA.
Financial incentives (e.g. rebate or subsidy programme)	<ul style="list-style-type: none"> • An incentive-based scheme for promoting usage of energy efficient products thereby resulting in lowering the capital cost of technologies. Conventional incentive schemes prevalent include: <ul style="list-style-type: none"> ○ Rebates: Buyer purchases equipment or system that complies with specific energy use requirements and receives a rebate (utility cash rebate, instant rebate, mail-in rebate, etc.) upon submission of application. ○ Tax credits: Taxpayers can subtract tax amount upon purchase of pre-approved energy efficient product / system. These credits are granted to both individuals and businesses. ○ Subsidies: Measures that are put in place to keep prices of product below market level or reduced cost for purchase of energy efficient product. ○ Value-added tax (VAT): Lowering of VAT rates for efficient products in order to stimulate import of such 	Residential Commercial	Ghana ²⁵ : The Government of Ghana launched a ‘rebate, turn-in, and replacement’ programme for refrigerators in 2012. The scheme allowed customers to replace the old appliance with a new energy efficient appliance that was made available through a rebate. USD 32 per appliance was the average rebate amount offered. The programme reportedly increased the market share of imported efficient refrigerators to more than 80%. In addition, the programme also resulted in reducing the energy demand of refrigerators from 1,140 kWh/year to 740 kWh/year (approx..).

²⁴ Basel Agency for Sustainable Energy (BASE) for UN Environment, *Manual of Financing Mechanisms and Business Models for Energy Efficiency (March 2018)*, p.34

²⁵ Basel Agency for Sustainable Energy (BASE) for UN Environment, *Manual of Financing Mechanisms and Business Models for Energy Efficiency (March 2018)*, p.36

Instrument type	Key features	Applicable sector	Use cases from other countries
	products and subsequently lower the price of such products.		
Guarantees	<ul style="list-style-type: none"> • Instruments that can expand loan financing for commercially viable energy efficiency investments (e.g. partial risk loan guarantees). • Guarantees are designed to reduce risk in short and long-run and improve technical and financial confidence amongst financial institutions on energy efficiency projects. • Guarantees are generally provided by international financial institutions (IFIs), governments or utilities to financial institutions through public energy efficiency investment programmes that are backed by IFIs or government. • Guarantee issuers enter into agreement with participating financial institutions who would release funds to borrowers (project developers) seeking loans. Agreement specify certain eligibility criteria and sets the guarantee support (e.g. % of loan amount, first loss coverage etc.). Borrowers are requested to submit project document to the lender and the loans are released. Repayment comes from either households or commercial entity owners where the projects are being implemented. • Although guarantees are in place, borrowers are required to submit collateral as a loan condition. • If claims are made due to any failure, guarantee issuers are required to pay the claim amount. 	Residential Commercial Industrial	<p>India²⁶:</p> <p>Through the support of World Bank, SIDBI developed a Partial Risk Sharing Facility (PRSF) guarantee programme. The programme has the objective to fast track EE implementation through ESCOs under performance contracting model. Under this model, coverage of the guarantee extends to 75% of the loan and loan range varies from USD 13,000 to USD 1.9 million with a guarantee tenure of 5 years.</p> <p>The overall outlay available under this scheme is USD 43 million of which USD 37 million is available for the risk sharing facility.</p>
Energy savings insurance (ESI)	<ul style="list-style-type: none"> • An instrument that includes financial and non-financial elements to reduce risk of the customer. The model primarily assists SMEs to invest in energy efficient technologies. Elements of this model include: 	Commercial Industrial (SMEs)	<p>Latin America²⁷:</p> <p>ESI led and developed by Inter-American Development Bank with the support of BASE has been endorsed with ongoing projects in 7 countries. More than USD 45 million has been mobilised in Colombia and Mexico for SMEs to invest in energy efficiency technologies.</p>

²⁶ <https://sidbi.in/en/prsf-project>

²⁷ Basel Agency for Sustainable Energy (BASE) for UN Environment, *Manual of Financing Mechanisms and Business Models for Energy Efficiency (March 2018)*, p.57

Instrument type	Key features	Applicable sector	Use cases from other countries
	<ul style="list-style-type: none"> o Standard contracts that offers a transparent framework for negotiations between SMEs and technology suppliers. Project risks are distributed evenly among the stakeholders. o Energy savings insurance provides third-party risk coverage to insure against failure of the product to generate the perceived energy savings. The insurance reduces the credit risk of the SME. o Validation through an independent technical process to evaluate the project's potential to generate energy savings, installation process and also acts as an arbitrator (if required). o Financing through competitive credit conditions, flexible loan tenors and support to SMEs in accessing finance for energy efficiency solutions by linking green credit lines, guarantees is possible. Insurance linked finance reduces credit risk of the borrower and mobilises green finance. 		

Summary on Scheme Applicability for EE Appliances

Following the secondary research, an analysis of the above listed 17 financing schemes (refer

Table 6), their business models and financial instruments in the context of Maldives for developing the financial programme for energy efficient appliances was conducted. The observations on their relevance for financial programme development for energy efficient appliances is as follows:

1. *Concessional loans – (Applicable)* These are relevant for appliance buyers and will enable offsetting the higher cost of purchase of energy efficient appliances. For the scheme to be relevant for specific EE appliances it is proposed to combine it with list based financing. Green credit lines from multilateral development agencies in the form of soft loans can be a source of funding in the mechanism or an alternated can be government funding to kick start the programme.
2. *On-bill financing – (Applicable for consumer appliance financing)* The scheme is applicable for financing EE appliances. The applicability is only in the case where the utility company (electricity provider) who provides electricity is in the favor of this mode of financing for increasing the uptake of EE appliances. As per consultations with the utility providers in Maldives, they have shown less interest.
3. *List based financing - (Applicable for consumer appliance financing)* Pre-approved list of appliances and vendors can be prepared and the financing can be coupled with concessional loans for consumers. This scheme is relevant for appliance buyers.
4. *Demand aggregation – (Applicable for consumer appliance financing)* Requires the presence of a demand aggregator and in absence of the same, the mobilization activities to create such an entity may require time, effort and resources. For this model to be a success, typically the demand of products/appliances shall be in the range of at least few millions. Demand aggregation model is more successful in countries where a bulk demand can be created.
5. *Performance contracting* – It is more popular for industrial and commercial sectors and less popular for residential sector. However, in presence of availability of efficient energy monitoring systems in residential sector, the model can be adopted.
6. *Revolving fund – (Applicable for consumer appliance financing)* Just like concessional loans, revolving fund can support consumer appliance financing provided it is coupled with another financial scheme such as on bill financing or list based financing.
7. *Leasing (Partially applicable for consumer appliance financing)* – This can be tailored for banks which follow leasing model wherein the appliance would serve as a collateral. However, leasing restricts a sense of ownership among consumers. It works better for financing of heavy duty industrial equipment, heavy duty technology systems in commercial buildings **where the project's success is dependent on energy savings**. The model has not been very successful in the case of appliance financing for the residential sector.
8. *Dealer Financing – (Applicable for consumer appliance financing)* This can be applicable as a rider on top of list based consumer financing where the dealers can facilitate appliance financing as a bridge between appliance buyers and service providers.
9. *Micro finance – (Applicable for consumer appliance financing)* The supporting infrastructure and micro financial institutions are not available in the context of Maldives.
10. *Savings group – (Applicable for consumer appliance financing)* The scheme is applicable for low income households in especially rural areas at a community level for projects leading to social development of the community. May not be much applicable for Maldives.
11. *Pay per service* - For services provided by utilities or service providers in case of district cooling, and hence less relevant for appliances.
12. *Mortgage financing* – Applicable for energy efficient households where mortgage is involved and not applicable for appliance financing.

13. *On-tax financing* – It is applicable for homeowners where the property buyer gets incentives on property tax.
14. *Remittance based payments* – The model was devised for migrant workers who can direct part of their earnings in purchase of energy efficient technologies or appliances for their families at their native place.
15. *Financial incentives (rebate or subsidy)* – (*Applicable for consumer appliance financing*) Rebate and subsidy can be incorporated for financing of appliances in addition to another financial scheme as subsidies or rebates alone may lead to an unsustainable business model for financing of appliances.
16. *Guarantees and insurance* – Applicable for industrial and commercial buyers where the intent is on making EE investments to realize considerable energy savings where systems for continuous monitoring are in place. Such an infrastructure to track energy performance on a continuous basis are not readily available for household consumers.
17. *Energy Savings Insurance* - The scheme has been tested only for small and medium enterprises in Colombia and Mexico where the energy savings are insured by a third party. It is applicable for industrial and commercial users and less applicable for appliance financing in the residential sector.

Shortlisting of relevant financing instruments for appliances

As per the analysis of observations presented above, and the findings from the inception phase, the initial list of financial instruments shortlisted include:

- Loans and green credit lines
- Dealer financing
- List Based finance
- Bulk procurement (demand aggregation)
- On-bill financing
- Performance Contracting, Guarantees, & Insurance

As a next step, consultations were conducted with banks, electricity utility companies and NBFCs to seek inputs on the readiness of financial infrastructure for inclusion of the above shortlisted financing instruments as well as validate the analysis of the secondary research and findings from the inception mission. Around 8 stakeholders were consulted, and minutes of these consultations are provided in Annexure 1. Due to the prevalent COVID 19 risks, consultations were conducted through digital channels (skype / WebEx / telephone).

3.2. Stakeholder consultations

To ensure the consultations yielded actionable results, a list of parameters was developed to analyze the responses of the stakeholders with the aim to gather inputs on shortlisted instruments and to assess their relevance and suitability on a scale of low-medium-high. This framework served as a tool for selecting the appropriate financial instrument for appliance financial programme. The parameters are presented in below table:

Table 7: Parameters for assessing the relevance of the shortlisted financing instrument

Parameters	Rationale for Selection
EE technical competence required by banks	Technical Competence on understanding of energy efficiency (especially in case of guaranteed savings EE financing etc.) can pose a challenge for financing institutions and banks. <i>A financing instrument that can be operated by banks with lower technical competence requirements will be preferred.</i>
Understanding among stakeholder institutions	Past experience in operating a related financing instrument in consumer appliance financing can lead to better understanding and learning curve of institutions. The objective here will be to assess the prior experience and understanding among stakeholder institutions. <i>Higher understanding of the instrument by stakeholders will be preferred.</i>
Understanding among end-users	To analyze user friendliness of the financial instrument related to its application process, contractual requirements. <i>Higher understanding is better.</i>
Availability of regulations	These can be related to national or international regulations to support the implementation of financial instrument for the country. <i>Availability of regulations to support establishment of financing instrument is must.</i>
Alignment of policies and legal framework	For a financial instrument policies and legal framework shall be conducive. In cases where the policies and the legal framework do not support the operation of financial scheme can pose a restriction to its adoption. <i>Higher alignment of policies and legal framework the better.</i>
Repayment risk	A risk is associated with the situation where the borrower may fail to repay the debt. There can be certain examples of financing instruments where the stakeholders may perceive a higher repayment risk especially when repayments are associated with energy savings. <i>Lower repayment risk perceived would be preferred.</i>
Institutional capacity to implement	Financial instruments depend on institutional structure and its capacity to operate for their implementation. Absence or presence of institutional capacity to implement can hinder the adoption of that financial instrument. E.g. the absence of micro finance institutions, and a demand aggregator can pose a restriction for adoption of micro finance and demand aggregation based models, respectively. <i>Hence, higher institutional capacity and presence of institutional structures specific to financial instrument are preferred.</i>

To capture the stakeholder perspective on each of the above listed parameter, a scoring matrix was prepared and shared with the stakeholders during the discussion. The responses were gathered and discussions were held to understand **stakeholders'** assessment of the shortlisted financial instruments and the related business model. The proceedings of the consultations are presented in Annexure 1. The findings of the consultations are provided below, in Table 8.

The responses in the above table are color coded with responses as 'Low', 'Medium' and 'High' and their meaning can be quickly assessed with '**Green**' representing '**Favorable**', '**Red**' representing '**Unfavorable**' and '**Beige**' representing '**Partially Favorable**'.

Table 8: Responses from Financial Institutions on Relevance of Financial Instruments

Parameters	Performance Contracting, Guarantees & Insurance	List based finance	Demand aggregation (bulk procurement)	On-bill financing	Leasing	Others like: Dealer financing and Concessional Loan,
EE technical competence required by banks	High	Low to Medium	Low	Low to Medium	Low	Medium
Understanding among stakeholder institutions	Low	High	High	Medium	High	Low to Medium
Understanding among end-users	Low	High	Low to Medium	High	Low	Low to Medium
Availability of regulations	Low	High	Medium	Medium	Low to Medium	Low to Medium
Alignment of policies and legal framework	Low	High	Medium	Medium	Medium	Low to Medium
Repayment risk	High	Low	High	Low to Medium	Medium	Medium
Institutional capacity to implement	Low	High	High	Medium	Medium	Low to Medium

Based on review of secondary data, findings from inception workshop, and post analysis of inputs received from stakeholders, **'Banks to Consumer List Based Financing with Concessional Lending'** with an option of dealer financing seems to be the preferred financing option. A detailed outline of the instrument and model functionalities are described in Section 3.3.

3.3. Proposed Financial Instrument - Banks to Consumer List Based Financing (Concessional Lending) and Business Model

Based on the consultations, it was evident that list based financing was the most preferred instrument amongst the stakeholders. The reason being the model has been successful in Europe and other developing countries such as India, wherein covered appliances and minimum eligibility criteria are pre-defined and listed for use by the banks. In addition, the model is simple, and it will be relatively easier for enhancing capacity and raising awareness amongst the stakeholder community. In line with this, the key elements that would entail this financial strategy, detailed outline of the business model, benefits and supporting mechanisms essential for rolling-out the strategy in the market are presented further in this section.

Elements of financial strategy

The following are proposed to be the elements of the financial strategy for list based consumer financing for energy efficient appliances.

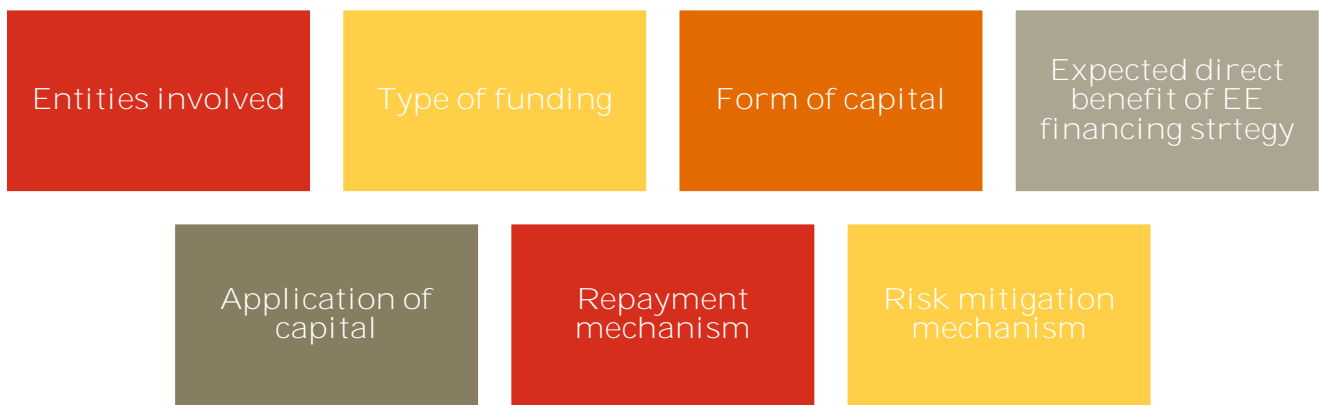


Figure 3 Elements of financial strategy

The detailed outline of these attributes in the context of energy efficient appliances has been provided in the table below.

Table 9: Applicability of financial strategy elements in Maldives

Strategy Element	Description	Remark
Stakeholders/ entities involved	<p>This attribute describes the primary stakeholders involved in the various stages of the programme implementation. These entities can be sub categorised into four:</p> <ol style="list-style-type: none"> <u>Grant Provider</u>: Initial Grant to support the mobilization of financial programme and to support financiers in operating the same. <u>The Financier</u>: The financier in any instrument would be the entity, which directly provides the fund required for the successful implementation of the instrument. The instrument might be self-financed, or require no external source of financing, or the instrument might also require government support. <u>The Programme Manager / Service Provider</u>: A programme manager would be an entity, which performs all the operations required for the successful implementation of the programme. Involvement of a programme manager would be imperative in case the implementation phase requires a complex operation procedure. <u>The Beneficiary</u>: The beneficiary would be an entity, which receives the direct benefits of the EE financing instrument. This would be an entity, the benefit of whom the instrument focusses on. The beneficiary can be the end user or the customer, and the ESCO or the service provider in certain cases. <u>Policy makers and regulators</u>: to ascertain the financial programme is within the existing financial and legal framework, and to review the framework for accommodation of new and upcoming business models, if required. <u>Facilitator</u>: The one who will facilitate the finance (EMI/loan) processing between the consumer and the FI. In consumer financing, the one with whom the 	<ol style="list-style-type: none"> The Grant provider can be government of Maldives through the <i>Ministry of Environment</i>. <i>Financial Institutions</i> to be the financiers as well as the service providers in case of consumer list-based finance. The programme can start with one FI to test the implementation and in due course other FIs can be included. <i>Residential consumers</i> of EE appliances will be the beneficiaries. <i>Ministry of Environment (ME)</i> along to be the policy maker and regulator for the financial programme for energy efficient appliances. Facilitator: Pre-approved list of vendors of EE appliances. To begin with there can be few selected vendors and as the programme

Strategy Element	Description	Remark
	appliance purchase request is made can be the facilitator for the same.	matures, additional vendors can be added to the list based on some basic minimum criteria.
Type of funding	This attribute would consider whether the capital required for the instrument is provided in the form of debt, or equity or a mixture of both. In case the government provides the capital and/or seed funding, it may be in the form of grant/ subsidy/ loan/ co-financing, etc.	Loan for upfront payment of the EE appliance with future co-financing opportunity
Form of capital	This attribute would represent the financial stake in the instrument held by the financier for the capital provided by them. This can be in the form of common shares, preference shares, long-term loans, mezzanine debt, etc.	Short term loans where the consumer will pay back the loan amount to bank subsequently over the loan period of 3 – 5 years at an agreed interest rate.
Instrument Objective / Expected Direct Benefits in EE investment	This attribute would entail the direct or the first benefit due to the investment made by the programme manager. This may be defined as the first objective the instrument seeks to achieve by the application of funds. A top-down approach is usually adopted for forecasting such impact and setting targets.	The benefits will be in terms of GHG emission reduction and cost savings as a result of savings in electricity consumption. The forecasted benefits are elaborated in Section 3.5.
Application of Capital in Implementation Phase	This attribute would define the way in which the capital is expected to be applied by the programme manager. The implementation phase of the project would start after this investment.	The capital will be used to pay the upfront cost of EE appliance for the consumer. Financial Institutions will act as repayment conduit.
Primary Repayment Mechanism (between end user and service provider)	After investment made for the EE improvement measure, the beneficiary is expected to repay the financier for the benefits enjoyed by them. Primary payment mechanism defines the financial agreement for repayment between the beneficiary and the service provider (or programme manager). This attribute has been further sub-divided into two components: <ul style="list-style-type: none"> a. Whether transferable: This refers to the clause when the repayment liability of the end user or the beneficiary is transferable to another entity, without any change in the payment terms. b. Modes of Repayment: This defines the mode of repayment by the end user to the service provider for the EE investment. 	Equated monthly instalment (EMI) as per applicable interest rates over an agreed period and after consideration of concession.
Risk Mitigation	This attribute describes if any risk mitigation strategy is present in the working model of the instrument.	KYC process followed with Bank's Credit Evaluation check, Application of Risk Mitigation Instruments

Strategy Element	Description	Remark
		such as guarantees, appliance minimum warranty, post-dated cheque based payment, direct salary deduction based repayment mechanism. These are further described in Section 3.4

3.3.1. Proposed Business Model

Overview of the model

In this model an agreed list of appliances, the appliance providers and their energy efficiency levels are pre-approved for lending by financial institutions. The financial institutions provide lending to borrowers for purchase of energy efficient appliance meeting the pre-approved lending criteria. The banks/FIs can follow a standard lending procedure in assessing credit and conduct due diligence with the pre-approved appliance list in place. These will be concessional loan based instruments for promotion of energy efficient appliances in Maldives. There can exist a number of stakeholders in operating such a model depending on the financial strategy. Accordingly, the roles and responsibilities of each actor in the operational value chain of the instrument can be defined. The framework intends to standardize environmentally friendly lending by clarifying principles on the use of funds, the process of evaluation and selection of EE appliances, the management of funds, and reporting.

In addition, the model will aim to address the issue of higher cost of EE appliances by offsetting the cost through concessional loan as compared to conventional financing. The details of the financing business model showcasing the flow of funds, and the lending process is presented in this section.

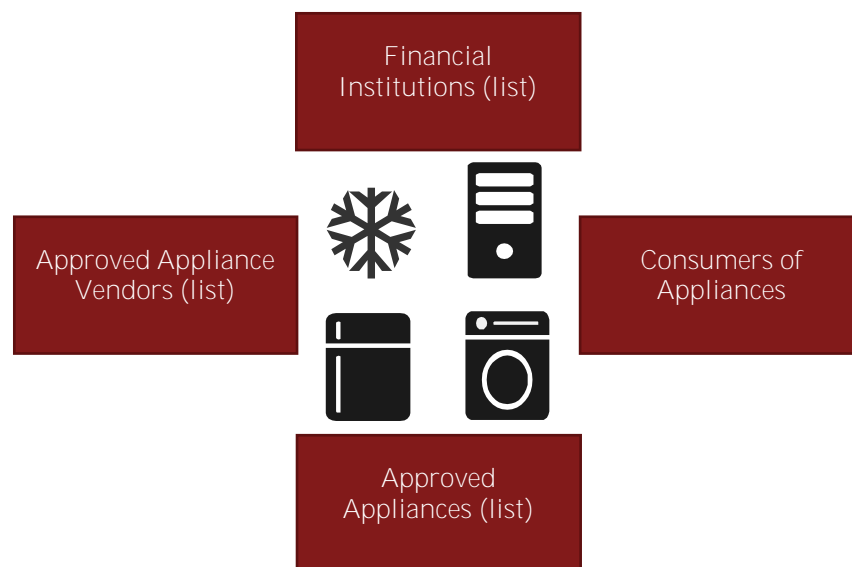


Figure 4: Essential components of consumer list based appliance financing instrument

In line with the above mentioned elements, two options for this business model have been designed - direct finance model and an indirect finance model through intermediary. The details of the model are presented next.

Direct Financing to Borrower

In this model the borrower will approach the partner bank for issuance of borrowing request for EE appliance as per the list based financing model. The Partner bank will process the request post due diligence and offer the concessional loan product under list based financing model to offset upfront cost of EE appliance in comparison to conventional appliance under the appliance category. Post disbursement of loan at agreed terms, the borrower will repay the loan in equated monthly installments (EMI) during the agreed loan period with interest. The business model is illustrated in the figure below.

Financing Business Model

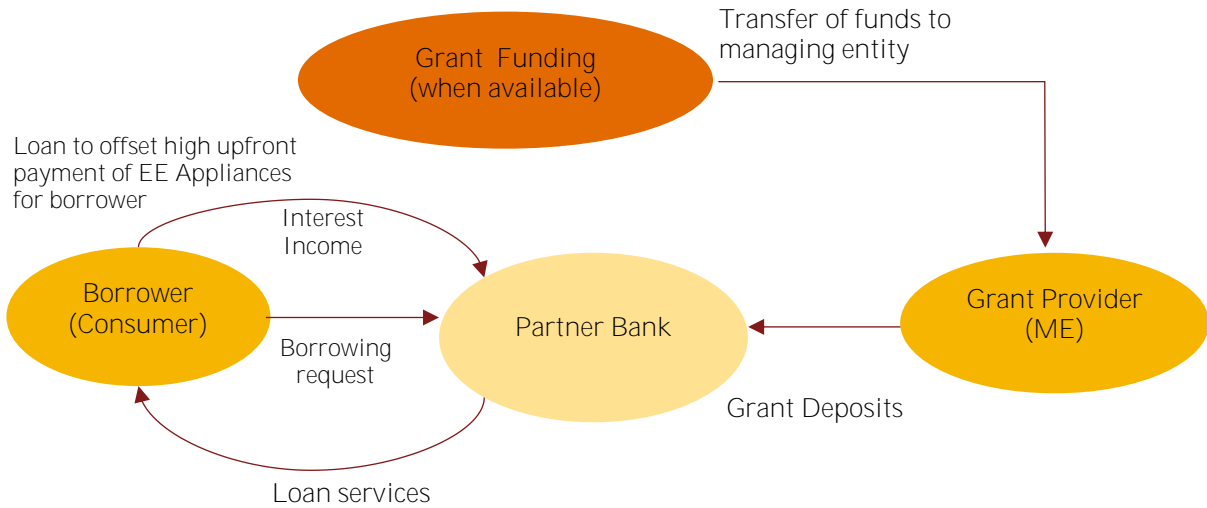


Figure 5: Direct financing business model

Fund Flow

The flow of funds is illustrated below:

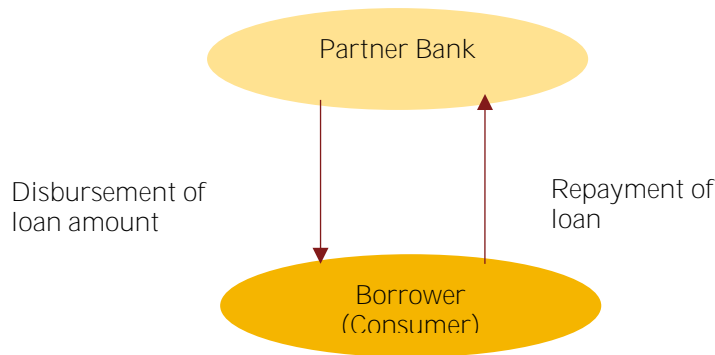


Figure 6: Flow of funds in the direct financing model

Lending Process

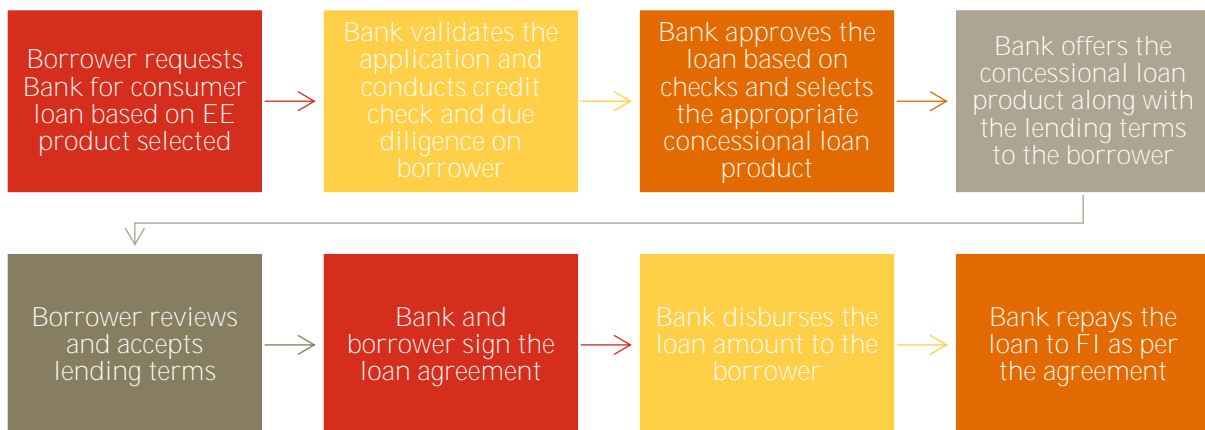


Figure 7: Lending process in the direct financing model

Indirect financing through intermediary

In this model there is a facilitator in the form of pre-approved vendor who will facilitate borrower with loan application. This will enable the borrower to make the loan request while making the purchase request with the vendor. The vendor will facilitate the borrower in collating the necessary documentation. The borrower will submit the loan application request along with the quotation from vendor and upon loan approval, the bank will directly pay the full amount to the approved vendor of the appliances. The borrower will pay monthly loan repayment instalments to the bank as per the agreement.

Financing Model

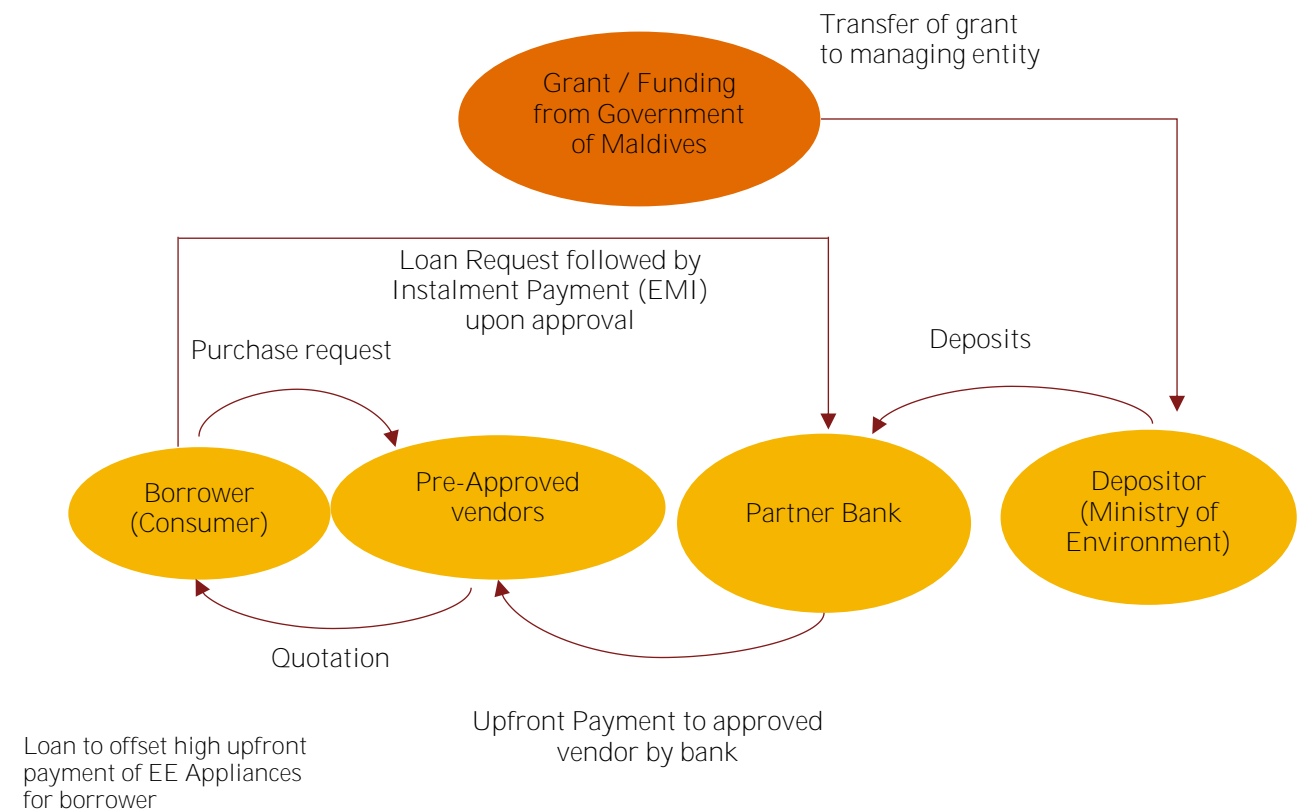


Figure 8: Indirect financing business model

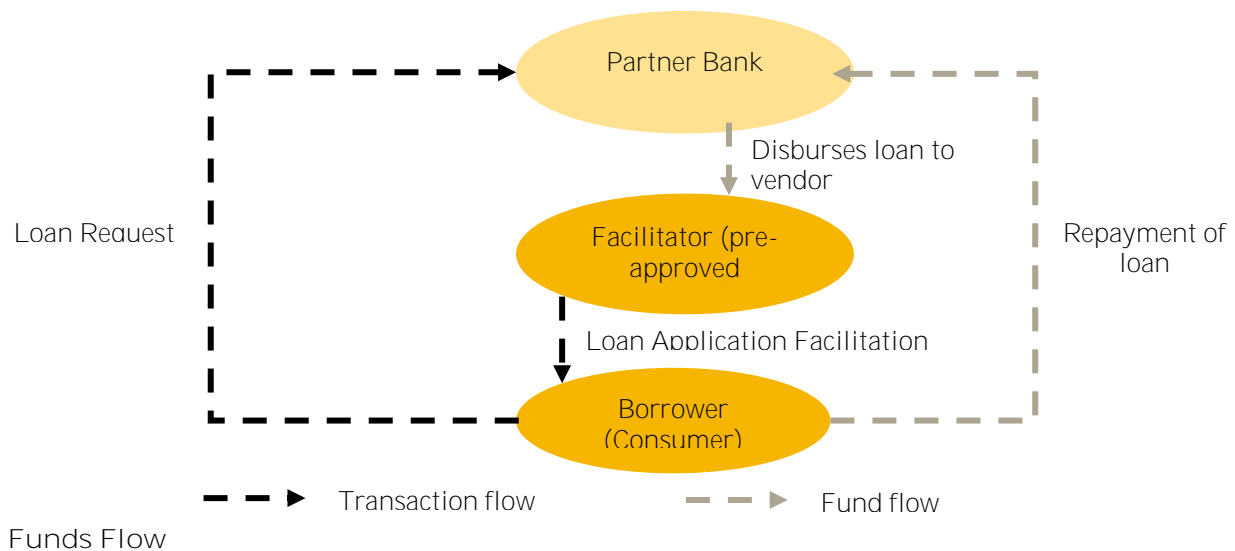


Figure 9 Flow of funds in the indirect financing model

Lending Process

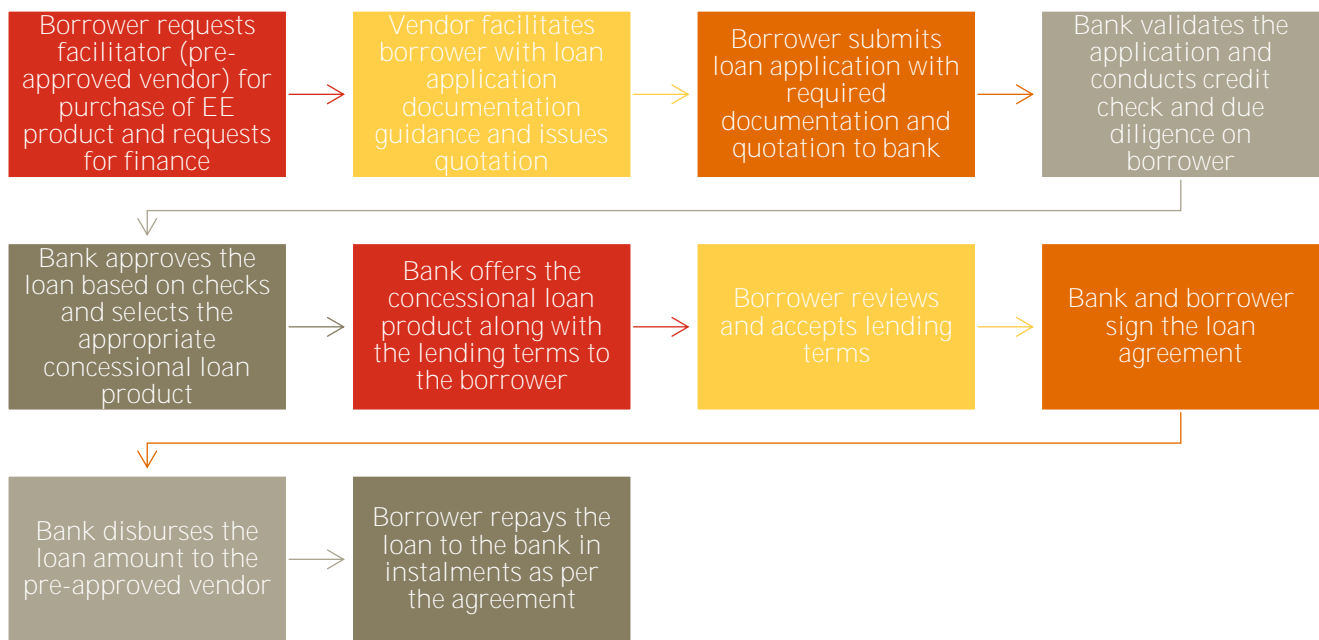


Figure 10: Lending process in the indirect financing model

Benefits & Challenges

The list based approach would enable financial institutions to proceed with caution delivering loans for energy efficient appliances. The approach offers transparency on the measurement, reporting and verification of the environmental benefits of the loan instrument with concessional financing. The foreseen challenge is that as the technology within appliances undergoes innovation and upgradation, the list based financing requires constant updates with lists for approved vendors and energy performance level of appliances suitable under the scheme. At the same time the approved appliance list may require a downgrade vis-à-vis introduction of high performance appliances. Another possible challenge is for the vendors to provide a minimum operational lifetime warranty for a specific EE appliance, in order to realize potential energy savings over the lifetime of the appliance in comparison to a conventional appliance. It is not necessary that an energy efficient appliance will have a higher lifetime. Hence, the selection of appliances for concessional list based financing shall have a predefined criteria related to warranty and other quality parameters other than the minimum energy performance.

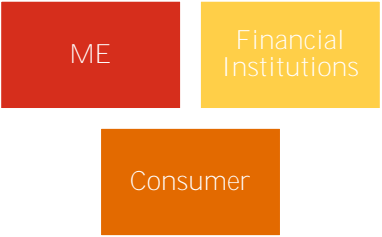
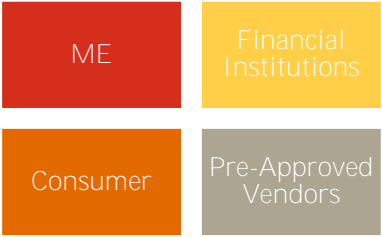
Supporting Mechanism

The funds to mobilize the financial strategy with banks to consumer list based financing for EE appliance financial programme needs to be further assessed. In addition to utilizing the allocated government budget, the programme can be co-financed or supported by green credit lines from multilateral development agencies (MDAs) in the form of revolving funds, as per the availability and requirements of co-financing in due course.

Involved Stakeholders

The following are the various stakeholders who would be involved in deploying this financial strategy.

Table 10 Stakeholders Involved in Deploying Financial Strategy

Direct Financing to Borrower	Indirect Financing Through Intermediary
	

**One of the above two financing mode can be adopted for the financial programme depending upon inputs from stakeholders.*

3.4. Risk mitigation measures in the context of banks to consumer financing in Maldives²⁸

Overview of typical risks and control measures adopted

In this section, the project team has first documented the typical risks encountered and their control measures followed by risk mitigation steps, and risk mitigation instruments in the context of Maldives. The typical risks over the course of a loan tenure are captured in the below table based on initial stakeholder interactions. The stakeholders from banks and non-banking financial institutions have been listed in Annexure 1.

Table 11 Typical Risks & Control Measures

Risk description	Risk Mitigation/ Control	Residual Risk Rating
1. Increase of Delinquencies/Defaults	Stringent underwriting guidelines	High
	Frequent review of KYC	
2. Insufficient Security Coverage	Documenting the same as part of the loan agreement to avoid any such risks	High
	Constant review / monitoring	
	Periodic inspection/review of Security	
3. Inappropriate Insurance cover	Strengthen Operational procedures and controls - Periodic review	Medium
4. Litigation Process delay	Negotiate with Customer to seek out of courts settlements through dispute resolving mechanisms	Low
	Strengthen Recovery and Legal dept.	

Increase of Delinquencies/Defaults

To mitigate the risk of increase of Delinquencies/Defaults, it is important to have stringent underwriting guidelines focusing on checks on **customer's character and the capacity to repay the loan. Character is lender's opinion of a borrower's general trustworthiness, credibility and personality. Lenders want to lend to people who are responsible and keep commitments.** This can be assessed by assessing work experience, educational background, credit history, credentials, references, reputation and interaction with lenders. Capacity or **customers' ability to repay the loan** is the most crucial factor to consider. Lenders want assurance regarding the capacity of borrower to generate funds to repay the loan in full and also the frequency and the continuity of income generation.

KYC means 'Know Your Customer' and sometimes 'Know Your Client'. This is the mandatory process of identifying and verifying the identity of the client at the time of lending, and is a continuous process where the KYC details are checked bimanually in order to closely monitor borrower's information and to mitigate the Delinquencies/Defaults.

Insufficient security cover

Regular inspection of items can be conducted annually to review the value and condition of the security for the purpose of ensuring that the security value is sufficient for the loan amount. The review may not be very relevant in the case of appliance loan. However, this can be an option for the banks to track the condition of the purchased appliances in case of bulk procurement of appliances by a specific borrower.

Inappropriate Insurance Cover

This can be a risk more applicable for borrower of the loan product. Proper insurance cover can be obtained for each energy efficient appliance with the option to renew annually before the expiry date. The option of taking a

²⁸ The findings presented in the section are a result of stakeholder interactions over web, phone and secondary research. The list of stakeholders contacted to gain insights is presented in Annexure 1.

single insurance premium for the tenor of the loan is the preferred way to avoid the chances of annual lapse of insurance which otherwise needs be monitored on regular basis.

Litigation delays related to settlement dispute

Litigation in its own nature is not a simplified process and it involves stages that are complex in nature. This phase comes up in the case the borrower fails to repay as per the agreement and also fails to respond to notices issued by the bank. It may require involvement of lawyer and legal action depending upon the case to case basis. Even though access to legal process is available for the banks, it is an expensive and a time consuming process, which means delays leading to additional expense and if not properly addressed the required justice may not be reached. In order to quickly solve the dispute, resorting to arbitration quickens the process and ensures fair settlement through mutual understanding, thereby making it desirable. Therefore, it is important to have proper recovery/legal department for the banks.

Typical risk mitigation steps followed by banks

The banks in Maldives have their specific system and set of formalities for mitigating risks related to loan disbursement to consumers for financing any purchase.

Step 1: Risk Mitigation as part of loan application stage

The generic loan application process followed by most of the banks and the involved risk mitigation instruments and measures are elaborated in this section. The Loan Application form is the first intent shown by the consumer to the bank for requesting the loan product. A typical loan application form has following sections²⁹:

1. **Personal Information with applicant's details**
2. Loan Details
3. Income & Financial Details
4. Security, if applicable
5. Details of Referees for verification purpose

Figure 11 Loan Application form (illustrative example)

For every section a valid proof document is required to be submitted to validate the declared information. This ensures mitigation of any risks related to bank to consumer financing. A similar process can thus be taken for the concessional list based financing for energy efficient financing.

Table 12 Loan Application Requirements

Information Requested	Document as Proof for Verification
Personal Information with applicant details	Valid Identity Document
Loan Details	Quotation Details with Vendor Details
Income & Financial Details (for credit evaluation)	Letter from Employer, Salary Account Summary, Income Statement, Tax declaration, Proof for additional income, etc.
Security, if applicable	In selected cases where Loan Amount is greater than a pre-defined threshold value (Details of Security and a contract agreement for mortgage or security assurance)
Details of Referees for verification purpose	Self-Declaration with Contact details of referees

²⁹ The customer loan application form for HDFC bank is available here: <https://www.hdfc.com.mv/downloads/loan-related/>

Step 2: Bank's Credit Evaluation Checks

To manage risks at the appraisal stage banks ensure that the credit evaluation is proper and the supporting documents are complete and accurate. Post this, a credit evaluation procedure is adopted by banks for individuals which involves **assessment of 'Credit Information Bureau Report' (CRIB report) and assessment of 'Fixed Obligation Income Ratio'(FOIR) for the individual loan applicants.**

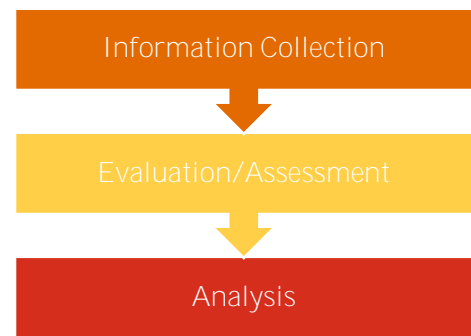


Figure 12 Risk Management Workflow

- The CRIB Report is generated for any individual who has taken a credit in the past. The assessment of the report enables in knowing whether the customer has defaulted his/her payments in the past against any credit. The assessment becomes an important aspect for banks to take a decision on **loan acceptance or rejection. These reports are maintained by 'Credit Information Bureau' of Maldives established under the Maldives Banking Act and governed by a Credit Information Regulation issued under the Act³⁰.**
- **'Fixed Obligation Income Ratio'** is assessed by banks as a credit evaluation procedure. FOIR considers all the fixed obligations that a borrower is supposed to meet regularly on a monthly basis. The fixed obligations do not include statutory deductions from the salary such as Provident Fund, professional tax and deductions for investments such as insurance or a recurring deposit. As per bank's eligibility criteria, the borrowers should restrict all their fixed obligations including the currently applying loan EMI in the range of 45 to 50% of his monthly income. Or in other words, considering that 55 - **50% of borrower's income is required for his living, banks would see that all the monthly loan obligations/liabilities should be only 45 - 50% of borrower's monthly income. The 'Fixed Obligation Income Ratio' is the ratio of monthly installments against the total loan amount and the monthly salary of the individual.** The ratio is used to check the capacity of the individual to repay the loan. It considers the active status of loan repayments for an individual and weighs them as a proportion of their monthly salary. The maximum percentage for the FOIR can vary across banks in Maldives but is typically in the range of 45 to 50 %.

Some of the risk mitigation instruments that are prevalent in the context of Maldives involve the following:

- **'Know Your Customer' (KYC)** Procedures – The check takes place at a regular frequency. Typically the KYC check is performed bi-annually by banks throughout the loan period. This ensures that the customer details with the banks are up to date during the loan tenure. are a critical function to assess customer risk and a legal requirement to comply with Anti-Money Laundering (AML) laws. Effective KYC **involves knowing a customer's identity, their financial activities and the risk they pose.**

CUSTOMER INFORMATION FORM (INDIVIDUAL)

MFLC
MALDIVES FINANCE LEASING COMPANY PVT. LTD.

If you have already submitted this form and some information needs to be updated, please fill in your name, ID card number and relevant sections to be changed.

New Customer Existing Customer

1 PERSONAL DETAIL

Mr Ms Dr Other, Please specify

Figure 13 KYC Form (illustrative example)

- Guarantees in case of bulk procurement of appliances – Some consumers may prefer availing the loan for a number of energy efficient appliances at the same time or procure appliances in bulk. Such a situation can arise in the case where a developer wants to procure a number of EE appliances and sell furnished apartments with all amenities as an example or in case of a household owner who would want to place a bulk procurement request. In such cases banks can define the loan limit above which a **'Guarantor' or a 'Guarantee' would have to be involved. In the case of a guarantor, a credit evaluation process**

³⁰ <https://cib.gov.mv/home>

will be applicable for the guarantor. This will thus be taken into consideration in the loan application process and the agreement will involve the disclosure of financial details of the guarantor.

- **Appliance Warranty** – This is a critical aspect for the appliances included in the list based financing and acts as a risk mitigation instrument thereby inspiring confidence attributable to reduced risk for banks and consumers leading to a successful loan arrangement. Appliance warranty acts as a guarantee issued to the purchaser of the appliance by its supplier/approved vendor, promising to repair or replacement if necessary within a specified period of time. Appliances sold without any warranty shall disqualify for the list based financing irrespective of energy efficiency claims.
- **‘Salary Deduction Mechanism’** as a risk mitigation instrument – Direct salary deduction towards loan repayment is preferred by banks in Maldives. At the time of signing the loan agreement with banks, employee obtains letter from employer and submits to the bank. It is thus a letter based **agreement between the employee, employer and the ‘Bank’ where the individual agrees for direct salary deductions by employer against the loan repayment through EMI.**
- **‘Post Dated Cheque’ mode of payment as a risk mitigation instrument** – At the time of loan agreement the banks prefer the mode of payment by asking the applicant for postdated cheques for the complete duration of the loan or on annual basis depending upon the preference of the applicant.

The risk mitigation instruments available with the banks/financial institutions shall be analyzed and then incorporated for the financial programme. This shall include but not limit to the instruments and strategies mentioned in this section, as mentioned above. In addition to these a risk mitigation measure to be incorporated shall include a selection criteria on the basis of energy savings appliance list. The details shall record the following:

Table 13 Risk Mitigation Criteria based on Energy Savings Appliance List

Key Appliance Aspects	Supporting Document
Name of Manufacturer	Appliance Specification Sheet / Manual
Appliance Type	AC/Refrigerator/Washing Machine
Model Name	Appliance Specification Sheet / Manual
Star Rating under the S&L Programme (1 to 5)	4 and 5 Star Labelled (applicability criteria)

3.5. Forecasting of Benefits

Approach to Forecasting Benefits by Implementation of Financing Scheme

The proposed financing scheme is expected to drive the consumer appliance market towards uptake of energy efficient appliances. This will be achieved through concessional list based consumer financing for ‘Energy Efficient’ (EE) appliances by banks in the initial years. The project team has analyzed the financing requirements/investments over the years to enable concessional financing for selected energy efficient appliances – Air Conditioners, Refrigerators and Washing Machines. As the S&L programme for the indicated appliances is under consideration for implementation, the project team has carried out a preliminary assessment to identify investment requirements, potential energy savings and GHG emissions mitigation potential over the years attributable to increased uptake of EE appliances as a result of financing scheme. The below illustration indicates the step wise approach to achieve the same.

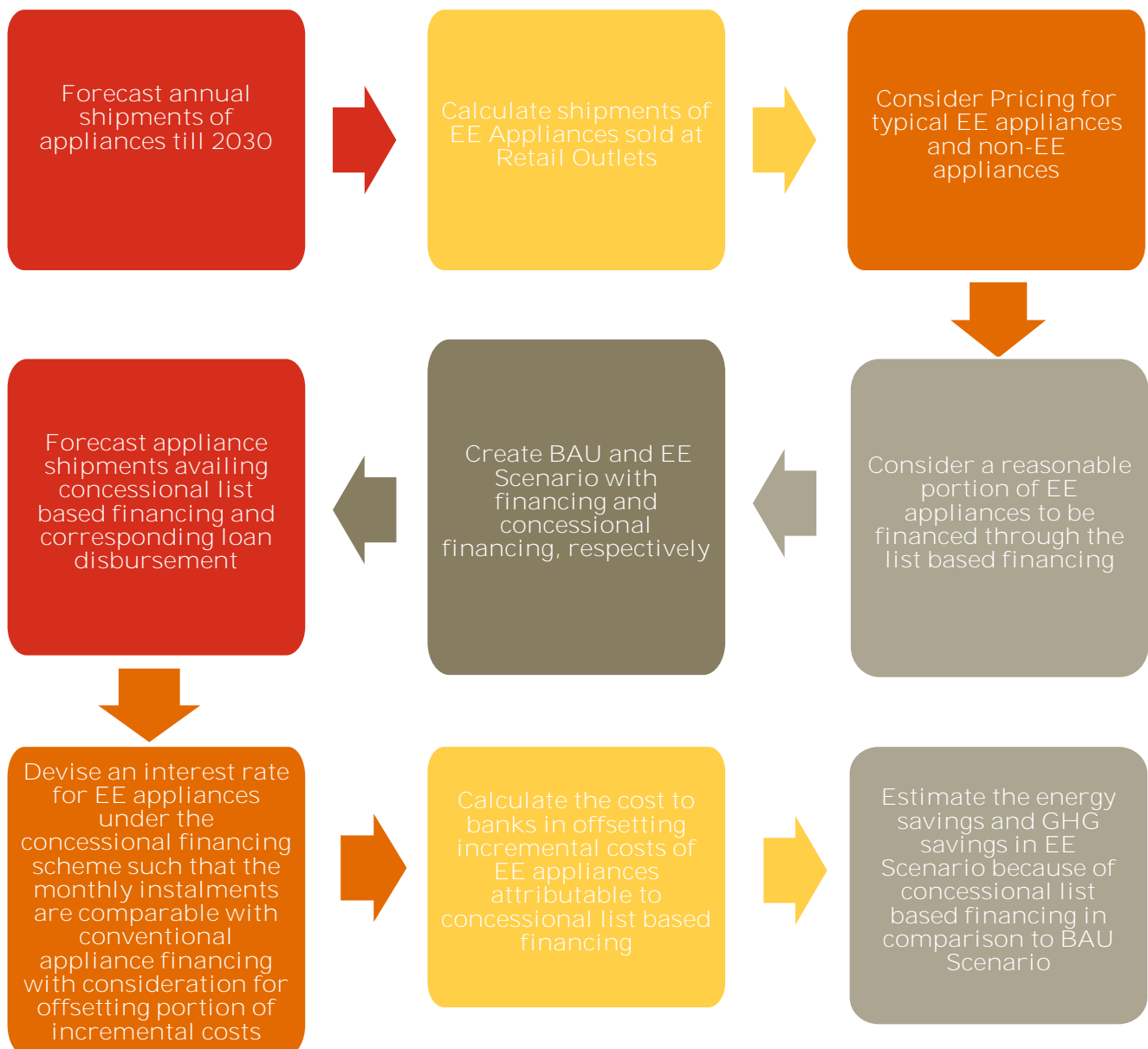


Figure 14: Approach to analyze forecasted benefits of financing scheme implementation

Investments & GHG Emissions Avoided up to 2030 because of financial programme intervention

Aligned to the approach discussed earlier, the step wise findings with assumptions are described next.

1. Estimating Annual sales of 3 appliances – Air Conditioners, Refrigerators and Washing Machines for the retail market.

To arrive at this, the team analyzed the imports of the above appliances from the available UN Comtrade imports of appliances for Maldives for the years 2014 to 2018³¹. The imports were forecasted for the years 2019 to 2030 by assuming a certain growth rate to as per past trends, based on which the project team arrived at the below forecast for annual sales³². The import forecast is indicative, and the growth trends shall be updated as an when the project team receives import data from Maldives Customs Service.

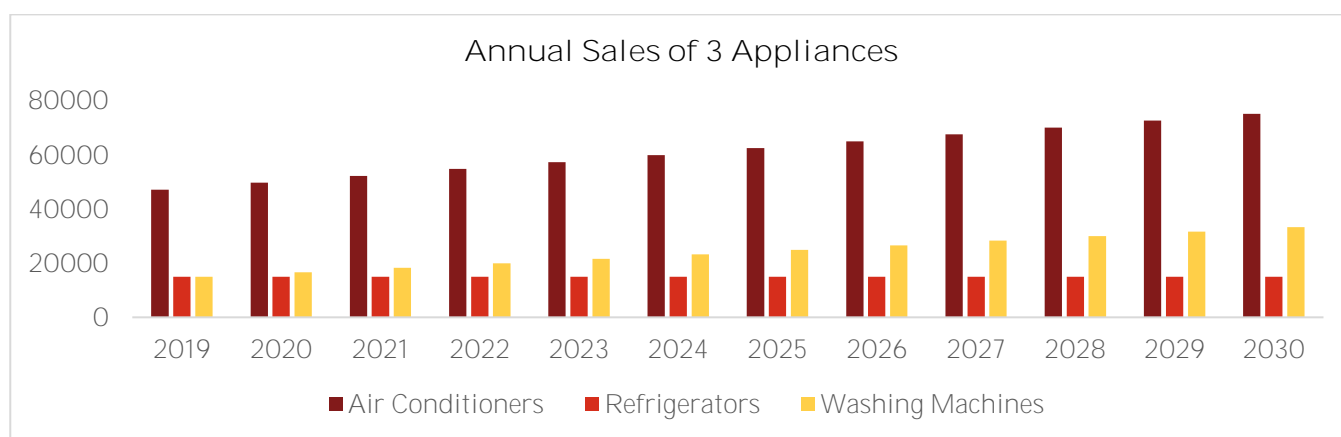


Figure 15: Annual Sales of 3 Appliances (Air-Conditioners, Refrigerators & Washing Machines)

For the three appliances under consideration, it will be reasonable to assume that 100% of washing machines and refrigerators are sold through retailer network while in case of air-conditioners only 60 % of them are sold at retail shops. About 40 % of air-conditioners are assumed to be sold under direct business to business mode for the commercial sector consumers. The annual sales at retail stores is represented in below figure.

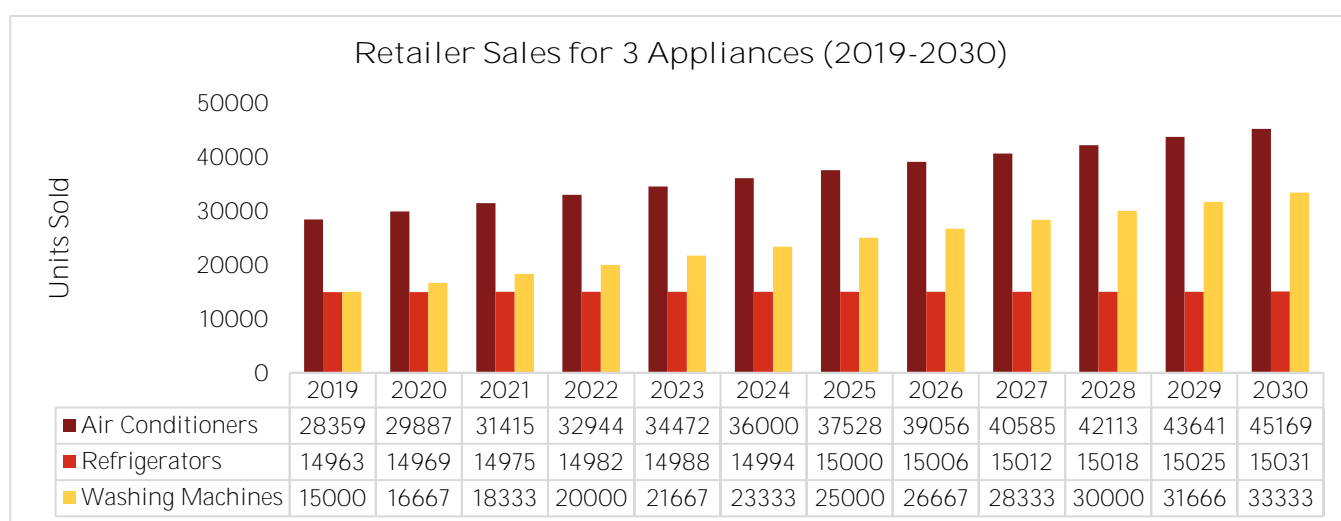


Figure 16 Annual Sales at Retail Stores for Appliances

³¹ The imports in the case of appliances do not show a consistent trend for the three appliances under consideration for the data available with UNCOMTRADE. Project team shall compare the UN Comtrade imports with that available with MCS to arrive at more accurate import numbers and trends for consideration in forecasting.

³² The forecasted import numbers are based on initial assumptions considered for the growth in imports for the period 2019 – 2030. The import numbers have been assumed to be equal to annual sales in the market. The figures will be updated post the latest imports data is received from Maldives Customs Service.

Key assumptions:

1. Annual Imports represent shipments of respective appliances in Maldives.
2. The compounded annual growth in shipments for air conditioners, refrigerators and washing machines for the period 2019 to 2030 is considered as 4.32 %, 0.04 % and 7.54 %, respectively.
3. 100% of washing machines and refrigerators are sold through retailer network while in case of air-conditioners only 60 % of them are sold at retail shops. About 40 % of air-conditioners are assumed to be sold under direct business to business mode for the commercial sector consumers

2. **Project team developed two scenarios namely ‘Business as Usual’ (BAU) and ‘Energy Efficiency’ (EE) to determine the benefits of the financial scheme on comparative terms.** The key considerations of the two scenarios are presented below.

Table 14: BAU & EE Scenario Considerations for Estimating Sales of Appliances at Retail Stores

BAU Scenario	EE Scenario
1. Majority of appliances sold (85%) are conventional and only a small proportion of them are energy efficient (15%). This consideration is consistent for sales during the period between 2020 and 2030.	1. The financing mechanism is assumed to be introduced in 2020 and influx of energy efficient appliances in the retail increases by equal intervals annually from 15 % in 2020 to 50 % in 2025 and 85 % in 2030.
2. Sales of appliances requiring conventional financing in this scenario is 90 % of appliances sold at retail. Remaining appliances are assumed to be sold without consumers taking the financing route.	2. Sales of appliances opting for concessional list based financing in this scenario is 90 % of appliances sold at retail. Remaining appliances are assumed to be sold without consumers taking the financing route.
3. Applicable annual interest rates are considered as 16 % over a maximum EMI period of 3 years for appliances. There is no consideration for concessional financing for energy efficient appliances in this scenario. ³³	3. Applicable annual interest rates are considered to be 6.5 % over a maximum EMI period of 3 years for energy efficient appliances. ³⁴ The concessional interest rate will enable offsetting the high cost of purchase of EE appliances.
4. Conventional financing shall be applicable throughout.	4. Innovative Financing to be applicable for a maximum tenure of 5 years to support the initial uptake of EE appliances. This is the duration in which it is expected that market share of EE appliances will increase to 50 %.

The above considerations will be discussed with stakeholders from financial institutions for their inputs and accordingly revisions will take place to finalize the applicable interest rate and loan period for EE appliances through list based financing. As a result of above considerations, the sales of EE appliances in EE attributable to innovative list based concessional financing mechanism will be as follows:

³³ Lui Loans are offered by Bank of Maldives (BML) for a duration of 5 years at an average interest rate of close to 19 % for loan amount of 50,000 MVR.

³⁴ The selection of this assumption is explained subsequently.

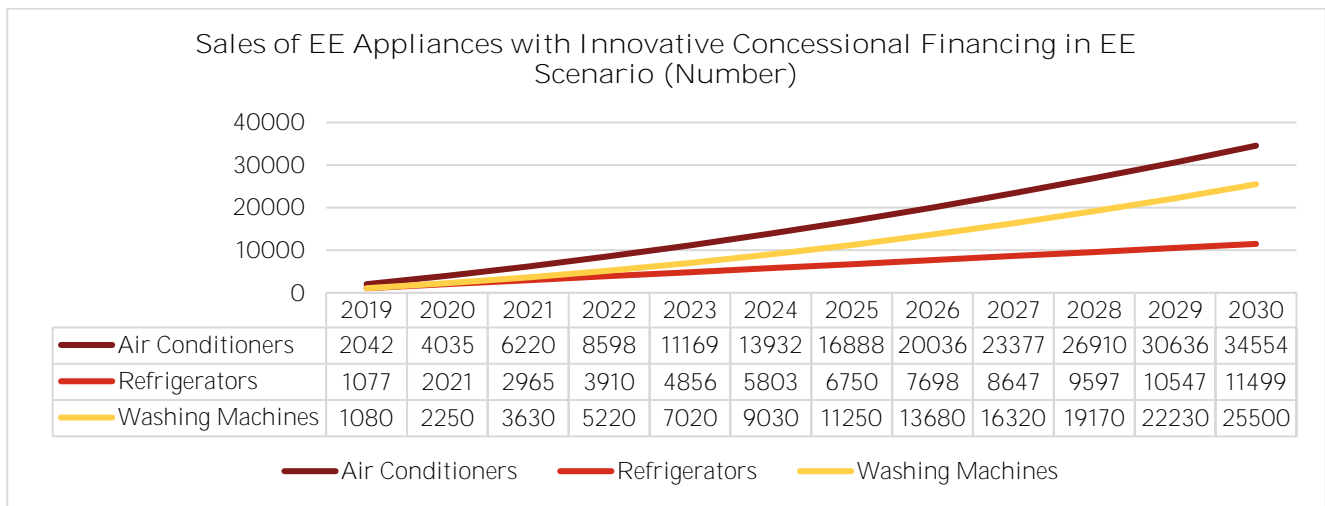


Figure 17: Assumed Sales of EE Appliances by List Based Financing in EE Scenario

The diffusion rates considered for EE appliances are as below:

Table 15 Diffusion Rate Consideration for EE Appliances in Maldives

Diffusion of EE Appliances	2020	2021	2022	2023	2024	2025
Air Conditioners	15%	22%	29%	36%	43%	50%
Refrigerators	15%	22%	29%	36%	43%	50%
Washing Machines	15%	22%	29%	36%	43%	50%

3. Loan disbursement options in list based financing and grant requirement for financial institutions in EE Scenario is next presented to arrive at a suitable financing solution.
 - a) To arrive at loan requirements based on sales volume under the two scenarios, the project team did a feasibility assessment for consideration of interest rates and loan term period in the two scenarios. To arrive at the same, it was necessary to consider the typical pricing for EE appliance and conventional appliance in the context of Maldives. The project team assumed the prices of the appliances as following:

Table 16: Assumed Prices of EE Appliances at Retail in Maldives

Assumed Pricing of Typical EE Appliances	Price, MVR
Air Conditioners (Capacity: 9000 BTU/hr.)	7011
Refrigerators (Cooling Capacity: 220 – 280 Liters)	8130
Washing Machines (Type: 7 Kg fully automatic)	6185

Table 17: Assumed Prices of Conventional Appliances at Retail in Maldives

Assumed Pricing of Typical Conventional Appliances	Price, MVR
Air Conditioners (Capacity: 9000 BTU/hr.)	6097
Refrigerators (Cooling Capacity: 220 – 280 Liters)	7070
Washing Machines (Type: 7 Kg fully automatic)	5378

Key assumptions and considerations:

1. The prices are assumed to be constant between the period 2021 – 2025
2. The prices of energy efficient alternatives have been assumed to be approximately 15% higher as that of conventional appliances under the same type
3. **The prices of ‘Conventional’ and ‘Energy Efficient Appliances’ are for typical appliances which have been considered as inclusive of all applicable taxes. At the time of finalization of financial programme with the bank/banks, the EMI calculations and the applicable market rates of the banks with other considerations for inflation rate, actual GST/VAT, etc. shall be considered.**

- b) The project team arrived at a case where the equated monthly installment (EMI) for the consumer in EE scenario with list based financing (for EE appliances) is comparable to that in BAU scenario with conventional financing. The EMI were calculated by considering debt to equity percentages of 100 %, 80% and 60 % under three cases for arriving at resulting EMI analysis.

The EMI computed in BAU and EE scenarios for conventional and energy efficient appliances is analyzed in below table.

Table 18: EMI calculation for appliances using different Scenarios

EMI in BAU Scenario & EE Scenario with Conventional & List Based Financing						
BAU Scenario, Interest @ 16 %, EMI Term: 3 years	Debt/Equity @ 100 %		Debt/Equity @ 80 %		Debt/Equity @ 60 %	
	EMI, Con. Appliance	EMI, EE Appliance	EMI, Con. Appliance	EMI, EE Appliance	EMI, Con. Appliance	EMI, EE Appliance
Air Conditioner	MVR 214	MVR 246	MVR 171	MVR 197	MVR 129	MVR 148
Refrigerators	MVR 249	MVR 286	MVR 199	MVR 229	MVR 149	MVR 171
Washing Machines	MVR 189	MVR 217	MVR 151	MVR 174	MVR 113	MVR 130
EE Scenario Interest @ 6.5%, EMI Term: 3 years	Debt/Equity @ 100 %		Debt/Equity @ 80 %		Debt/Equity @ 60 %	
	EMI, Con. Appliance	EMI, EE Appliance	EMI, Con. Appliance	EMI, EE Appliance	EMI, Con. Appliance	EMI, EE Appliance
Air Conditioner	MVR 176	MVR 215	MVR 149	MVR 172	MVR 112	MVR 129
Refrigerators	MVR 89	MVR 249	MVR 173	MVR 199	MVR 130	MVR 150
Washing Machines	MVR 142	MVR 190	MVR 132	MVR 152	MVR 99	MVR 114

The project team carried out a number of iterations to arrive at the specified rate of interest and term for EMI in the case of EE Scenario (with list based financing). It is proposed to use an interest rate of 6.5 % with a maximum loan term of 3 years in the case of purchase of energy efficient appliances through list based financing as indicated in the above table.

For the EE and conventional appliances, partner banks may revisit the interest rates and maximum loan term with the aim to offset the differential cost in EMI for the procurement of energy efficient appliances. This will result in greater uptake of EE appliances in the market.

- c) Offset cost foregone by banks in offering list based concessional financing for energy efficient appliances in EE Scenario is presented next for the different debt to equity ratio cases.

As can be observed from below table, banks will bear a cost in providing concessional finance to borrower for purchase of EE appliance. This cost can be funded by grant funding on an annual basis depending on the availability of grant. The offset cost foregone by financial institutions has been calculated next at different debt to equity proportions followed by calculation for total grant requirements.

Table 19 Offset Cost to Banks in EE Scenario for the entire loan term

Cost to Banks in list based concessional financing per Appliance for the loan term in EE Scenario = 36 x (EMI EE @ 6.5%– EMI Con @ 16%)	Debt/Equity @ 100 %	Debt/Equity @ 80%	Debt/Equity @ 60%
Air Conditioner	MVR 1,118.81	MVR 895.05	MVR 671.29
Refrigerators	MVR 1,297.23	MVR 1,037.78	MVR 778.34
Washing Machines	MVR 986.13	MVR 788.91	MVR 591.68

Cost to banks in providing list based concessional financing for EE appliances in ‘EE Scenario’ is represented in below figure. The total sales of EE appliances opting for financing scheme has been considered for a period of 5 years. The case of 100 % debt financing has been considered in the subsequent analysis for offset cost to banks and calculation of grant requirements as it was observed from the stakeholder consultations that this is the mostly preferred route for appliance financing in Maldives.

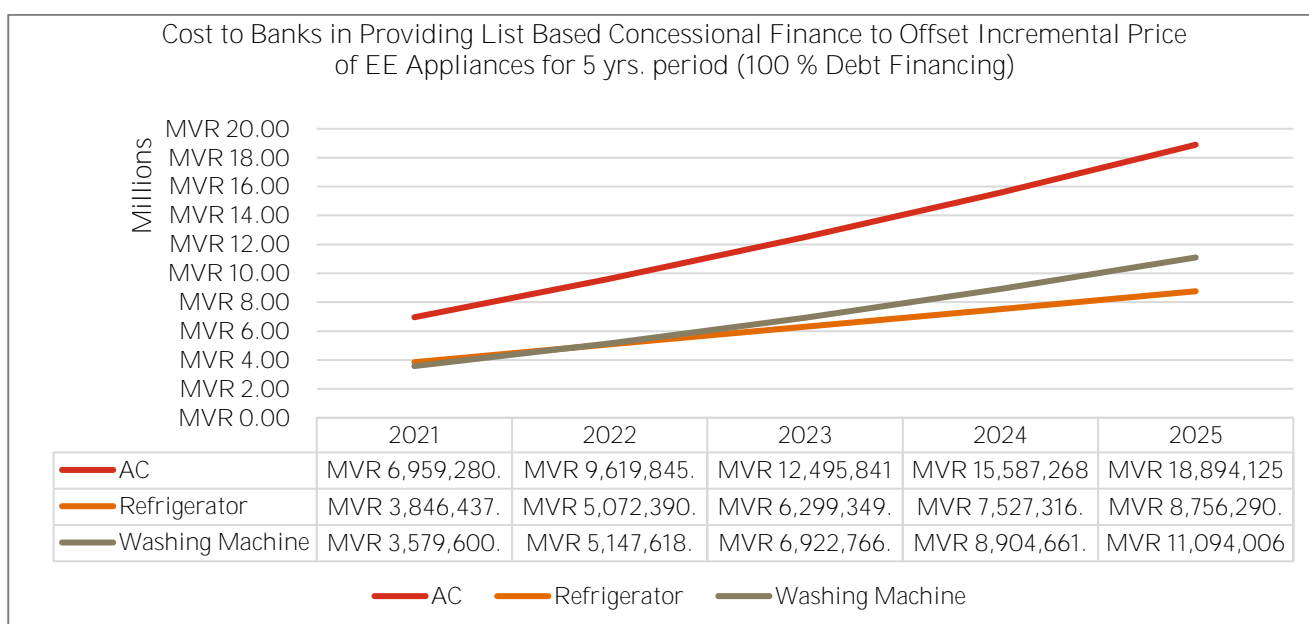


Figure 18 Offset Cost to Banks due to List Based Concessional Financing (2021 - 2025)

d) Grant Requirement (Cumulative Offset Cost Foregone by FIs) over the years for EE Appliances

Table 20: Grant Requirements for Financial Institutions, million MVR

Calculation for Offset Capital foregone by Banks per Appliance Category	Units	2021	2022	2023	2024	2025
AC	Million MVR	6.96	9.62	12.5	15.59	18.89
Refrigerator	Million MVR	3.85	5.07	6.39	7.53	8.76
Washing Machine	Million MVR	3.58	5.15	6.92	8.90	11.09
Grant Requirements in MVR	Million MVR	14.38	19.84	25.72	32.01	38.74
Grant Requirements in USD (@ 1 USD = 15.45 MVR)	USD	931,088	1,284,133	1,664,592.74	2,072,443.14	2,507,729.56
Cumulative Grant Requirements for 5 years	Million USD	8.46				

The method to arrive at grant requirements is explained next.

Method for Calculating Grant Requirements for a period of 5 years through concessional List based financing

The below flow diagram presents the method of arriving at total grant requirements in USD for the 3 appliance categories attributable to list based concessional financing for ‘Energy Efficient’ appliances under each category.

The ‘Grant Requirements’ are derived by first calculating the offset cost to banks for a typical appliance under each appliance category. This is arrived by subtracting the product of loan term and EMI for a typical EE appliance in absence of list based concessional financing (16 % annual interest rate and 3 year term) from product of loan term and EMI applicable for typical EE appliance with applicable list based concessional financing (loan term of 3 years and EMI based on 6.5 % interest rate).

The offset cost to banks for the given appliance is then multiplied with the sales of typical EE appliance for the years 2021 to 2025. This calculation is to be performed for all 3 appliance categories. The summation of annual cost to banks for the given year covering the 3 appliance categories will give the grant requirements for that year. **The complete calculation sheet is provided as an excel file ‘ Calculation Sheet for Forecasting Benefits’ along with this report.**

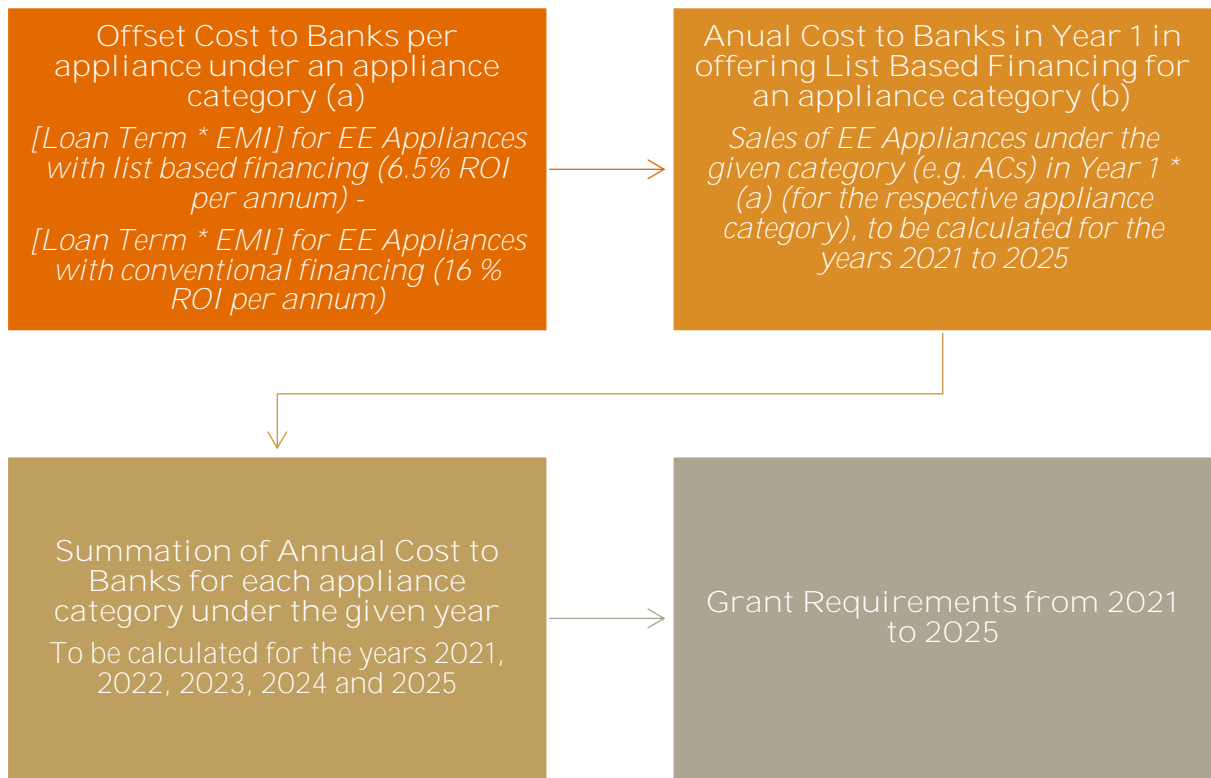


Figure 19 Grant Requirement Calculation Method Illustration

4. Energy & GHG Savings Calculation

The project team considered the below ‘Annual Energy Consumption’ (AEC) levels for the typical conventional and energy efficient appliances.

Table 21: Assumed Annual Energy Consumption levels for Conventional & Energy Efficient Appliances

Typical AEC Levels for Energy Efficient Appliances in kWh		
Appliance	AEC, kWh	Typical Appliance
Conventional Air Conditioner	868	Capacity 9000 BTU/hr.
Conventional Refrigerator	342	Cooling Capacity (220 – 280 Liters)
Conventional Washing Machine	280.5	7 kg fully automatic
Typical AEC Levels for Energy Efficient Appliances in kWh		
Appliance	AEC, kWh	Typical Appliance
EE Air Conditioner	556.5	Capacity 9000 BTU/hr.
EE Refrigerator	194	Cooling Capacity (220 – 280 Liters)
EE Washing Machine	198	7 kg fully automatic

Annual Energy Savings in EE Scenario = (AEC of Appliances in BAU) – (AEC of Appliances in EE Scenario), where AEC of Appliances in BAU and EE Scenario is calculated as following:

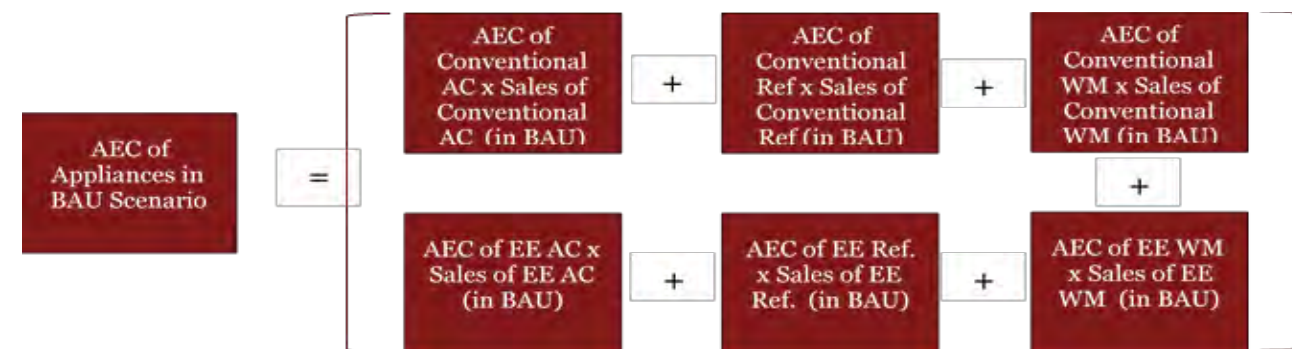


Figure 20: Annual Energy Savings Calculation in BAU Scenario

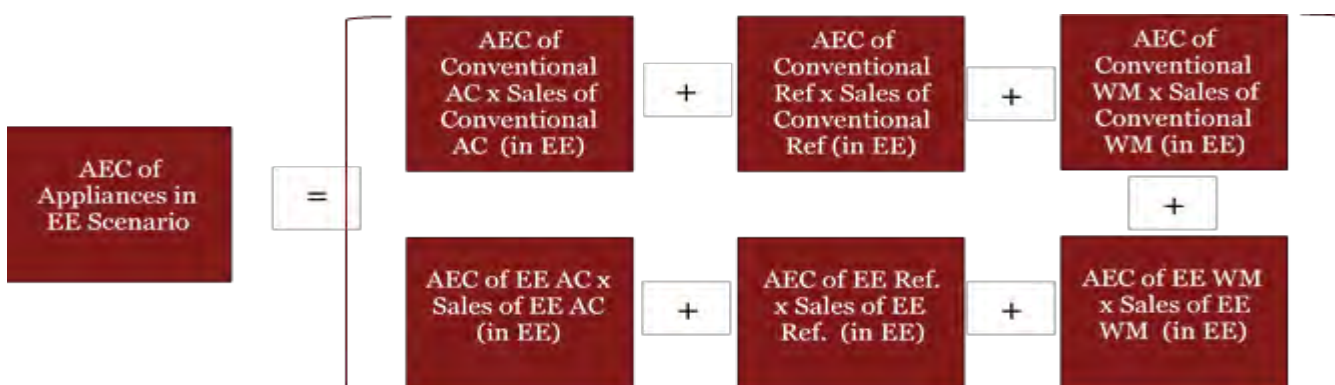


Figure 21: Annual Energy Consumption of Appliances in EE Scenario

Annual Energy Savings are used to further calculate ‘Cumulative Energy Savings’ from 3 appliances from 2021 to 2030 attributable to list based financing for EE appliances are presented below:

To arrive at cumulative energy savings between the period 2021 to 2030, it is assumed that the EE appliance will continue to contribute to energy savings till its operational life in years. For e.g. if the operational life of an air conditioner is 10 years, and if it is installed in the year 2021, the cumulative energy savings will consider annual energy savings of the air conditioner for the years 2021 to 2030.

The typical operation life in years for the appliances is provided in below table³⁵.

Table 22 Typical Operational Lifetime of Appliances

Appliance	Typical Operational Life in Years
Air Conditioner	10 to 12 years (~10 years)
Refrigerator	15 years (~15 years)
Washing Machine	10 to 12 years (~10 years)

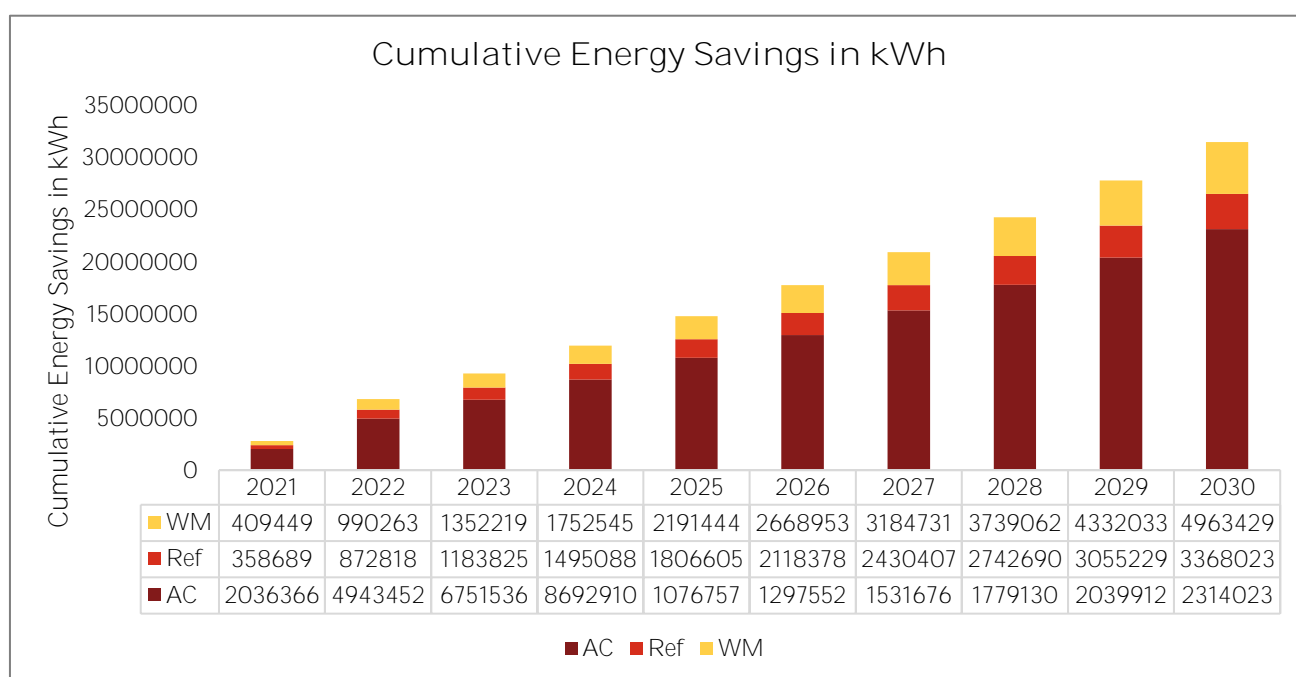


Figure 22 Cumulative Energy Savings from 3 appliances as a result of List Based Financing

Table 23: Cumulative Energy Savings & GHG Emissions Avoided due to List Based Financing (2021-2030)

Appliance Category	Cumulative Savings in GWh (2021 – 2030)	GHG Emissions Avoided (ktCO ₂) ³⁶	Electricity Savings at 0.22 \$/kWh (million USD)
Air Conditioners	122.81	90.75	27.02
Refrigerators	19.43	14.35	4.27
Washing Machines	25.58	18.90	5.63
Total	167.82	124	36.92

³⁵ These are typical operational lifetime based on international practices and considerations based on international experience of the project team.

³⁶ GHG emission factor for Maldives considered as 0.73 kgCO₂ per kWh as applied in UNEP U4E country assessment

4. *Next steps*

The following are the tasks that would be completed in the coming weeks:

- Discussion with ME on the proposed financing instrument, business model and forecasted benefits
- Finalizing the financial strategy
- Define the activities to develop the model, including MRV and disposal
- Conduct stakeholder consultations to validate the financial strategy and programme
- Develop implementation strategy and implementation workplan for the financial programme

Annexure 1 – Stakeholders Consulted on Relevance of Financial Instruments Based on the Matrix Presented in Table 8

The responses towards Table 8 on Relevance of Financial Instruments were received from representatives from 2 banking and 2 non-banking financial institutions and the responses were concurrent in nature.

The following stakeholders were contacted to gain inputs on the on **‘Relevance of Financial Instruments’** and other loan product related details in Maldives.

Organization	Contact Details
Maldives Islamic Bank (MIB)	Mr. Ali Wasif
	Chief Finance Officer
	Hp: 9933696
	Email: ali.wasif@mib.com.mv
Bank of Maldives (BML)	Mr. Mohamed Haneef
	Head of SME Banking
	Hp: 7776074
	Email: haneef@bml.com.mv
Maldives Finance Leasing Company (MFLC)	Mr. Ashif Rasheed
	Deputy General Manager - Finance
	Hp: 7775665
	Email: asif@mflc.com.mv
HDFC Bank	Mr. Mohamed Nawaz Hassan
	Assistant Manager - Credit
	Housing Development Finance Corporation Plc
	Mobile ; 7957081
	Email: nawaz@hdfc.com.mv

Annexure 2 – Impact Potential with Available Grant of 700,000 USD

We derived the impact potential by considering 700,000 USD (10,815,000 MVR) grant for financing EE appliances in the Maldives. The proportional sales of EE appliances was back calculated from concessional finance requirements calculated in Table 20. The overall grant requirements to finance the sales of EE appliances through list based finance as tabulated in Table 20 is presented below for reference along with unit sales of EE appliances under each category corresponding to availability of grant.

Calculation for Offset Capital foregone by Banks per Appliance Category	Units	2021	2022	2023	2024	2025
AC	Million MVR	6.96	9.62	12.5	15.59	18.89
<i>EE AC Sales</i>	<i>Units</i>	<i>6,220</i>	<i>8,598</i>	<i>11,168</i>	<i>13,932</i>	<i>16,887</i>
Refrigerator	Million MVR	3.85	5.07	6.39	7.53	8.76
<i>EE Ref Sales</i>	<i>Units</i>	<i>2,965</i>	<i>3,910</i>	<i>4,856</i>	<i>5,802</i>	<i>6,750</i>
Washing Machine	Million MVR	3.58	5.15	6.92	8.90	11.09
<i>EE WM Sales</i>	<i>Units</i>	<i>3,629</i>	<i>5,220</i>	<i>7,020</i>	<i>9,029</i>	<i>11,250</i>
Grant Requirements in MVR	Million MVR	14.38	19.84	25.72	32.01	38.74
Grant Requirements in USD (@ 1 USD = 15.45 MVR)	USD	931,088	1,284,133	1,664,592.74	2,072,443.14	2,507,729.56
Cumulative Grant Requirements for 5 years	Million USD	8.46				

The grant of 700,000 USD will be able to cover EE appliance sales for the 1st year (i.e. year 2021) as can be observed from the above table.

The resultant sales of EE appliances as a result of USD 700,000 grant concessional finance is presented below:

Resultant EE Sales As a Result of List Based Financing

EE Appliance Category	Grant Allocation, MVR	Resultant Unit Sales in 2021
AC	5,232,043.75 (48 %)	4,676 units
Ref	2,891,783.13 (27 %)	2,229 units
WM	2,691,173.11 (25 %)	2,729 units

Resultant Energy Savings

Resultant Energy Savings	Year 1 Savings in kWh	Cumulative Energy Savings (GWh) over life time (~ 10 yrs.)
AC	1,456,709	14.5
Refrigerators	329,922	3.2
Washing Machines	225,144	2.2

Resultant GHG emission reductions

Resultant GHG emission reductions	Year 1 emission reductions in ktCO ₂	Cumulative emission reductions (ktCO ₂) over lifetime (~ 10 yrs.)
AC	1.06	10.63
Refrigerators	0.24	2.41
Washing Machines	0.16	1.64

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**Ministry of Environment, Climate Change and
Technology**

Development of Financial Programme for Energy Efficient Appliances

Financial Programme

**Promoting Energy Efficient Buildings through
Strengthening Low Carbon Energy
Island Strategies (LCEI) Project**



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A. Context

Background

The Republic of Maldives is highly dependent on imported fossil fuels to meet its energy needs. Furthermore, as a Small Island Developing State, it also relies on fossil-fuel based transport for the imports that provide the needs and wants of the population. As a result, the cost of energy generation and energy dependent appliances is both high and unreliable, causing financial constraints on national budget and individual finances.

Government of Maldives has initiated the “Strengthening Low Carbon Energy Island Strategies Project (LCEI)”, which is designed with a goal of market transformation for energy efficient technologies in buildings and the built environment in the Maldives to promote energy efficiency investments in buildings. The project not only targets energy efficient technologies but also encourages the use of emerging low carbon energy technologies for the building sector. LCEI Project is funded by the Global Environment Facility (GEF) and implemented by the Ministry of Environment, Climate Change and Technology with support from UN Environment. It aims to reduce greenhouse gas (GHG) emissions through energy efficiency in the building sector. Appliances and their use in building sector has been identified as the focus area for energy efficiency as per the National Energy Policy and Strategy (2010). As part of the LCEI project, some of the initiatives already taken by Ministry of Environment, Climate Change and Technology, Government of Maldives, are:

1. Development of Standards and Labelling (S&L) programme for air-conditioners, refrigerators, and washing machines. The regulation is expected to be implemented that shall shift market to high quality, low impact appliances;
2. Energy efficiency guidelines for buildings are being developed that shall lay the minimum energy efficiency requirements for buildings in Maldives;
3. Life cycle cost based public procurement guidelines thereby promoting energy efficient products and technologies;
4. Establishment of the ‘Green Loan’¹ under Bank of Maldives Green Fund for increasing investment in energy efficiency and renewable energy solutions.

These initiatives indicate that Maldives is on a path of a transformational journey towards building its climate resilient capacity. It is anticipated that in near future the market will have higher share of energy efficient products and technologies.

The scope of the assignment includes:

1. Inception workshop and review of existing financing mechanisms to identify stakeholders and workable financing mechanisms as per the local context.
2. Develop draft financial strategy and draft financial programme
3. Finalize draft strategy and programme after stakeholder consultations
4. Conduct consultation workshops and meetings with stakeholders for establishing financial strategy and financial programme.
5. Implementation of financial strategy and financial programme.
6. Capacity building and training of stakeholders.

Ministry of Environment, Climate Change and Technology engaged a consortium comprising of PwC Maldives, PwC India, and Riyan Pvt Ltd. to carry out the activities as per scope of the project on ‘Development of financial programme on Energy Efficient Appliances’. As a first step in the assignment (as mentioned in scope of the assignment), the project team organized an inception workshop. The approach and methodology for the project with key findings during inception phase, and detailed proceedings and agenda of the workshop are presented subsequently.

¹ From consultations with local stakeholders, it was found that Ministry of Environment, Climate Change and Technology, Government of Maldives supported BML in identifying priority areas to be covered as per the scope of the loan programme and also supported with the programme promotion.

Need for Financial Programme for Energy Efficient Appliances

Ministry of Environment, Climate Change and Technology has developed the S&L programme for 3 appliances: air-conditioners, refrigerators, and washing machines, and a regulation stating the same shall be notified by the Government of Maldives. It is estimated that the S&L programme for the three appliances alone will result in reduction of energy consumption of 1,326 million kWh (~16 % projected to 2030), GHG emission reduction of 980,321 tCO₂ equivalent and reduction in **147 MW** of generation capacity by 2030². Most of these savings will be accrued from the residential and commercial sector. **However, there can exist other appliances and energy consuming technologies that may further add to realization of energy efficiency in the long run.** Below figure provides projection of energy saving potential estimate based on our analysis³.

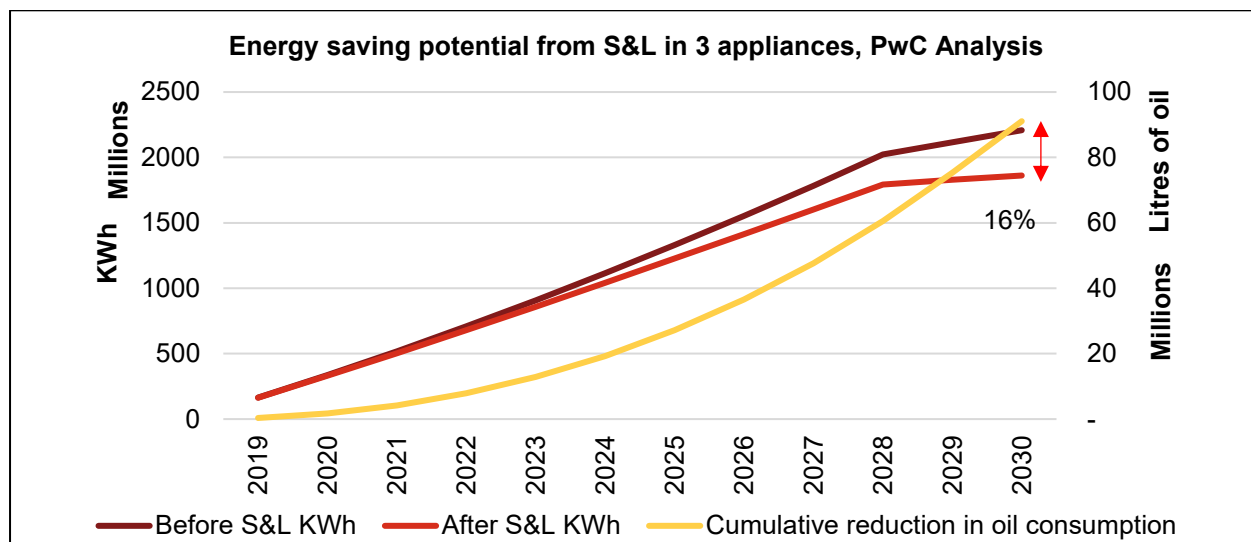


Figure 1 Energy saving potential from S&L in 3 appliances

Above findings, and other initiatives in the country indicate that Maldives is on a path of a transformational journey towards building its climate resilience capacity. Appliances like air-conditioners, refrigerators, fans, lights etc. are used by varied types of end users including – residential, commercial, industrial, government sectors, and with progressive energy efficient guidelines, it is anticipated that in near future the market will have more energy efficient products and technologies.

Adoption of efficient appliances would require comparatively higher upfront capital expenditure. Consumer behaviour, preferences, and buying capacities across end users thus needs to be assessed in the context of increasing the uptake of energy efficient appliances. This calls for a need to develop an innovative financial programme such that it can compensate for incremental cost of purchase by offsetting the higher upfront cost of purchase as a result of bulk adoption by end users, and lead to greater uptake of energy efficient appliances. At the same time, the financial programme needs to be robust and easy to operate. *On account of upfront cost barrier identified and to bring in energy efficiency market transformation in the household electrical appliance segment, it is necessary for Maldives to have a robust and locally adapted financial programme to promote greater adoption of energy efficient appliances across sectors and market segments.* At the same time, utmost care shall be taken towards making the programme a sustainable one such that the programme supports purchase of energy efficient appliances and leads to recovery of capital through operational energy cost savings.

²PwC analysis as part of ongoing project on “Development and Implementation of Energy Efficiency Labelling Program in Maldives”. As part of ongoing project, the analysis work was submitted to Ministry of Environment and Energy

³ Reference as above

B. Programme Outline

From the review of secondary data, findings from inception workshop, draft financial strategy and post analysis of inputs received from stakeholders, '**Banks to Consumer List Based Financing with Concessional Lending**' for energy efficient appliances such as the ones covered under the scope of S&L programme in Maldives. The option of dealer financing was shortlisted as the preferred financing option as part of the financing programme.

Outline of the Financing Programme: Banks to Consumer List based Financing (Concessional Lending)

Business Model

In this model an agreed list of appliances, the appliance providers and their energy efficiency levels are pre-approved for lending by financial institutions. Additionally, there are empanelled financial institutions that provide lending to borrowers for purchase of energy efficient appliance **through indirect financing with intermediary pre-approved vendors**. The banks/FIs can follow a standard lending procedure in assessing credit and conduct due diligence with the pre-approved appliance list in place with the help of vendors. The vendor will facilitate the borrower in collating the necessary documentation for loan application. These will be concessional loan based instruments for promotion of energy efficient appliances in Maldives. There can exist a number of stakeholders in operating such a model depending on the financial strategy. Accordingly, the roles and responsibilities of each actor in the operational value chain of the instrument can be defined. The framework intends to standardize environmentally friendly lending by clarifying principles on the use of funds, the process of evaluation and selection of EE appliances, the management of funds, and reporting. In addition, the model will aim to address the issue of higher cost of EE appliances by offsetting the cost through concessional loan as compared to conventional financing. The details of the financing business model showcasing the flow of funds, and the lending process is presented in this section.

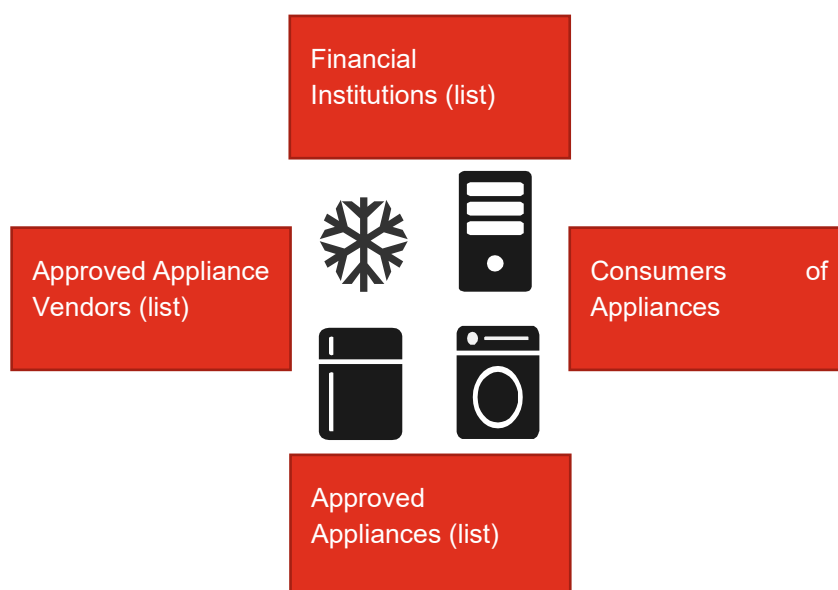


Figure 2: Essential components of consumer list based appliance financing instrument

In line with the above mentioned elements, two options for this business model have been designed - direct finance model and an indirect finance model through intermediary.

Elements of Financing Programme

The following are proposed to be the elements of the financial mechanism for list based consumer financing for energy efficient appliances.

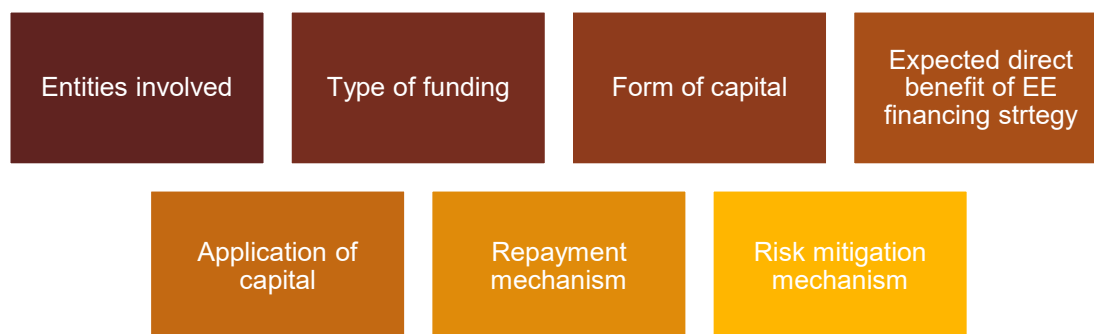


Figure 3 Elements of financial mechanism

The detailed outline of these attributes in the context of energy efficient appliances has been provided in the table below.

Table 1: Applicability of elements of Financing Mechanism in Maldives

Elements of Financing Mechanism	Description	Remark
Stakeholders/ entities involved	<p>This attribute describes the primary stakeholders involved in the various stages of the programme implementation. These entities can be sub categorised into four:</p> <ol style="list-style-type: none"> 1. Grant Provider: Initial Grant to support the mobilization of financial programme and to support financiers in operating the same. 2. The Financier: The financier in any instrument would be the entity, which directly provides the fund required for the successful implementation of the instrument. The instrument might be self-financed, or require no external source of financing, or the instrument might also require government support. 3. The Programme Manager / Service Provider: A programme manager would be an entity, which performs all the operations required for the successful implementation of the programme. Involvement of a programme manager would be imperative in case the implementation phase requires a complex operation procedure. 4. The Beneficiary: The beneficiary would be an entity, which receives the direct benefits of the EE financing instrument. This would be an entity, the benefit of whom the instrument focusses on. The beneficiary can be the end user or the customer, and the ESCO or the service provider in certain cases. 5. Policy makers and regulators: to ascertain the financial programme is within the existing financial and legal framework, and to review the framework for accommodation of new and upcoming business models, if required. 6. Facilitator: The one who will facilitate the finance (EMI/loan) processing between the consumer and the FI. In consumer financing, the one with whom the appliance purchase request is made can be the facilitator for the same. 	<ol style="list-style-type: none"> a. The Grant provider can be government of Maldives through the <i>Ministry of Environment, Climate Change and Technology</i>. b. <i>Financial Institutions</i> to be the financiers as well as the service providers in case of consumer list-based finance. The programme can start with one FI to test the implementation and in due course other FIs can be included. c. <i>Residential consumers</i> of EE appliances will be the beneficiaries. d. <i>Ministry of Environment, Climate Change and Technology</i> along to be the policy maker and regulator for the financial programme for energy efficient appliances. e. Facilitator: Pre-approved list of vendors of EE appliances. To begin with there can be few selected vendors and as the programme matures, additional vendors can be added to the list based on some basic minimum criteria.

Type of funding	This attribute would consider whether the capital required for the instrument is provided in the form of debt, or equity or a mixture of both. In case the government provides the capital and/or seed funding, it may be in the form of grant/ subsidy/ loan/ co-financing, etc.	Loan for upfront payment of the EE appliance with future co-financing opportunity
Form of capital	This attribute would represent the financial stake in the instrument held by the financier for the capital provided by them. This can be in the form of common shares, preference shares, long-term loans, mezzanine debt, etc.	Short term loans where the consumer will pay back the loan amount to bank subsequently over the loan period of 3 – 5 years at an agreed interest rate.
Instrument Objective / Expected Direct Benefits in EE investment	This attribute would entail the direct or the first benefit due to the investment made by the programme manager. This may be defined as the first objective the instrument seeks to achieve by the application of funds. A top-down approach is usually adopted for forecasting such impact and setting targets.	The benefits will be in terms of GHG emission reduction and cost savings as a result of savings in electricity consumption. The forecasted benefits are elaborated in Section 3.5.
Application of Capital in Implementation Phase	This attribute would define the way in which the capital is expected to be applied by the programme manager. The implementation phase of the project would start after this investment.	The capital will be used to pay the upfront cost of EE appliance for the consumer. Financial Institutions will act as repayment conduit.
Primary Repayment Mechanism (between end user and service provider)	After investment made for the EE improvement measure, the beneficiary is expected to repay the financier for the benefits enjoyed by them. Primary payment mechanism defines the financial agreement for repayment between the beneficiary and the service provider (or programme manager). This attribute has been further sub-divided into two components: <ol style="list-style-type: none"> a. Whether transferable: This refers to the clause when the repayment liability of the end user or the beneficiary is transferable to another entity, without any change in the payment terms. b. Modes of Repayment: This defines the mode of repayment by the end user to the service provider for the EE investment. 	Equated monthly instalment (EMI) as per applicable interest rates over an agreed period and after consideration of concession.
Risk Mitigation	This attribute describes if any risk mitigation strategy is present in the working model of the instrument.	KYC process followed with Bank's Credit Evaluation check, Application of Risk Mitigation Instruments such as guarantees, appliance minimum warranty, post-dated cheque based payment, direct salary deduction based repayment mechanism. These are further described in Section 3.4

C. Programme Management Arrangements

Implementation Organisations – Roles and Responsibilities

The stakeholders involved in the programme implementation would be the grant provider, financier, programme manager, facilitator, beneficiaries, policy makers and regulators. In addition, the financial institution would need to be empanelled by the nodal agency to operationalize the business model. The proposed role and responsibilities of the various stakeholders are detailed in the table below.

Table 2: Roles and Responsibilities of Key Actors

Actors	Role	Responsibility
Govt. of Maldives through Ministry of Environment, Climate Change and Technology	Grant Provider & Nodal Agency for the implementation of financial programme for EE Appliances	<ul style="list-style-type: none"> ▪ Facilitate selection of banks/FIs for creation of the financing facility ▪ Empanelment of banks/FIs ▪ Developing and maintaining list of EE equipment/appliances to be financed through the program ▪ Develop measurement, reporting and verification (MRV) framework for the programme ▪ Create outreach platform to disseminate information
FIs / Banks (Financing Institutions)	Intermediary Banks & Executing Agency (empaneled by ME)	<ul style="list-style-type: none"> ▪ Responsible for design and operationalization of financial program and any additional credit enhancement mechanisms ▪ Availing co-finance for the programme through collaboration with international development agencies ▪ Empanelment of EE technology suppliers (vendors / ESCOs / Retail Chains / etc.) through market assessment and technical due diligence ▪ Maintain records of funds disbursed and EE appliances purchased ▪ Report the programme progress and benefits as per the MRV framework
EE Appliance Pre-Approved Vendors	Technology Supplier (vendors/ Retail Chains / etc.)	<ul style="list-style-type: none"> ▪ Maintain approved list of EE equipment/appliances by coordinating with Banks/FIs from time to time ▪ Facilitate consumers for filing loan application with empaneled FIs/Banks ▪ Responsible for the overall supply and installation of the EE equipment/appliances and maintain the desired product quality and energy performance levels as laid out in the empanelment criteria.

The stakeholder roles and responsibilities shall be finalised in consultation with the Ministry of Environment, Climate Change and Technology.

D. Programme Financing and Costs

Financing Modalities

The indirect financing model proposed for the financing programme is presented below.

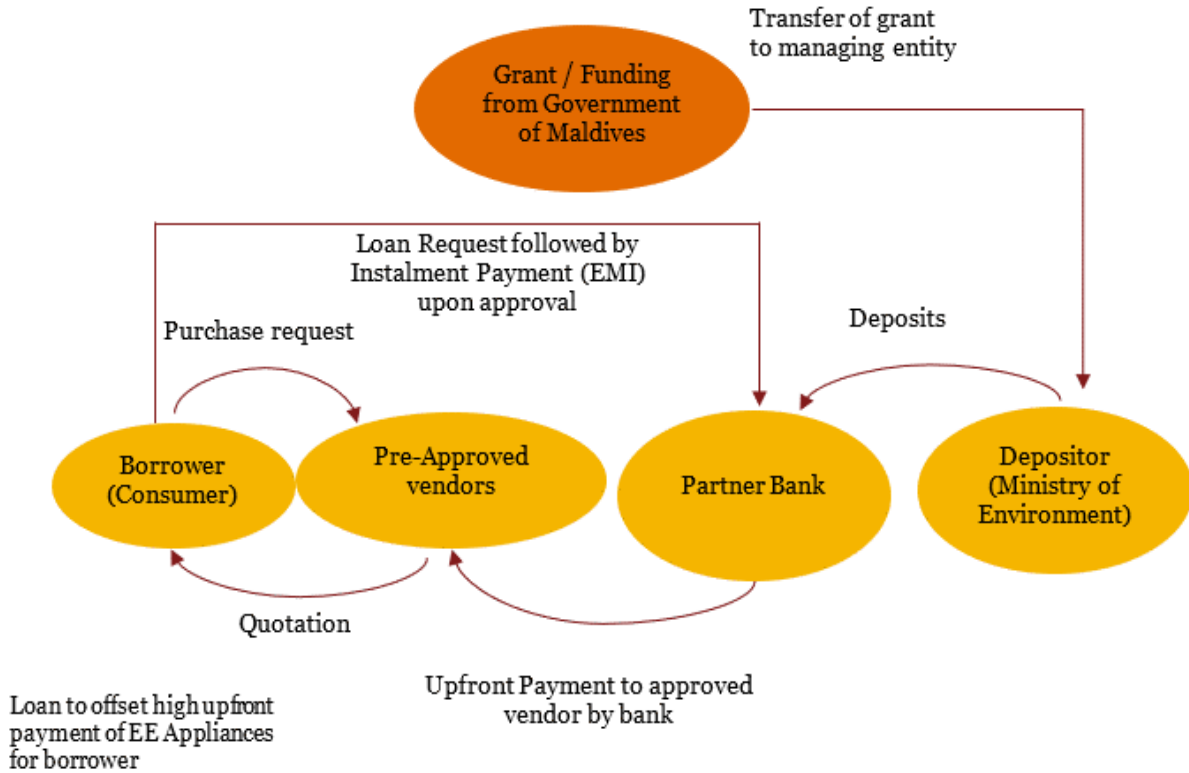


Figure 4: Indirect Financing Business Model

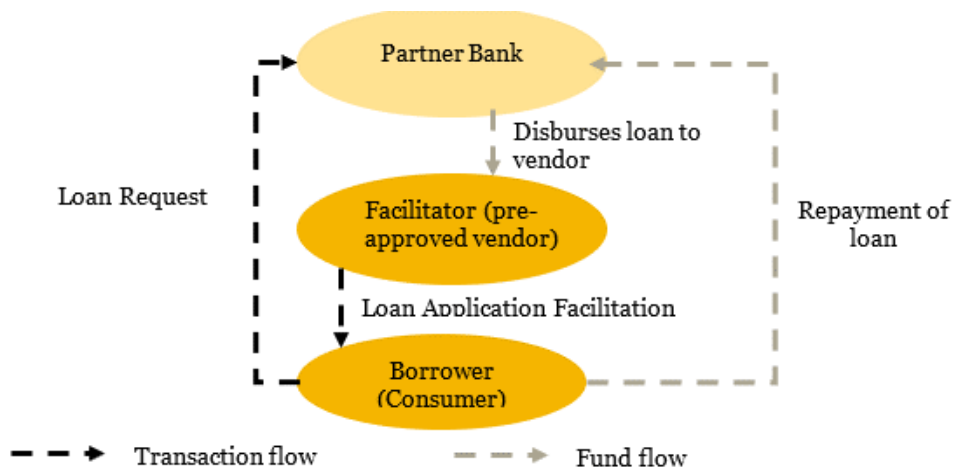


Figure 5: Flow of Funds in Indirect Financing Business Model

Programme Costs

To realise the potential of demand side energy efficiency savings as a result of ‘Energy Efficiency Appliance Financing’, the total projected sales of EE appliances between 2021 and 2030 are expected to grow as follows:

- EE Air-Conditioners: From ~6,900 units in 2021 to ~34,000 units by 2030 at a CAGR of 17.29%
- EE Washing Machines: From ~4000 units in 2021 to ~24,000 units by 2030 at a CAGR of 19.62%
- EE Refrigerators: From ~2500 units in 2021 to ~11,000 units by 2030 at a CAGR of 15.97%

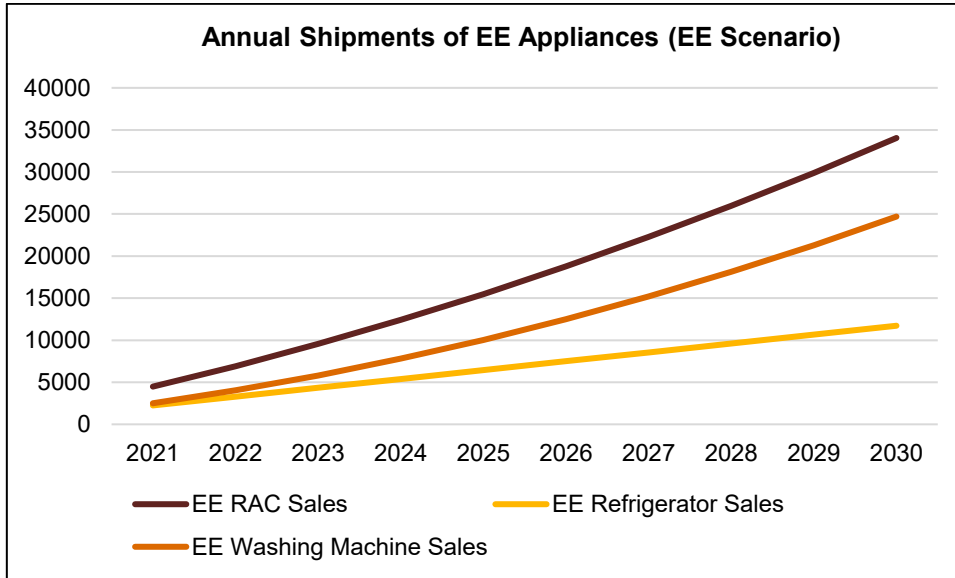


Figure 6: Annual Shipments of EE Appliances in EE Scenario (EE Appliance Financing)

To realize the above shipments as a result of the financial programme, the following investments shall be required to offset the incremental price of EE appliances in Maldives which are comparable to costs to be incurred by the financial programme. The programme cost is estimated to be 8.47 million USD from 2021 to 2030.

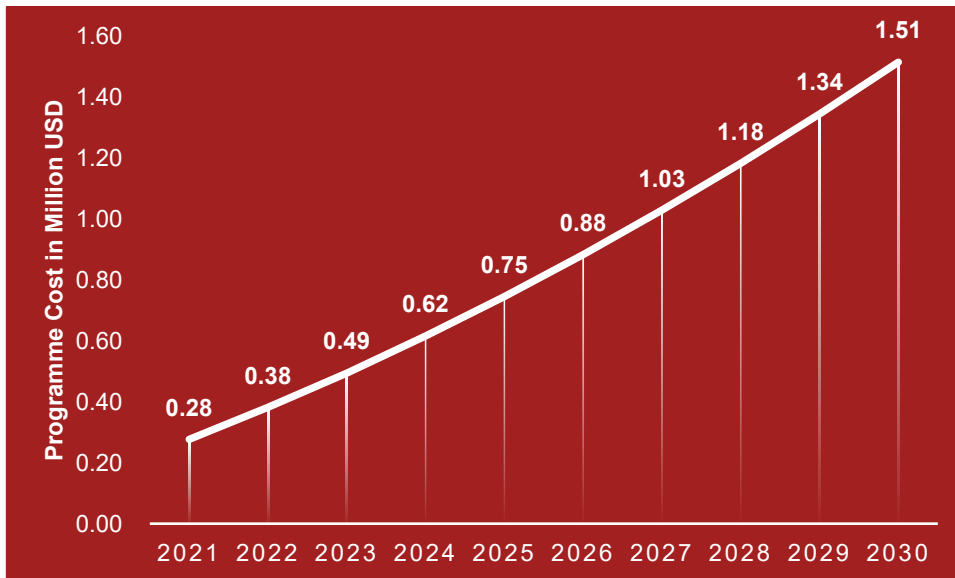


Figure 7: Annual Programme Cost

E. Risk Management

Overview of typical risks and control measures adopted

Typical risks foreseen over the course of a loan tenure are captured in the below table based on stakeholder interactions. These are indicated below with risk mitigation measures.

Table 3: Typical Risks & Control Measures

Risk description	Risk Mitigation/ Control	Residual Risk Rating
1. Increase of Delinquencies/Defaults	Stringent underwriting guidelines	Medium
	Frequent review of KYC	
2. Insufficient Security Coverage	Documenting the same as part of the loan agreement to avoid any such risks	Medium
	Constant review / monitoring	
	Periodic inspection/review of Security	
3. Inappropriate Insurance cover	Strengthen Operational procedures and controls - Periodic review	Medium
4. Litigation Process delay	Negotiate with Customer to seek out of courts settlements through dispute resolving mechanisms	Low
	Strengthen Recovery and Legal dept.	

Increase of Delinquencies / Defaults

To mitigate the risk of increase of Delinquencies/Defaults, it is important to have stringent underwriting guidelines focusing on checks on customer's character and the capacity to repay the loan. Character is lender's opinion of a borrower's general trustworthiness, credibility and personality. Lenders want to lend to people who are responsible and keep commitments. This can be assessed by assessing work experience, educational background, credit history, credentials, references, reputation and interaction with lenders. Capacity or customers' ability to repay the loan is the most crucial factor to consider. Lenders want assurance regarding the capacity of borrower to generate funds to repay the loan in full and also the frequency and the continuity of income generation. KYC means 'Know Your Customer' and sometimes 'Know Your Client' is a mandatory process of identifying and verifying the identity of the client at the time of lending and is a continuous process where the KYC details are checked bimanually in order to closely monitor borrower's information and to mitigate the Delinquencies/Defaults.

Insufficient security cover

Regular inspection of items can be conducted annually to review the value and condition of the security for the purpose of ensuring that the security value is sufficient for the loan amount. The review may not be very relevant in the case of appliance loan. However, this can be an option for the banks to track the condition of the purchased appliances in case of bulk procurement of appliances by a specific borrower.

Inappropriate Insurance Cover

This can be a risk more applicable for borrower of the loan product. Proper insurance cover can be obtained for each energy efficient appliance with the option to renew annually before the expiry date. The option of taking a single insurance premium for the tenor of the loan is the preferred way to avoid the chances of annual lapse of insurance which otherwise needs be monitored on regular basis.

Litigation delays related to settlement dispute

Litigation in its own nature is not a simplified process and it involves stages that are complex in nature. This phase comes up in the case the borrower fails to repay as per the agreement and also fails to respond to notices issued by the bank. It may require involvement of lawyer and legal action depending upon the case to case basis. Even though access to legal process is available for the banks, it is an expensive and a time consuming

process, which means delays leading to additional expense and if not properly addressed the required justice may not be reached. In order to quickly solve the dispute, resorting to arbitration quickens the process and ensures fair settlement through mutual understanding, thereby making it desirable. Therefore, it is important to have proper recovery/legal department for the banks.

Typical risk mitigation steps followed by banks

The banks in Maldives have their specific system and set of formalities for mitigating risks related to loan disbursement to consumers for financing any purchase. A brief overview of the steps followed by banks to mitigate the risks are presented below:

Step 1: Risk Mitigation as part of loan application stage

The generic loan application process followed by most of the banks and the involved risk mitigation instruments and measures are elaborated in this section. The Loan Application form is the first intent shown by the consumer to the bank for requesting the loan product. A typical loan application form has following sections⁴:

1. Personal Information with applicant's details
2. Loan Details
3. Income & Financial Details
4. Security, if applicable
5. Details of Referees for verification purpose

Valid proof documents shall be required to be submitted to validate the declared information against each of the above mentioned points. This ensures mitigation of any risks related to bank to consumer financing. A similar process can thus be taken for the concessional list based financing for energy efficient financing.

Table 4: Loan Application Requirements

Information Requested	Document as Proof for Verification
Personal Information with applicant details	Valid Identity Document
Loan Details	Quotation Details with Vendor Details
Income & Financial Details (for credit evaluation)	Letter from Employer, Salary Account Summary, Income Statement, Tax declaration, Proof for additional income, etc.
Security, if applicable	In selected cases where Loan Amount is greater than a pre-defined threshold value (Details of Security and a contract agreement for mortgage or security assurance)
Details of Referees for verification purpose	Self-Declaration with Contact details of referees

Step 2: Bank's Credit Evaluation Checks

To manage risks at the appraisal stage banks ensure that the credit evaluation is proper and the supporting documents are complete and accurate. Post this, a credit evaluation procedure is adopted by banks for individuals which involves assessment of '**Credit Information Bureau Report**' (CRIB report) and assessment of '**Fixed Obligation Income Ratio**' (FOIR) for the individual loan applicants.

- The **CRIB Report** is generated for any individual who has taken a credit in the past. The assessment of the report enables in knowing whether the customer has defaulted his/her payments in the past against any credit. The assessment becomes an important aspect for banks to take a decision on loan acceptance or rejection. These reports are maintained by 'Credit Information Bureau' of Maldives

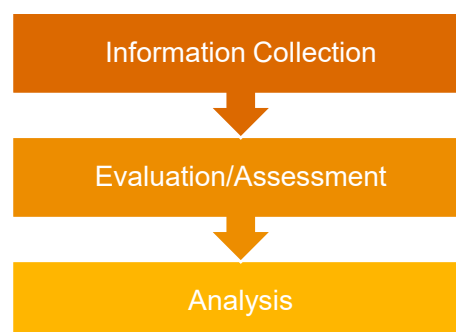


Figure 8: Risk Management

⁴ The customer loan application form for HDFC bank is available here: <https://www.hdfc.com.mv/downloads/loan-related/>

established under the Maldives Banking Act and governed by a Credit Information Regulation issued under the Act⁵.

- **‘Fixed Obligation Income Ratio’** is assessed by banks as a credit evaluation procedure. FOIR considers all the fixed obligations that a borrower is supposed to meet regularly on a monthly basis. The fixed obligations do not include statutory deductions from the salary such as Provident Fund, professional tax and deductions for investments such as insurance or a recurring deposit. As per bank’s eligibility criteria, the borrowers should restrict all their fixed obligations including the currently applying loan EMI in the range of 45 to 50% of his monthly income. Or in other words, considering that 55 - 50% of borrower’s income is required for his living, banks would see that all the monthly loan obligations/liabilities should be only 45 - 50% of borrower’s monthly income. The ‘Fixed Obligation Income Ratio’ is the ratio of monthly instalments against the total loan amount and the monthly salary of the individual. The ratio is used to check the capacity of the individual to repay the loan. It considers the active status of loan repayments for an individual and weighs them as a proportion of their monthly salary. The maximum percentage for the FOIR can vary across banks in Maldives but is typically in the range of 45 to 50 %.

Some of the risk mitigation instruments that are prevalent in the context of Maldives involve the following:

- **‘Know Your Customer’ (KYC) Procedures** – The check takes place at a regular frequency. Typically, the KYC check is performed bi-annually by banks throughout the loan period. This ensures that the customer details with the banks are up to date during the loan tenure. are a critical function to assess customer risk and a legal requirement to comply with Anti-Money Laundering (AML) laws. Effective KYC involves knowing a customer’s identity, their financial activities and the risk they pose.
- **Guarantees in case of bulk procurement of appliances** – Some consumers may prefer availing the loan for a number of energy efficient appliances at the same time or procure appliances in bulk. Such a situation can arise in the case where a developer wants to procure a number of EE appliances and sell furnished apartments with all amenities as an example or in case of a household owner who would want to place a bulk procurement request. In such cases banks can define the loan limit above which a ‘Guarantor’ or a ‘Guarantee’ would have to be involved. In the case of a guarantor, a credit evaluation process will be applicable for the guarantor. This will thus be taken into consideration in the loan application process and the agreement will involve the disclosure of financial details of the guarantor.
- **Appliance Warranty** – This is a critical aspect for the appliances included in the list based financing and acts as a risk mitigation instrument thereby inspiring confidence attributable to reduced risk for banks and consumers leading to a successful loan arrangement. Appliance warranty acts as a guarantee issued to the purchaser of the appliance by its supplier/approved vendor, promising to repair or replacement if necessary within a specified period of time. Appliances sold without any warranty shall disqualify for the list based financing irrespective of energy efficiency claims.
- **‘Salary Deduction Mechanism’ as a risk mitigation instrument** – Direct salary deduction towards loan repayment is preferred by banks in Maldives. At the time of signing the loan agreement with banks, employee obtains letter from employer and submits to the bank. It is thus a letter based agreement between the employee, employer and the ‘Bank’ where the individual agrees for direct salary deductions by employer against the loan repayment through EMI.
- **‘Post Dated Cheque’ mode of payment as a risk mitigation instrument** – At the time of loan agreement the banks prefer the mode of payment by asking the applicant for post-dated cheques for the complete duration of the loan or on annual basis depending upon the preference of the applicant.

The risk mitigation instruments available with the banks/financial institutions shall be analyzed and then incorporated for the financial programme. This shall include but not limit to the instruments and strategies mentioned in this section, as mentioned above. In addition to these a risk mitigation measure

⁵ <https://cib.gov.mv/home>

to be incorporated shall include a selection criterion on the basis of energy savings appliance list. The details shall record the following:

Table 5: Risk Mitigation Criteria based on Energy Savings Appliance List

Key Appliance Aspects	Supporting Document
Name of Manufacturer	Appliance Specification Sheet / Manual
Appliance Type	AC/Refrigerator/Washing Machine
Model Name	Appliance Specification Sheet / Manual
Star Rating under the S&L Programme (1 to 5)	4 and 5 Star Labelled (applicability criteria)

F. Programme Benefits

The proposed financing scheme is expected to drive the consumer appliance market towards uptake of energy efficient appliances. This will be achieved through concessional list-based consumer financing for 'Energy Efficient' (EE) appliances by banks in the initial years. The project team has analyzed the financing requirements/investments over the years to enable concessional financing for selected energy efficient appliances – Air Conditioners, Refrigerators and Washing Machines. As the S&L programme for the indicated appliances is under consideration for implementation, the project team has carried out a preliminary assessment to identify investment requirements, potential energy savings and GHG emissions mitigation potential over the years attributable to increased uptake of EE appliances as a result of financing scheme.

Higher share of high efficiency appliances in overall appliances sale

The financial programme is expected to drive the consumer appliance market towards uptake of energy efficient appliances through increased sales. The financing mechanism is expected to increase retail sales of energy efficient appliances by 15% in 2021, 50% in 2025 and 85% in 2030.

Projected Energy Savings & GHG emission reductions

The financial programme is expected to reduce energy consumption by 168 GWh of energy which equates to 0.2 million tCO_{2e} emission reductions by 2030. In terms of cost savings, this amounts for electricity savings of around USD 36.92 million.

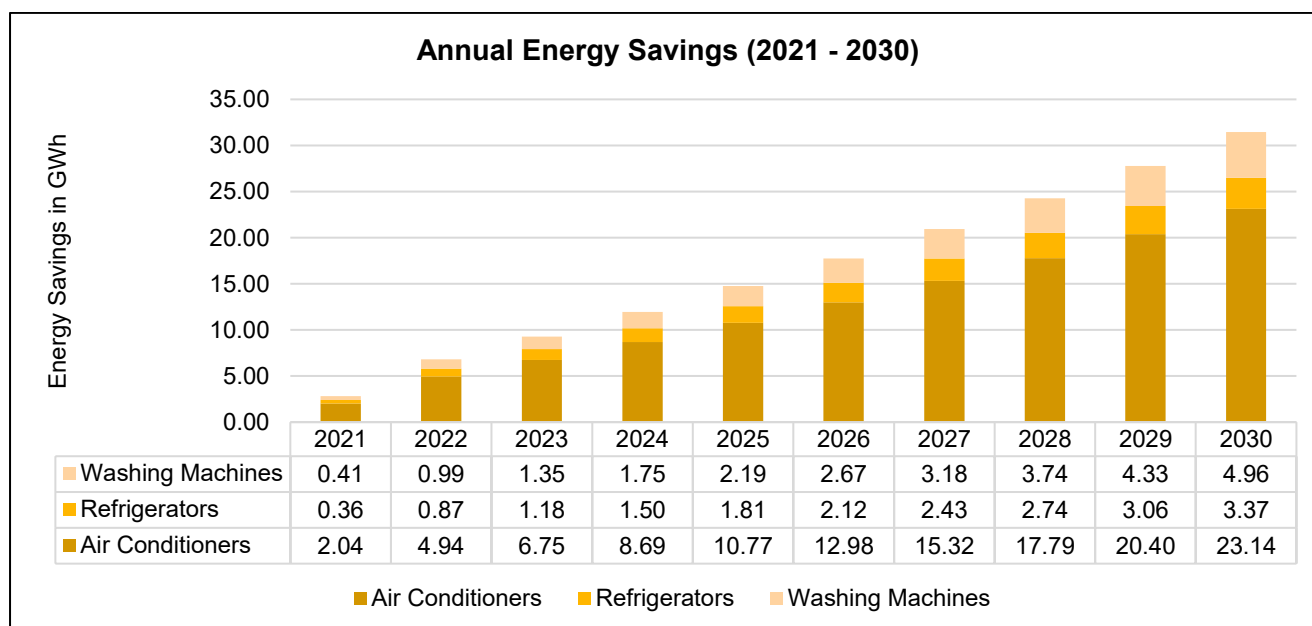


Figure 9: Annual Energy Savings from Increasing Penetration of EE Appliances

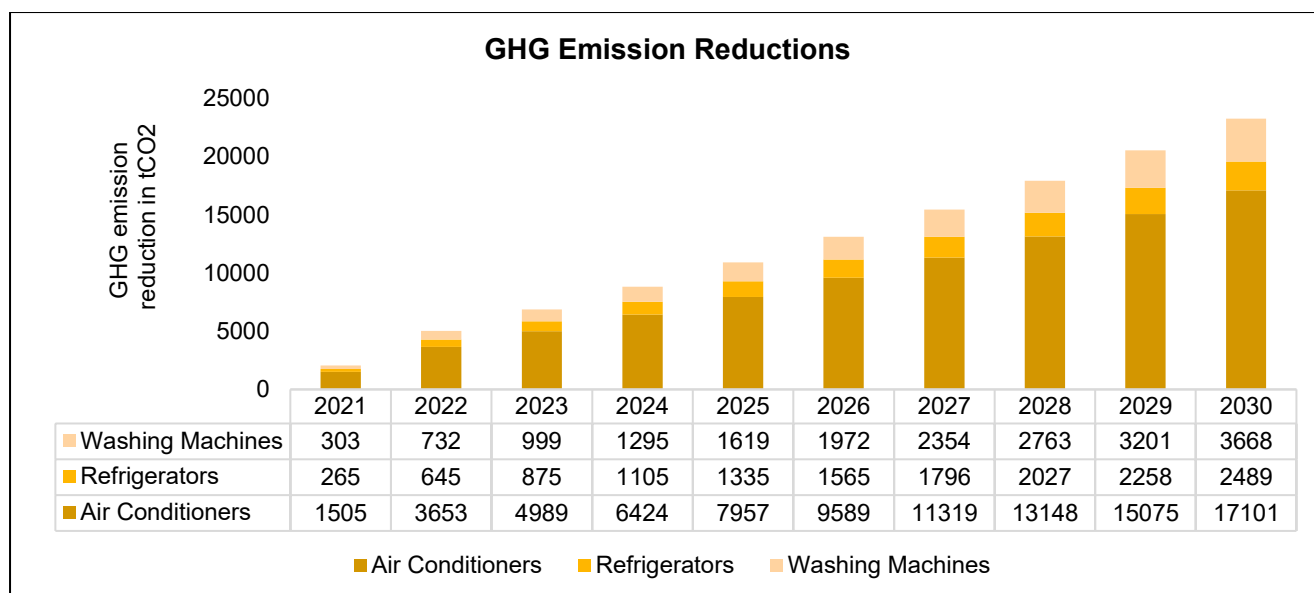


Figure 10: GHG Emission Reductions Year on Year as a Result of EE Appliance Financing Programme

Cumulative Energy Savings between (2021 – 2030):

Table 6: Cumulative Energy Savings

Cumulative Energy Savings		GWh
Air Conditioners		122.81
Refrigerators		19.43
Washing Machines		25.58

Table 7: Summary of benefits

Appliance Category	Investments in Million USD (2021 – 2030)	Cumulative Savings in GWh (2021 – 2030)	GHG Emissions Avoided (ktCO ₂) ⁶	Electricity Savings at 0.22 \$/kWh (million USD)
Air Conditioners	4.14	122.81	90.75	27.02
Refrigerators	1.80	19.43	14.35	4.27
Washing Machines	2.53	25.58	18.90	5.63
Total	8.47	167.82	124	36.92

⁶ GHG emission factor for Maldives considered as 0.73 kgCO₂ per kWh as applied in UNEP U4E country assessment

G. Next Steps

The steps to be followed beyond the finalizing of this document are highlighted below:

- Discussion with the Ministry of Environment, Climate Change and Technology on the proposed financial programme
- Finalizing the financial programme
- Conduct stakeholder consultations to validate the draft financial programme, ascertain their roles and seek additional feedback
- Identification and onboarding of financial institution by Ministry of Environment, Climate Change and Technology
- Development of implementation workplan in consultation with the Ministry of Environment, Climate Change and Technology, identified financial institution and stakeholders



**Ministry of Environment, Climate Change and
Technology**

Development of Financial Programme for Energy Efficient Appliances

Draft Implementation Manual

**Promoting Energy Efficient Buildings through
Strengthening Low Carbon Energy
Island Strategies (LCEI) Project**



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A. Introduction to Financial Programme

The programme will finance residential buyers of approved list of energy efficient household appliances under the appliance categories of washing machines, air conditioners and refrigerators in accordance with S&L programme in the Maldives. The programme will be implemented through the Banks to Consumer ‘**List Based Appliance Financing**’ through indirect financing route with credit guarantee facility. The programme through this model will enhance the uptake of energy efficient appliances. The business model for the financial programme is presented below:

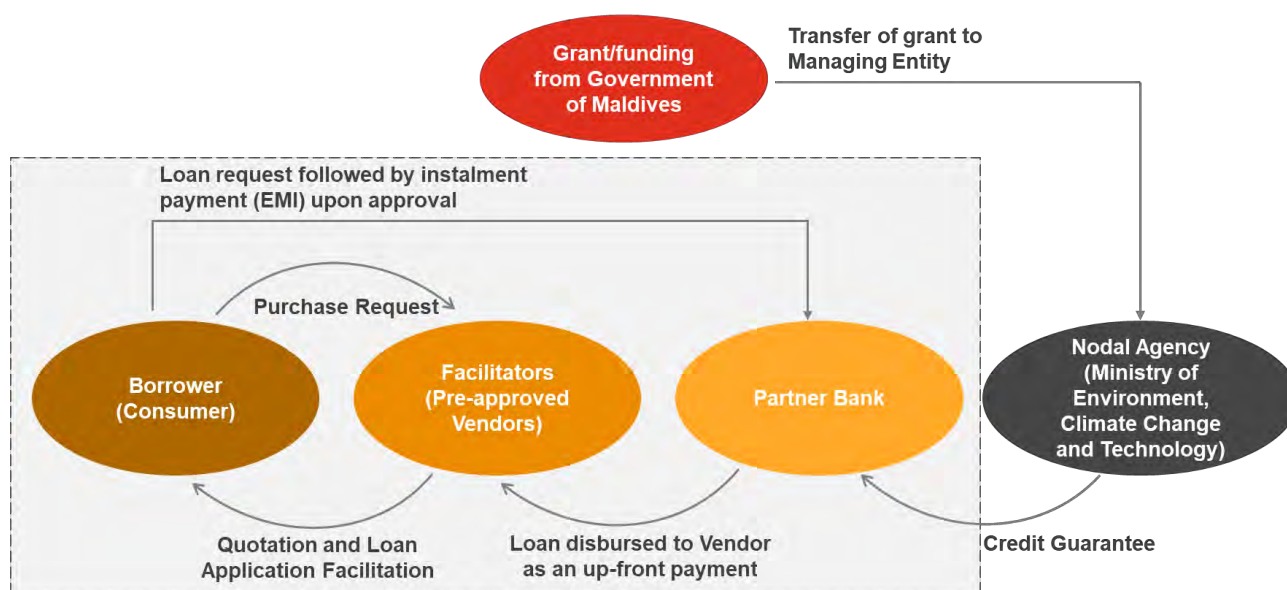


Figure 1: List Based Financing (Indirect Financing) with Credit Guarantee Facility

The impact of the programme will be an expanded market for energy efficient appliances and reduced greenhouse gas (GHG) emissions of the economy, aligned with the Nationally Determined Contributions (NDC) to the United Nations Framework Convention on Climate Change (UNFCCC). The programme’s outcome will be increased end-use electricity efficiency in the residential sector. The financial programme brochure specifying benefits to consumers along with information on features of the financial programme is attached in [Annexure 1](#). This can be used as a marketing collateral by the empanelled bank.

B. Institutional Structure

Programme Implementation Organisations – Roles and Responsibilities

The stakeholders involved in the programme implementation would be the grant provider, financier, programme manager, facilitator, beneficiaries, policy makers and regulators. In addition, the financial institution would need to be empanelled by the nodal agency to operationalize the business model. The proposed role and responsibilities of the various stakeholders are detailed in the table below.

Table 1: Roles and Responsibilities of Implementing Organizations

Actors	Role	Responsibility
Govt. of Maldives through Ministry of Environment, Climate Change and Technology (MECCT)	Grant Provider & Nodal Agency for the implementation of financial programme for EE Appliances	<ul style="list-style-type: none"> ▪ Facilitate selection of banks/FIs for creation of the financing facility ▪ Empanelment of banks/FIs ▪ Developing and maintaining list of EE equipment/appliances to be financed through the program ▪ Develop measurement, reporting and verification (MRV) framework for the programme ▪ Create outreach platform to disseminate information
Empaneled Bank - Maldives Islamic Bank (MIB)	Intermediary Banks & Executing Agency (empaneled by ME)	<ul style="list-style-type: none"> ▪ Responsible for design and operationalization of financial program and any additional credit enhancement mechanisms ▪ Availing co-finance for the programme through collaboration with international development agencies ▪ Approving list of EE Appliance Vendors (Individual retailers / Retail Chains / etc.) through market assessment and due diligence. Bank in consultation with MECCT shall finalize selection of EE appliance vendors for the programme. ▪ Maintain records of funds disbursed and EE appliances purchased under the financial programme ▪ Report the programme progress and benefits as per the MRV framework
EE Appliance Pre-Approved Vendors	Technology Supplier (vendors/ Retail Chains / etc.)	<ul style="list-style-type: none"> ▪ Maintain approved list of EE equipment/appliances by coordinating with Banks/FIs from time to time ▪ Facilitate consumers for filing loan application with empaneled FIs/Banks ▪ Responsible for the overall supply and installation of the EE equipment/appliances.

Key person(s) involved in the implementation

Nodal Agency

Ministry of Environment, Climate Change and Technology

- Mohamed Inaz
Project Manager, Strengthening Low Carbon Energy Island Strategies (LCEI) Project
Climate Change Department
Email: mohamed.inaz@environment.gov.mv

Empanelled Bank (Name of the Bank)

- Name
- Designation
- Address
- Email

Programme Organization Structure

Ministry of Environment, Climate Change and Technology (MECCT) will be the executing and implementing agency for the programme. The PMU under the MECCT shall be responsible for the overall management of the programme. Below figure provides an illustration of the organization structure of the programme.

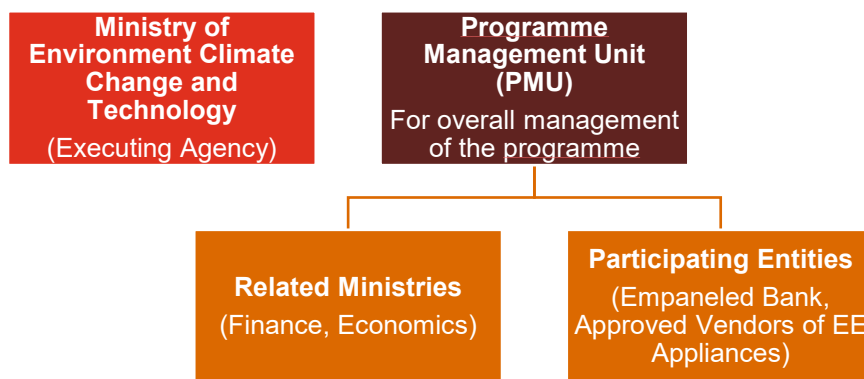


Figure 2: Programme Implementation Structure

C. Operational Guidelines

Coverage of the Financial Programme

Table 2 Coverage of elements of financial programme

Elements of Financial Programme	Description	Coverage
Product to be financed	The attribute describes the product or service to be financed under the financial programme	<ul style="list-style-type: none"> ➤ 4 and 5 star rated appliances under the S&L programme in the Maldives covering the appliance categories of air-conditioners, refrigerators and washing machines
Stakeholders/entities involved	<p>This attribute describes the primary stakeholders involved in the various stages of the programme implementation. These entities can be sub categorised into the following:</p> <ul style="list-style-type: none"> ➤ Grant Provider: Initial Grant to support the mobilization of financial programme and to support financiers in operating the same. ➤ Policy maker and regulator (Nodal Agency): to ascertain the financial programme is within the existing financial and legal framework, and to review the framework for accommodation of new and upcoming business models, if required. ➤ The Financier: The financier in any instrument would be the entity, which directly provides the fund required for the successful implementation of the instrument. The instrument might be self-financed, or require no external source of financing, or the instrument might also require government support. ➤ The Programme Manager: A programme manager would be an entity, which performs all the operations required for the successful implementation of the programme. Involvement of a programme manager would be imperative in case the implementation phase requires a complex operation procedure. ➤ The Beneficiary: The beneficiary would be an entity, which receives the direct benefits of the EE financing instrument. This would be an entity, the benefit of whom the instrument 	<ul style="list-style-type: none"> ➤ The grant provider shall be government of Maldives through the Ministry of Environment Climate Change & Technology. ➤ Ministry of Environment Climate Change & Technology (ME) to be the policy maker and regulator for the financial programme for energy efficient appliances. ➤ The empanelled bank is the financier ➤ Programme Management Unit (PMU) under the ministry shall be the programme manager entity for the financial programme. ➤ Residential consumers of EE appliances will be the direct beneficiary. Empanelled bank shall be the indirect beneficiary as the programme will add to the portfolio of green financing products of the bank and extend its customer base. ➤ Pre-approved list of vendors of EE appliances shall be the programme facilitator. To begin with there can be few selected vendors and as the programme matures, additional vendors can be added to the list based on

	<p>focuses on. The beneficiary can be the end user or the customer.</p> <p>➤ Facilitator: The one who will facilitate the finance (EMI/loan) processing between the consumer and the FI. In consumer financing, the one with whom the appliance purchase request is made can be the facilitator for the same.</p>	<p>some basic minimum criteria. These shall be selected by the empanelled bank as per their selection criteria.</p>
Type of funding	<p>This attribute would consider whether the capital required for the instrument is provided in the form of debt, or equity or a mixture of both. In case the government provides the capital and/or seed funding, it may be in the form of grant/ subsidy/ loan/ co-financing, etc.</p>	<p>➤ Grant from government to be utilized by banks as a credit guarantee facility in case of any loan defaults.</p> <p>➤ Empanelled bank to offer attractive consumer loans for energy efficient appliances. The financial parameters of the loan programme are provided in Table 3. These are subject to subsequent revisions by the bank and the information shall be provided on the bank's website.</p>
Form of capital	<p>This attribute would represent the financial stake in the instrument held by the financier for the capital provided by them. This can be in the form of common shares, preference shares, long-term loans, mezzanine debt, etc.</p>	<p>➤ Short term loans where the consumer will pay back the loan amount to bank subsequently over the loan period at an interest rate as fixed by the empanelled bank. The repayment period and applicable interest rates are provided in Table 3. These are subject to subsequent revisions by the bank and the information shall be provided on the bank's website.</p>
Instrument Objective / Expected Direct Benefits in EE investment	<p>This attribute would entail the direct or the first benefit due to the investment made by the programme manager. This may be defined as the first objective the instrument seeks to achieve by the application of funds.</p> <p>A top-down approach is usually adopted for forecasting such impact and setting targets.</p>	<p>The benefits will be in terms of GHG emission reduction and cost savings because of savings in electricity consumption.</p>
Primary Repayment Mechanism (between end user and service provider)	<p>After investment made for the EE improvement measure, the beneficiary is expected to repay the financier for the benefits enjoyed by them. Primary payment mechanism defines the financial agreement for repayment between the beneficiary and the service provider (or programme manager). This attribute has been further sub-divided into two components:</p> <ol style="list-style-type: none"> Whether transferable: This refers to the clause when the repayment liability of the end user or the beneficiary is transferable to another entity, without any change in the payment terms. Modes of Repayment: This defines the mode of repayment by the end user to the service provider for the EE investment. 	<p>Equated monthly instalment (EMI) as per applicable interest rates over an agreed period and after consideration of concession.</p>

Risk Mitigation	This attribute describes if any risk mitigation strategy is present in the working model of the instrument.	KYC process followed with Bank's Credit Evaluation check, Application of Risk Mitigation Instruments such as guarantees, appliance minimum warranty, post-dated cheque-based payment, direct salary deduction-based repayment mechanism.
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Energy Efficient Appliance Criteria

The programme shall finance the appliances meeting at least the 4-star efficiency level as per the latest issued energy efficiency label grading as part of Maldives Standards & Labelling programme developed by Ministry of Environment Climate Change and Technology.

Financial Parameters for the Programme

The financial parameters for the programme shall be finalized in consultation with the empanelled bank. These are tabulated below.

Table 3: Financial parameters of the loan programme

S. No.	Parameters	Norms
1	Minimum Assistance	To be filled
2	Maximum Assistance	To be filled
4	Maximum Debt Equity Ratio	To be filled
5	Projected DSCR	To be filled
6	Interest Rate	To be filled
7	Upfront Fee	To be filled
8	Security*	To be filled
9	Asset coverage	To be filled
10	Minimum repayment period	To be filled
11	Maximum repayment period	To be filled

Application

The prospective borrower shall submit duly filled in application form along with other necessary documents for financial scheme for EE appliances as per the prescribed format. The format of sample application form and other supporting documents is provided in [Annexure 2](#). The authorized vendor shall assist the prospective buyer in processing the application with the bank through the appropriate channel as laid out by the bank.

For completing the application, the following supporting documents shall be required:

- Copy of National Identity Card
- Employment letter stating the type of employment (permanent/contractual), date of commencement, history of salary deduction including basic salary, fixed allowances, variable allowances, and deductions.
- Bank statement for last 6 months
- Salary slips of last 6 months

Documents required from the guarantor:

- Copy of National Identity Card
- Employment letter stating the type of employment (permanent/contractual), date of commencement, history of salary deduction including basic salary, fixed allowances, variable allowances, and deductions

Appraisal (Eligibility Assessment, Guarantor Requirements, Income Requirements, Monthly Payment Limits)

The process of appraisal under the financial programme shall involve the necessary checks for the eligibility of the appliance being purchased by the buyer. The eligibility shall be based on the assessment of the application form information provided by the approved vendor. The appraisal shall include the verification of the energy label for the given model of the appliance and its eligibility for the financial programme as per the latest guidelines provided by Ministry of Environment Climate Change and Technology on the eligibility of appliances for the financial programme.

In case the application does not meet the requirements of the bank for financing scheme, it shall be declined by the bank.

- a) Eligibility: Following shall be the eligibility requirements
 - Applicant must be a Maldivian with valid an identification card
 - Age must be from 18 years onwards
 - Living and working in Maldives
 - Must be employed for the past 6 months and has been in employment with current employer accepted by the Bank for the last 3 consecutive months or Rental income record for past 6 months to any Bank

- b) Requirement of a Guarantor: Applicant must provide a guarantor, preferably his/her relative undertaking an employment for minimum period 6 months. The guarantor for this facility must be:
 - A Maldivian with valid identification card
 - Age must be from 18 years onwards (*)
 - Living and working in Maldives
 - Be in employment for the last consecutive 6 months with an employer accepted by the Bank
 - preferably related to Applicant, either by blood or marriage

- c) Income Requirements for both Applicant and Guarantor
 - For salary transfer and deduction applications must earn a minimum confirmed income of MVR 4,000 (total average gross salary for the past 6 months should be a minimum of MVR 4,000)
 - For rental income earners, applicants must earn a minimum confirmed income of MVR 10,000 (total average gross monthly income for the past 6 months should be a minimum of MVR 10,000)

- d) Limit with Monthly Payment: The monthly payment should not exceed
 - 40% of the monthly salary for those earning up to MVR 10,000
 - 45% of the monthly salary for those earning between 10,001 to 20,000
 - 50% of the monthly salary for those earning between 20,001 to 50,000
 - 55% of the monthly salary for those earning between 50,001 to 100,000
 - 60% of the monthly salary for those earning above 100,001

Financing Requirements

As a credit guarantee mechanism, a grant to the tune of 700,000 USD shall be provided to the empanelled bank. The bank shall utilize the funds to recover its losses in case of loan defaults.

The investment required for implementation of the programme through the recommended business model until 2030 shall be calculated as per the actual financial parameters of the loan programme.

To realise the potential of demand side energy efficiency savings because of 'Energy Efficiency Appliance Financing', the total projected sales of EE appliances between 2021 and 2030 are expected to grow as follows:

- EE Air-Conditioners: From ~6,900 units in 2021 to ~34,000 units by 2030 at a CAGR of 17.29%

- EE Washing Machines: From ~4000 units in 2021 to ~24,000 units by 2030 at a CAGR of 19.62%
- EE Refrigerators: From ~2500 units in 2021 to ~11,000 units by 2030 at a CAGR of 15.97%

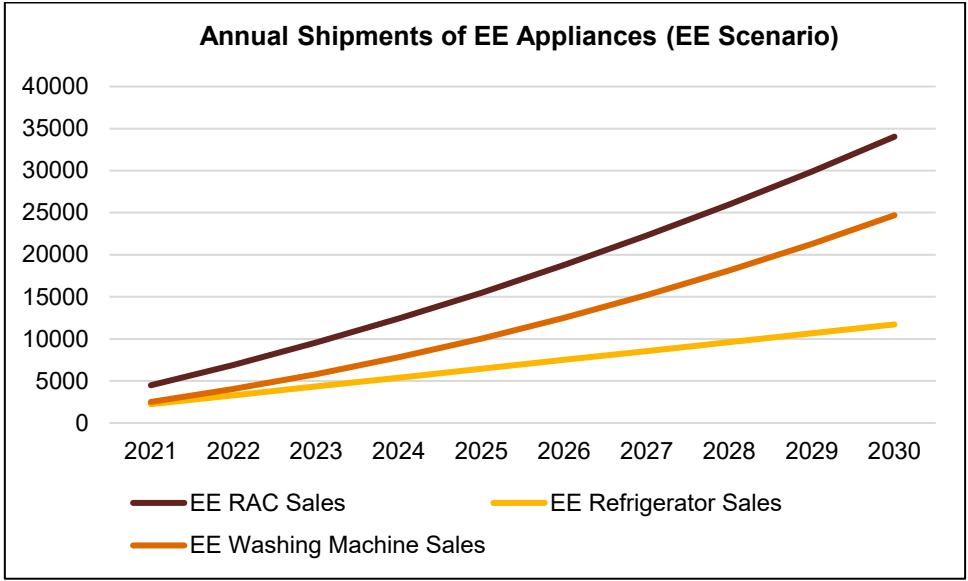


Figure 3: Annual Shipments of EE Appliances in EE Scenario (EE Appliance Financing)

To realize the above shipments as a result of the financial programme, the following investments shall be required to offset the incremental price of EE appliances in Maldives which are comparable to costs to be incurred by the financial programme. The programme cost is estimated to be 8.47 million USD during the period between 2021 to 2030.

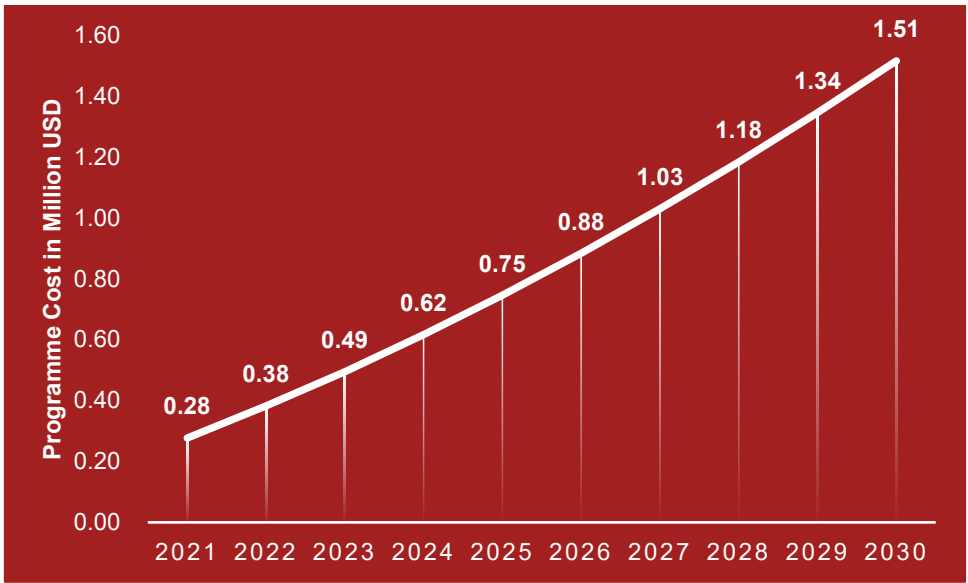


Figure 4: Annual Programme Cost

Programme Implementation Plan

The implementation activities are listed in the below table and shall be taken up post the empanelment of the bank. The implementation milestones along with the responsible organizations are tabulated below.

Table 4: Programme Implementation Activities

Indicative Activities	2022												Responsibility	
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec		
Memorandum of Understanding (MoU) between Bank and Ministry	■													Ministry of Environment, Climate Change and Technology and FI/Bank
Shortlisting of Participating Vendors ¹	■	■												Ministry of Environment, Climate Change and Technology and Ministry of Finance
Finalisation of the terms and conditions of the business model		■	■											Ministry of Environment, Climate Change and Technology
Establish Programme Implementation Arrangements				■										Ministry of Environment, Climate Change and Technology
Maldives Ministry of Finance approval					■									Ministry of Finance
Implementation of pilot project						■	■	■						FI/Bank
Programme effectiveness assessment based on pilot project									■	■				Ministry of Environment, Climate Change and Technology
Roll-out of the full programme											■	■		Ministry of Environment, Climate Change and Technology and FI/Bank

¹ Participating entities refers to financial institutions (FIs)/banks, technology suppliers and energy assessor as required for the recommended business models. Details of the participating entities for different business models are provided in the report 'Draft Financial Programme for Energy Efficient Buildings and Building Retrofits'.

D. Performance Monitoring, Reporting, Verification and Communication

A. Programme Design and Monitoring Framework

Ministry of Environment, Climate Change and Technology shall design an appropriate framework to assess the effectiveness of the programme. The framework shall be outlined in the following template:

Table 5 Financial programme design and monitoring framework

Programme Framework with indicators for the programme output and outcomes			
Results chain	Performance indicators with targets and baseline	Data sources	Responsibility
Outcome	➤ Total Energy and Emission Savings	Electricity Bill of end users, Appliance Test Certificate issued by manufacturers / importers.	PMU team of the Ministry of Environment Climate Change and Technology with support of MECCT team responsible for MV&E of S&L labelling programme.
Outputs	➤ Appliances Sold Under Each Appliance Category for the duration of the programme.	Bank's report on the financial programme indicating appliances sold with their appliance details including appliance details collected as part of appraisal for financing scheme application	Empanelled Bank to report the sales data by appliance categories to the ministry

B. Monitoring

Programme performance monitoring: Overall monitoring of the programme in terms and progress and performance will be undertaken in a timely manner by the Ministry of Environment, Climate Change and Technology. The PMU through the functional departments of the Ministry will be responsible for monitoring the implementation of the programme, including outcomes, outputs, and activities in relation to the targets and milestones set for the programme.

A designated officer within the PMU shall be responsible for the submission of the programme implementation reports. The senior authorities within the Ministry will receive bi-annual progress reports and review the performance in bi-annual review meetings.

The PMU will prepare monitoring reports in the format covering all essential aspects of the programme and submits them to the senior authorities at a bi-annual frequency post the roll-out of the programme. The information to be captured in the monitoring report shall be as follows:

- Name of the borrower
- Loan disbursement amount (MVR)
- Loan disbursement rate
- Loan tenure

- Interest rate
- Monthly EMI (MVR)
- Energy Efficient Appliance details
- Technology Supplier
- Anticipated energy savings (kWh)
- Anticipated GHG emissions reductions (tCO₂e)
- Proof of installation of the energy efficiency technology

C. Reporting

Ministry of Environment, Climate Change and Technology will prepare i) bi-annual progress reports consistent with the information detailed above; ii) consolidated annual reports including a) progress achieved by output as measured through the indicator's performance targets, b) key implementation issues and solutions, c) programme completion report within 6-months of physical completion of the programme.

D. Verification

The verification shall be conducted by MECCT or its authorized representative at the address of the buyer to check whether the specifications of the appliance match those approved by the empanelled bank for a given sample of appliances sold each year under the financial programme.

Stakeholder Communication Strategy

Ministry of Environment, Climate Change and Technology as well as the empanelled bank shall post all relevant information about the financial programme on their respective websites. The websites shall include at minimum information regarding the business model, role of implementing agencies, appliances covered, energy savings and GHG emission reduction achieved under the programme.

E. Energy Saving Calculator

The links to energy saving calculators for the respective appliance categories are provided below:

- a) Energy Saving Calculator for Air Conditioners:



Energy Savings
Calculator AC.xlsx

- b) Energy Savings Calculator for Refrigerators:



Energy Savings
Calculator for Refrigei

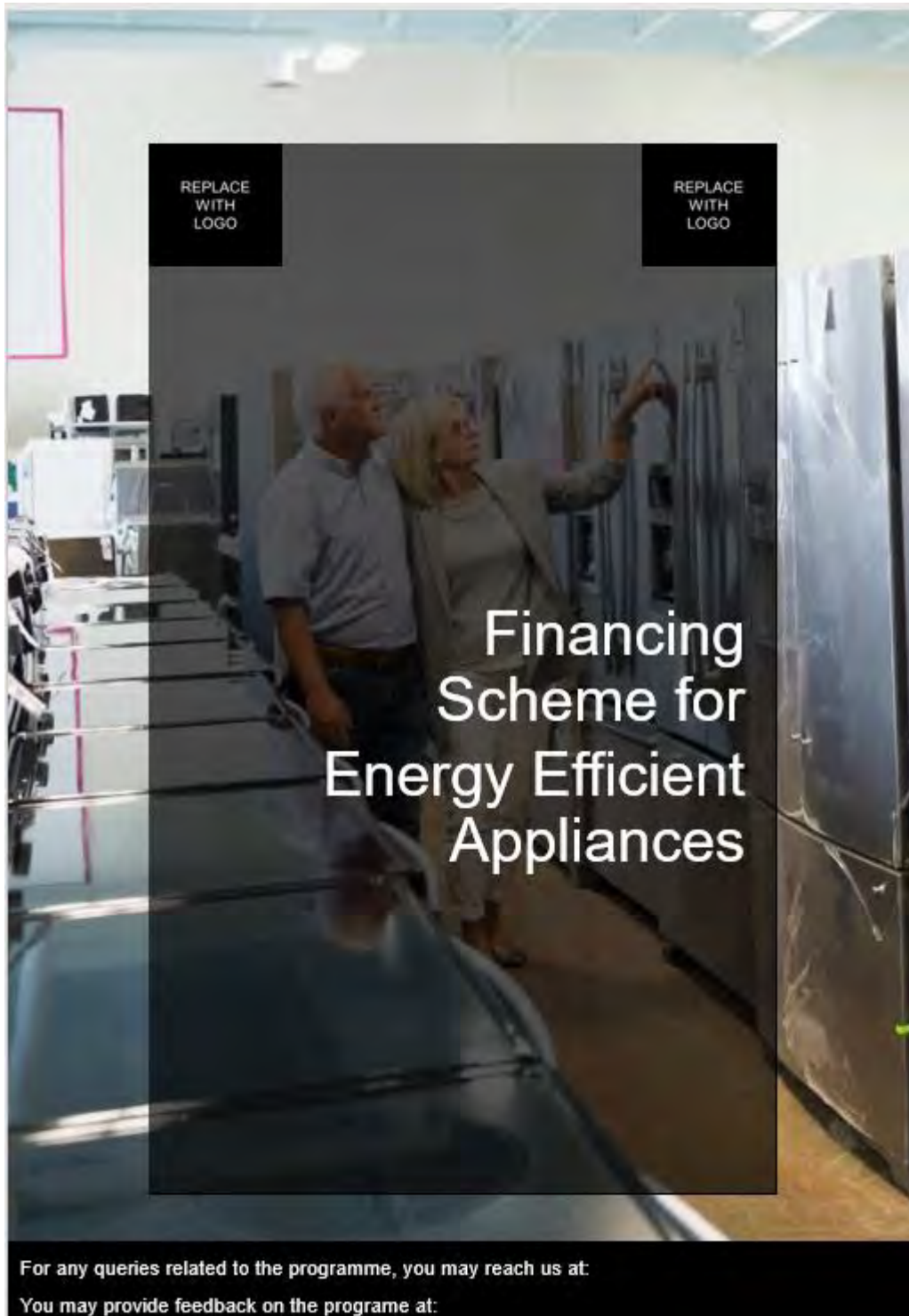
- c) Energy Savings Calculator for Washing Machines



Energy Savings
Calculator for Washin


E. Annexure 1: Financial Programme Brochure

F. Page 1: Cover Page of the Brochure




- G. Page 2: Information on the benefits to customers purchasing the appliances under the programme


Benefits of an Energy Efficient Appliance



Energy Savings



Financial Benefits




Environment Friendly

Appliances Eligible for the Programme

- ✓ Air Conditioners*
- ✓ Refrigerators**
- ✓ Washing Machines*

* Only certain appliances with the required efficiency level are applicable. Detailed list of eligible appliances will be provided by vendor.



Why should you buy an Energy Efficient Appliance?

Appliance	Energy saving compared to the lowest rated model		Operational Energy Savings in MVR per year [†]	
	4 Star	5 Star	4 Star	5 Star
<i>Air Conditioner*</i>	33%	42%	543	1047
<i>Refrigerators**</i>	38%	51%	600	750
<i>Washing Machine#</i>	24%	35%	324	432

[†]Calculations based on estimated figures. Tariff has been taken at 3 MVR/kWh.

*These are estimated figures for a 1-ton inverter AC.

**These are estimated figures for a refrigerator with capacity of ~ 350 Liters.

#These are estimated figures for 5kg capacity front load washing machine.

Get your EE Appliance today

Lower your energy consumption


Save on your electricity bills for years to come

H. Information on Programme Features and application process


Features of the Programme



Low interest rates



No Collateral required



Hassle-free Application Process




Overseen by the Government

How to Apply?

- ❑ Collect the application from the vendor or a branch of the bank.
- ❑ Submit the filled-out application form via the vendor or any branch of the bank along with the relevant documents (*Other mandatory documents would be as per bank's guidelines. Check bank's website to know the approved vendor*)
- ❑ Based on the results of the eligibility assessment, the loan will be approved.
- ❑ Once the loan is approved, you will receive the appliance and you can start enjoying the benefits.



Eligibility criteria will be provided by the vendor. An eligibility assessment will be performed as per the bank's policy.



You go to buy an appliance at a store




Discuss your needs with the vendor and find the right appliance for you and your family



Apply for a loan with the required documents



Eligibility assessment is carried out by the bank



Once the loan is approved, you receive your energy efficient appliance


I. Annexure 2: Application Form

The application form shall be filled by retail customer and shall be submitted to empanelled bank.

S. No.	Particular	Details
	Applicant Information	
1	Name of Applicant	
2	National ID Proof (Passport, Driving License, etc.)	
3	National ID Number	
4	Employment Status (Salaried / Non-Salaried)	
5	Annual Fixed Salary	
6	Annual Variable Salary	
7	Address (Home Address)	
8	Loan Term Applied for (in months)	
	Guarantor Information	
9	Name of Guarantor	
10	National ID Proof (Passport, Driving License, etc.) of Guarantor	
11	National ID Number of Guarantor	
12	Employment Status (Salaried / Non-Salaried)	
13	Annual Fixed Salary	
14	Annual Variable Salary	
	Appliance Information	
11	Appliance Category (Air Conditioner, Washing Machine, Refrigerator)	
12	Appliance Model No.	
13	Star Rating	
14	Maximum Retail Price on offer (MVR)	

Draft Implementation Manual for the Financial Programme for Energy Efficient Appliances

Snapshot of Draft Application Form & Checklist:



Applicant Details

Full Name

ID Card No. Date of Birth (dd/mm/yyyy) Gender M F

Permanent Address

Current Address

Educational Qualification

Mobile Office

Email Address

Employment Details

Name of the Employer

Job Title Employment Start Date

Basic Salary Allowances Deductions

Existing Facilities

Bank	Credit/Loan Facility type	Installment	Balance

Customer Request

Requested Limit Requested Tenure
(Between MVR 25,000 to MVR 400,000) (Between 18 to 48 months)

Emergency Contact

Name	Contact No.	Relationship

Guarantor Details

Full Name

ID Card No. Date of Birth (dd/mm/yyyy) Gender M F

Permanent Address

Current Address

Mobile Office

Email Address

Relationship with Applicant

Current Employer Salary

Checklist

Applicant	Guarantor
<input type="checkbox"/> Copy of National Identity Card <input type="checkbox"/> A letter from employer stating the type of employment (permanent / contract period, employment start date and salary details)* <input type="checkbox"/> Last 6 month salary slip <input type="checkbox"/> Last 6 month bank statement If customer gets a rental income <input type="checkbox"/> Rental agreements <input type="checkbox"/> Bank statements (6 months) <input type="checkbox"/> Letter from tenant* <input type="checkbox"/> Copy of title/utility bill	<input type="checkbox"/> Copy of National Identity Card <input type="checkbox"/> A letter from employer stating the type of employment (permanent / contract period, employment start date and salary details) <input type="checkbox"/> If not employed in accepted employer (03 month statement) If guarantor gets a rental income <input type="checkbox"/> Rental agreements <input type="checkbox"/> Bank statements (6 months) <input type="checkbox"/> Copy of title/utility bill

*To process under salary transfer/ rent transfer customer should submit a letter from employer/ tenant(s) confirming the salary/ rent of the customer will be regularly deposited to customer's MIB account for the full financing period.

FOR BANK USE ONLY	Name	S.ID	Initial	Date
Application received by				
Application processed by				
Application received to CAD				



**Ministry of Environment, Climate Change and
Technology**

Development of Financial Programme for Energy Efficient Appliances

Report on Awareness Workshop and Training for Finance Sector Professionals

**Promoting Energy Efficient Buildings through
Strengthening Low Carbon Energy
Island Strategies (LCEI) Project**



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Introduction

Background

The Republic of Maldives is highly dependent on imported fossil fuels to meet its energy needs. Furthermore, as a Small Island Developing State, it also relies on fossil-fuel based transport for the imports that provide the needs and wants of the population. As a result, the cost of energy generation and energy dependent appliances is both high and unreliable, causing financial constraints on national budget and individual finances.

Government of Maldives has initiated the “Strengthening Low Carbon Energy Island Strategies Project (LCEI)”, which is designed with a goal of market transformation for energy efficient technologies in buildings and the built environment in the Maldives to promote energy efficiency investments in buildings. LCEI Project is funded by the Global Environment Facility (GEF) and implemented by the Ministry of Environment, Climate Change and Technology with support from UN Environment. It aims to reduce greenhouse gas (GHG) emissions through energy efficiency in the building sector. Appliances and their use in building sector has been identified as the focus area for energy efficiency as per the National Energy Policy and Strategy (2010).

As part of the LCEI project, some of the initiatives already taken by Ministry of Environment, Climate Change and Technology, Government of Maldives, are:

- Development of Standards and Labelling (S&L) programme for air-conditioners, refrigerators, and washing machines. The regulation is expected to be implemented that shall shift market to high quality, low impact appliances.
- Energy efficiency guidelines for buildings are being developed that shall lay the minimum energy efficiency requirements for buildings in Maldives.
- Life cycle cost based public procurement guidelines thereby promoting energy efficient products and technologies

Maldives is on a path of a transformational journey towards building its climate resilience capacity. Appliances like air-conditioners, refrigerators, fans, lights etc. are used by varied types of end users including – residential, commercial, industrial, government sectors, and with progressive energy efficient guidelines, it is anticipated that in near future the market will have more energy efficient products and technologies.

However, adoption of efficient appliances would require comparatively higher upfront capital expenditure. Consumer behaviour, preferences, and buying capacities across end users thus needs to be assessed in the context of increasing the uptake of energy efficient appliances. **An innovative financial Programme is required to enhance demand of Energy Efficient appliances by offsetting higher upfront cost as a result of bulk adoption by end users and increasing the asset quality for financiers by quantifying savings due to energy efficiency.**

The overall benefits of this financial programme are as follows:

- Contributes significantly to meeting NDC targets and carbon commitments to reduce greenhouse gas (GHG) emissions

- It is estimated that the S&L programme for the three appliances alone will result in **reduction of energy consumption of 1,326 million kWh** (~16 % projected to 2030), GHG emission reduction of 980,321 tCO₂ equivalent and reduction in 147 MW of generation capacity by 2030.¹
- Energy security and reduced need for energy imports in future leading to reduced government expenditure
- It can compensate for higher cost of purchase by **offsetting the higher upfront cost of purchase** as a result of bulk adoption by end users, and lead to greater uptake of energy efficient appliances
- Drives energy efficiency innovation in the market
- Better asset quality for lenders

Purpose of the Report

This document titled “Report on Awareness Workshop and Training for Finance Sector Professionals” raises awareness about the financial programme for energy efficient appliances, provides insights into the design of the programme and the financing modalities involved. It also provides the means to seek feedback from professionals in the finance sector on their understanding of the programme.

The details of the workshop are provided in the following section.

¹ PwC analysis as part of ongoing project on “Development and Implementation of Energy Efficiency Labelling Program in Maldives”. As part of ongoing project, the analysis work was submitted to Ministry of Environment and Energy

Training Workshop for Banks and Financial Institution

Owing to the challenges faced due to the COVID-19 pandemic, the workshop was organized virtually on 18th November 2021. 21 participants under took the training. The agenda for the workshop can be found in Annexure 1. The workshop had participants from different banks and financial institutions like Bank of Maldives, Bank of Ceylon, Maldives Islamic Bank, Housing Development Finance Corporation Ltd. (HDFC), SME Development Finance Corporation (SDFC), State Bank of India, Maldives Finance Leasing Company (MFLC). The detailed list of the participants can be found in Annexure 3. The workshop focused on introducing the financial programme to professionals from the finance sector on the design of the financial programme for energy efficient appliances and the steps involved in implementing it. The slide deck presented during the training can be found in Annexure 2. Some highlights of the training are mentioned below:

1) Opening Remarks

The opening remarks and an introduction to the project was provided by Ms. Fathimath Raufa from the Ministry of Environment, Climate Change and Technology.

2) Introduction to Energy Efficient (EE) Appliances in Maldives

- The training began with a general overview of the energy efficiency standards and labels in existence and the use of the same for different appliances.
- The benefits of an energy efficiency labelling programme were highlighted in the context of market transformation, consumer benefits and socio-economic benefits.
- It described the labelling programme in Maldives which has been developed for three appliances namely,
 - Air conditioner
 - Refrigerator
 - Washing Machine
- The information on the label was then presented and explained
- A summary of the EE labelling requirements was provided for each of the appliance categories along with the energy savings impact from the labelling programme.

3) Need for a Financial Programme for EE Appliances

- The next part of the training highlighted the challenges in selling energy efficient appliances in the Maldivian market.
- Lack of Financial Resources & Information were identified as two major factors resulting in low uptake of EE measures in Maldives.²
- Thus, it concluded that an innovative financial Programme was required to enhance demand of Energy Efficient appliances by offsetting higher upfront cost as a result of bulk adoption by end users and increasing the asset quality for financiers by quantifying savings due to energy efficiency.

4) Outline of Financial Programme for EE Appliances

- A general overview of the financial programme for energy efficient appliances was provided.
- It described how the various stakeholders like the providers of capital, suppliers, members of the target market and financiers were connected.

² Ministry of Environment, Climate Change Technology, August 2017 Presentation on “Creating Enabling Environment for EE in the Maldives”

- It also described the various elements of such a programme which were as follows:
 - The **entities involved** like the Grant Provider, the Financier, the Programme Manager, Policy makers and the Facilitators.
 - The **type of funding** to decide help decide if the financing instrument would be in the form of debt, equity or a mixture of both.
 - The **form of capital** which represents the financial stake in the instrument held by the financier for the capital provided by them which can be in the form of common shares, preference shares, long-term loans, mezzanine debt, etc.
 - The **expected direct benefit of the EE financing strategy** due to the investment made by the programme manager.
 - The **application of capital** which would define the way in which the capital is expected to be applied by the programme manager.
 - The **repayment mechanism** which defines the financial agreement for repayment between the beneficiary and the service provider
 - The **risk mitigation measures** which are present to reduce the risks associated with the financing process.
- The steps followed in the development of the financial programme were presented. It highlighted the following:
 - Review of Secondary Data to Analyze Financing Situation and S&L in Appliances
 - Stakeholder consultations
 - Proposed Financial Instrument - Banks to Consumer List Based Financing (indirect financing) with Credit Guarantee and corresponding Business Model
 - Risk mitigation measures in the context of banks to consumer financing in Maldives
 - Forecasting of benefits
- The benefits for banks and financial institutions were highlighted next.

5) Implementing Organizations and roles

The roles of implementing organizations for the financial programme were then presented:

- Govt. of Maldives through Ministry of Environment, Climate Change and Technology as the Grant Provider and nodal agency for the implementation of the programme
- Financing Institution or banks to be empanelled by the Ministry to act as the Executing Agency
- EE appliance pre-approved vendors to be the technology suppliers

6) Financing Modalities

It presented the customer journey throughout the process of purchasing an energy efficient appliance while making use of the loan provided under the financial programme. It diagrammatically presented the flow of funds between the Grant Provider, Nodal Agency, empanelled bank, pre-approved vendor and the borrower.

7) Risk Mitigation

- Some of the risk mitigation measures discussed were as follows:
 - Increase of delinquencies/defaults
 - Insufficient security coverage
 - Inappropriate insurance cover
 - Delay in litigation process
- The typical risk mitigation measures prevalent Maldivian banks were also presented that included:
 - 'Know Your Customer' (KYC) procedures
 - Guarantees in case of bulk procurement
 - Appliance Warranty
 - 'Post-dated Cheque' mode of payment

8) Reporting and Verification Process

The Reporting and Verification process for the financial programme was presented next. The information required to be submitted by the empanelled bank to the Ministry of Environment, Climate Change and Technology included:

- 1) Name of the borrower
- 2) Loan disbursement amount (MVR)
- 3) Loan disbursement date
- 4) Loan tenure
- 5) Interest Rate
- 6) Monthly EMI (MVR)
- 7) Appliance Type (AC/Refrigerator/Washing Machine)
- 8) Appliance model and make
- 9) Star Rating of appliance
- 10) Proof of purchase from borrower

Additionally, the proposed verification process was also discussed. This involved hiring of a agency by the ministry to verify the appliance procured at the end user side. The frequency for reporting and verification shall be finalized by the ministry in due course.

9) Quiz and Closing Remarks

At the end of the presentation a quiz was presented on some of the topics covered during the training and the participants were asked to send in their answers by email to the Ministry of Environment, Climate Change and Technology.

The training was then concluded by the Ministry of Environment, Climate Change and Technology and the participants were asked to send any queries they might have regarding the programme to the Ministry.

Annexure

Annex 1: Agenda of the Workshop



Ministry of Environment, Climate Change and Technology
GOVERNMENT OF MALDIVES

Training for Finance Professionals **Financing for Energy Efficient Appliances**

Agenda

Date: 18th November 2021
Time: 1000 – 1200 hrs
Venue: Virtual Meeting over Teams

Opening and Introduction		
10:00 – 10:05	Opening Remarks by the Ministry of Environment, Climate Change and Technology	
Training Outline		
10:05 – 11:55	<ol style="list-style-type: none">1. Introduction to Energy Efficient (EE) Appliances in Maldives2. Need for a Financial Programme for EE Appliances3. Outline of Financial Programme for EE Appliances4. Implementing Organizations and roles5. Financing Modalities6. Risk Mitigation7. Reporting & Verification Process	PwC / Riyan
11:55 – 12:00	Closing	MECCT

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Ministry of Environment, Climate Change and Technology
GOVERNMENT OF MALDIVES

List of Stakeholders Invited

1. Housing Development Finance Corporation
2. Bank of Maldives
3. Maldives Islamic Bank
4. Bank of Ceylon
5. State Bank of India
6. Maldives Finance Leasing Company (MFLC)
7. SME Development Finance Corporation

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Annex 2: Presentation for the Workshop



To

01 November 2021

Mr. Mohammed Inaz
Project Manager-Strengthening Low Carbon Energy Island Strategies (LCEI),
Ministry of Environment,
Green Building, Handhuvaaree Hingun,
Male', 20392, Maldives.

Subject: Deliverable 9 – Draft Material for Capacity Building of Government Stakeholders

Dear Sir,

We sincerely thank you for giving us an opportunity to undertake the assignment "**Development of Financial Programme for Energy Efficient Appliances in Maldives**".

We have prepared for your kind perusal the capacity building material for the government stakeholders on Development of Financial Programme for Energy Efficient Appliances in Maldives to build their capacity on Need for Financial Programme, Benefits, Financing modalities, roles and responsibilities of implementing agencies, Risk Mitigation and M&V reporting of financial program.

We eagerly look forward to your inputs on this assignment. Further, we would be happy to provide any clarifications or additional information necessary. We can be reached on the below mentioned contact details.

Best wishes,

Prasanta Misra
Director,
PricewaterhouseCoopers Maldives



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Agenda

Introduction to Energy Efficient Appliances	3	Need for a Financial Programme	9	Outline of the Financial Program for EE Appliances	13	Implementing Organizations & Roles	19
Financing Modalities	21	Risk Mitigation	24	Reporting and Verification Process	27	Quiz	29

1

Introduction to Energy Efficient Appliances

What are Energy Efficiency Standards?

Energy-efficiency performance standards are regulations or guidelines that prescribe the **optimal energy performance of a product**.

Countries adopt these standards either on mandatory or voluntary basis. The energy efficiency standards are of three types:

1. Minimum Energy Performance Standards (MEPS):

It sets minimum energy efficiency level or maximum energy consumption of a product. For example, the Energy Efficiency Ratio (EER) for an air conditioner of capacity 3.5 KW should be 12 BTU/hr-W.

2. Class Average Standards:

It specifies an average efficiency for a class of product. For example, US introduced Corporate Fuel Efficiency Standards that sets certain average fuel efficiency level in terms of miles per gallon for different vehicle categories such as passenger cars, trucks etc.

Here, the manufacturer has the flexibility to select different efficiencies level of each components of a product to achieve the average efficiency requirements.

Further, **High Energy Performance Standards (HEPS)** are developed to designate the products that exhibit higher efficiency level than MEPS or Class average standards level. This is to identify and incentivize the industry leaders or the highest performers in the product category.

The goal of energy efficiency standards is to enable market transformation towards energy efficient variants

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What are Energy Efficiency Labels?

The energy efficiency standards are identified using Energy Efficiency Labels that provides **information on the energy efficiency performance of the product**

These energy efficiency labels are either **affixed on products itself (incase of appliances and equipment)** or are presented as a **memento (in case of buildings)**. Energy Efficiency labels are of two types:

1) Endorsement Labels

Denotes that the product adheres to a set of energy efficiency level



USA



EU



에너지효율
Korea

2) Comparative Labels

Denotes different levels of efficiency. Allows consumer to compare different products



India



USA



EU

The goal of energy efficiency label is to increase consumer awareness to make informed choices while purchasing any product.

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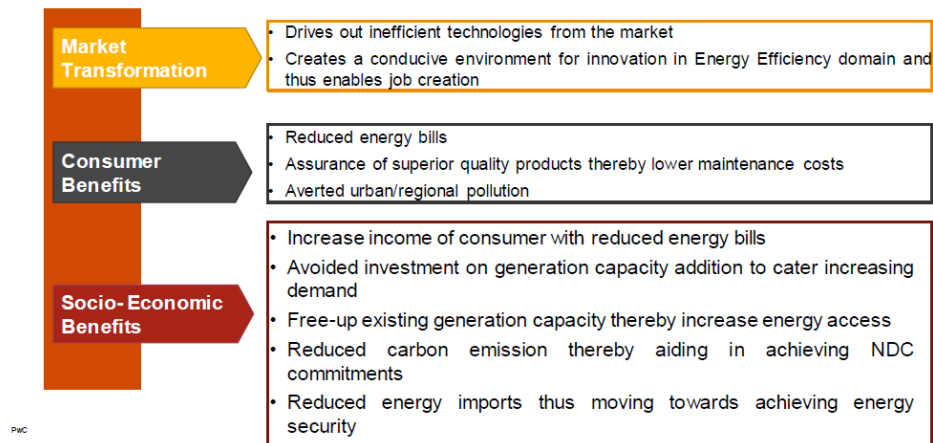
Use of Energy Efficiency Standards & Labeling

The energy efficiency standards and labeling are applicable to wide range of products. S&L has been established for **Washing Machines, Air Conditioners and Refrigerators** in Maldives. The S&L shall be further developed for remaining appliances and equipment in future.



Benefits of Energy Efficiency Labelling Programme

EE Labelling programme aids countries to take a low carbon pathway towards achieving their socio-economic growth ambitions.



Energy Efficiency (EE) Labelling in Maldives is developed for following appliances...

1. Air Conditioner



3. Washing Machine



2. Refrigerator



This means :

- ✓ These appliances will comply with specific minimum energy performance standards (MEPS)
- ✓ Conformance to MEPS is validated by the energy label affixed on the appliance
- ✓ The energy label will be a comparative label to distinguish higher efficient appliance from the lower one

Note: The EE Labelling in Maldives will be implemented on voluntary basis which means retailers/importers are encouraged to participate and affix EE label on their products.

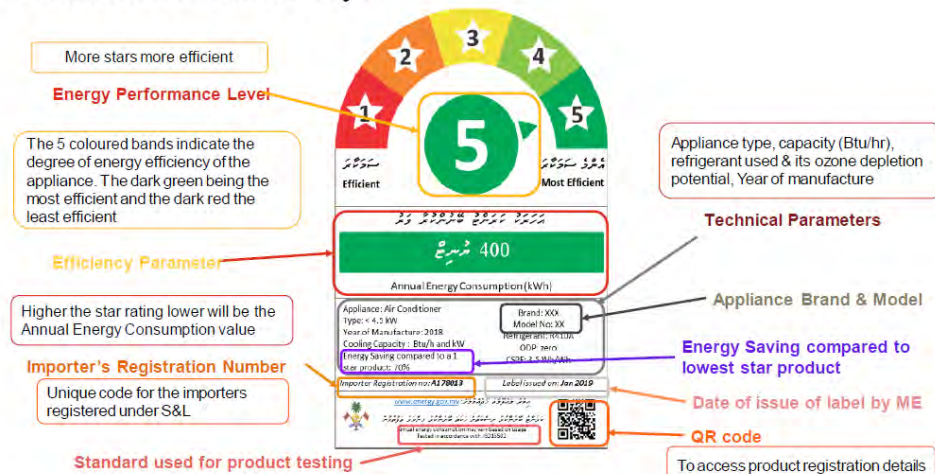
What does the label say?

1. Energy Performance Level
2. Efficiency Parameter
3. Brand & Model
4. Technical Parameters
5. Energy Saving compared to lowest star (only for higher star rated products)
6. Registration number
7. Date of issue of label
8. Standard for product testing
9. QR code



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What does the label say?



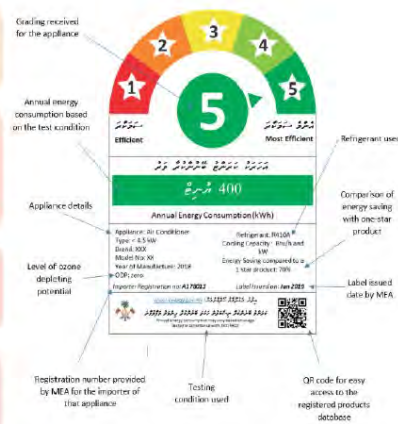
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Summary of Maldives EE Labelling programme-Air Conditioner

Scope	<ul style="list-style-type: none"> Single-phase single-split and unitary type air conditioners of both fixed speed and variable speed type of rated capacities up to 24226 BTU/hr (equivalent to 7.1 kW)
Technical Standard	<ul style="list-style-type: none"> ISO 5151:2010: for non-ducted air conditioners and heat pumps – Testing and rating performance ISO 16358-1- Testing calculating methods for seasonal performance factors IEC 62301:2011: for standby power consumption
MEPS	<ul style="list-style-type: none"> Lowest energy efficiency rating level (Star Rating 2)
Rating Parameter	<ul style="list-style-type: none"> Cooling Seasonal Performance Factor (CSPF)

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Summary of Maldives EE Labelling programme-Refrigerator

- Scope**
 - Compression-type Direct-Cool (single-door) refrigerators and Frost-Free (double-door, three-door and side-by-side) refrigerators, intended for household use, including rated capacities of 100l-650l.
- Technical Standard**
 - ISO 15502:2005 test procedure or IEC 62552-1:2015
- MEPS**
 - Lowest energy efficiency rating level (Star Rating 2)
- Rating Parameter**
 - Annual Energy Consumption (AEC) in kwh

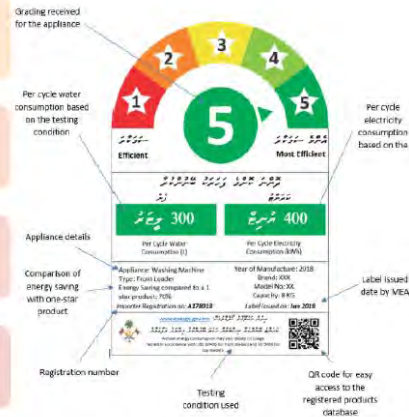


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Summary of Maldives EE Labelling programme-Washing Machine

- Scope**
 - Automatic and semi-automatic, with horizontal axis (front loaders or vertical axis (top loaders) with a capacity of up to 14 kg.
- Technical Standard**
 - IEC 60456:2010 for front loaders
 - JIS 9606:1993 for top loaders
- MEPS**
 - Lowest energy efficiency rating level (Star Rating 1)
- Rating Parameter**
 - Maximum Electricity use (kWh per cycle per kg)
 - Maximum Water use (litre per cycle per kg)
 - Minimum Cleaning performance



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Placement of the Label

- ✓ The label will be placed on **the packaging as well as on the appliances** before being imported into the country.
- ✓ In addition to this, the label will also be **affixed to appliances** displayed in the showroom



For Packaging



Indicative diagram of Label placement

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Estimated Impact from EE Labelling programme of three appliances

By 2030	Air conditioner	Refrigerator	Washing machine
Reduction in direct energy consumption	1274 million kWh	15 million kWh	38 million kWh
Generation capacity avoidance	121.20 MW	6.56 MW	19.31 MW
Reduction in water consumption	-	-	14,080 million L
Additional energy savings due to reduction in water consumption	-	-	39.42 to 70.40 million kWh
GHG emission reduction	941,186 tCO2 equivalent	11044 tCO2 equivalent	28109 tCO2 equivalent Additional 40,582 tCO2 equivalent due to water savings
Overall reduction including direct & additional energy savings due to reduction in water consumption	1,365 – 1,396 million kWh		
Overall generation capacity avoidance	147 MW		
Overall GHG reduction	1.02 million tonne CO2 equivalent		

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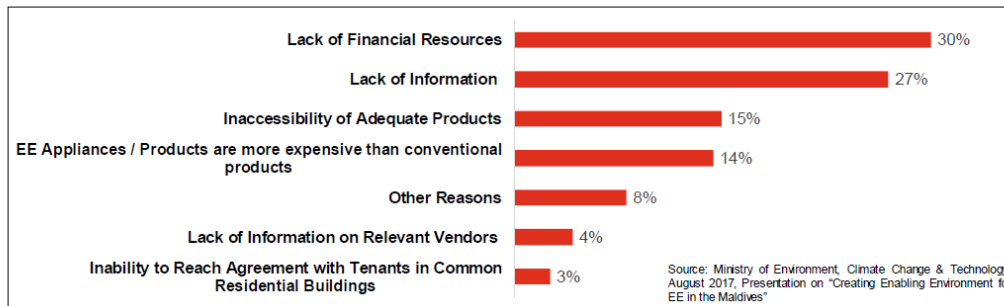
Challenges in Selling Energy Efficient Appliances

The 3 major potential roadblocks for purchase of energy efficient appliances among consumers are:

- 1. No need or desire:** This may arise when consumer has appreciation for a certain aesthetic feature of appliance
- 2. Lack of funds:** Consumer has fixed budget and is not willing to spend extra on EE appliances
- 3. No trust:** Consumer may not completely trust the label due to several reasons such as lack of information or due to brand loyalty

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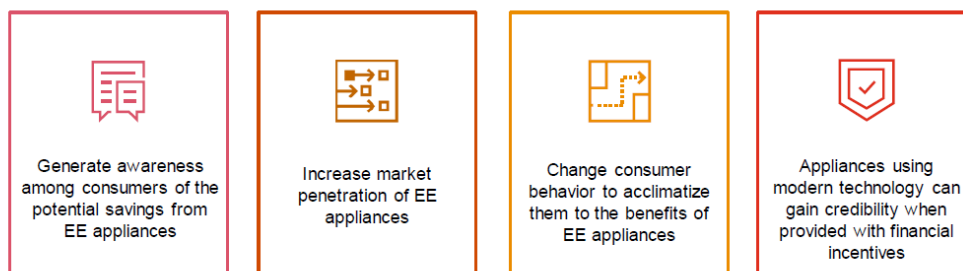
Responses on Factors Resulting in Low Uptake of EE Measures in Maldives



Lack of Financial Resources & Information were identified as two major factors resulting in low uptake of EE measures in Maldives. The 'S&L Program' in Maldives along with Financial Program for EE Appliances aim to address these barriers

Need for Financial Programme for EE Appliances

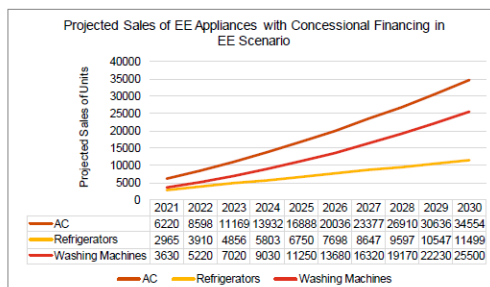
An innovative financial Programme is required to enhance demand of Energy Efficient appliances by offsetting higher upfront cost as a result of bulk adoption by end users, and increasing the asset quality for financiers by quantifying savings due to energy efficiency



Forecasted Benefits of the Financial Programme Intervention

The strategy is expected to drive the consumer appliance market towards **uptake of energy efficient appliances** through increased sales. The financing mechanism is expected to increase retail sales of energy efficient appliances by **15% in 2022, 50% in 2025 and 85% in 2030.**

- Total Energy Savings Potential of ~166 GWh
- GHG Emission Reduction Potential of ~ 120 ktCO₂e



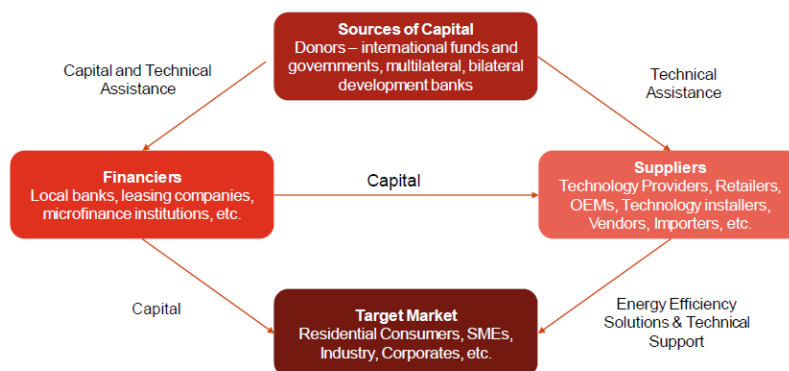
Appliance Categories	Cumulative Energy Savings, GWh (2022 - 2030)	Cumulative GHG Emission Reductions (2022 - 2030)
Air Conditioners	122 GWh	89.06 ktCO ₂ e
Washing Machines	25 GWh	18.25 ktCO ₂ e
Refrigerators	19 GWh	13.87 ktCO ₂ e

3

Outline of the Financial Program for EE Appliances

What is a Financial Program for Energy Efficient Appliances?

A programme that connects sources of capital with financiers and suppliers who then enable the process of supply of energy efficient appliances to end users



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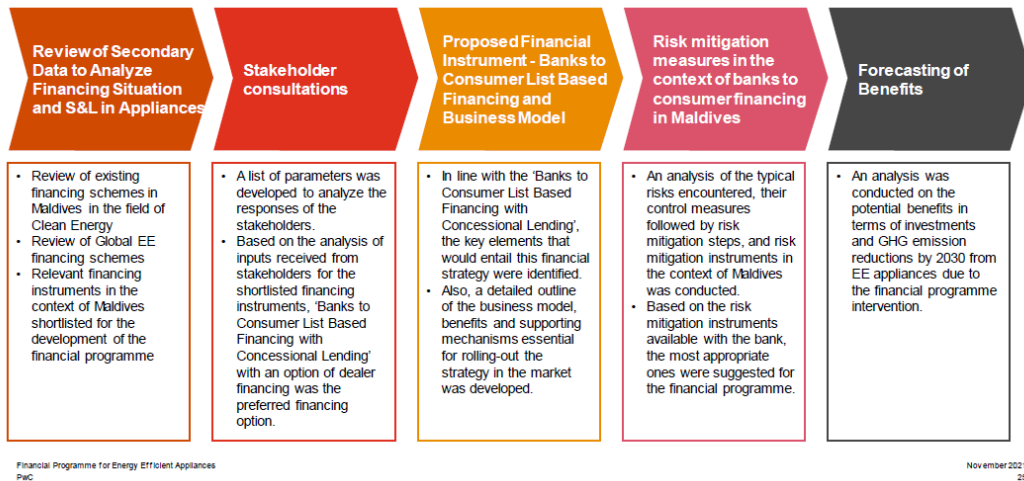
Elements of Financial Programme for EE Appliances

Entities involved	Type of funding	Form of capital	Expected direct benefit of EE financing strategy	Application of capital	Repayment mechanism	Risk mitigation mechanism
<ul style="list-style-type: none"> Grant Provider Financier Programme Manager / Service Provider Beneficiary Policy makers and regulators Facilitator 	<ul style="list-style-type: none"> This attribute would consider whether the capital required for the instrument is provided in the form of debt, or equity or a mixture of both 	<ul style="list-style-type: none"> Represents the financial stake in the instrument held by the financier for the capital provided by them which can be in the form of common shares, preference shares, long-term loans, mezzanine debt, etc 	<ul style="list-style-type: none"> Would entail the direct or the first benefit due to the investment made by the programme manager A top-down approach is usually adopted for forecasting such impact and setting targets 	<ul style="list-style-type: none"> Defines the way in which the capital is expected to be applied by the programme manager 	<ul style="list-style-type: none"> Primary payment mechanism defines the financial agreement for repayment between the beneficiary and the service provider 	<ul style="list-style-type: none"> This attribute describes if any risk mitigation strategy is present in the working model of the instrument to reduce the risks associated with the financing process

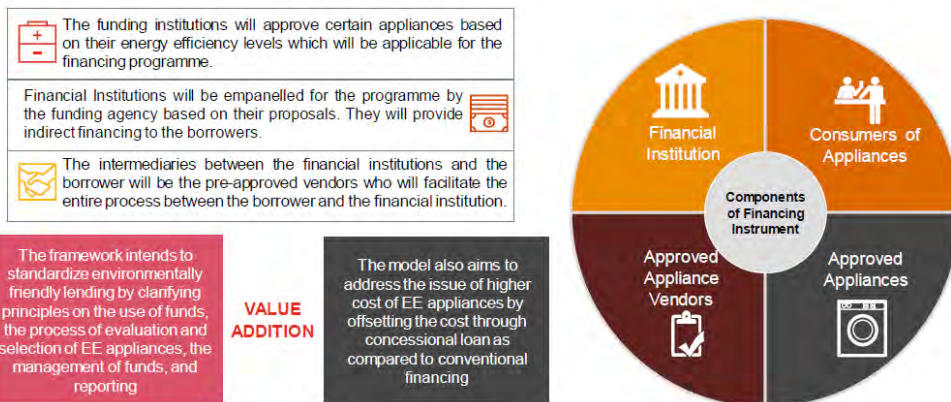
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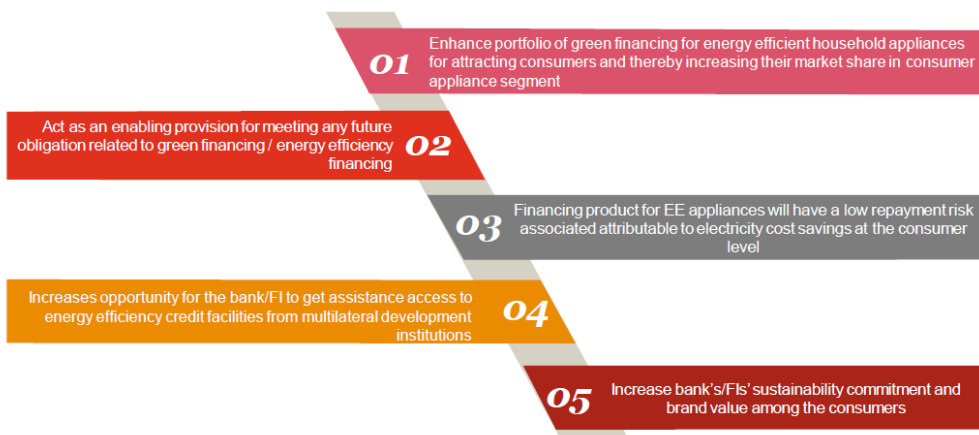
Financial Strategy and Programme Development



Business Model: List Based Financing



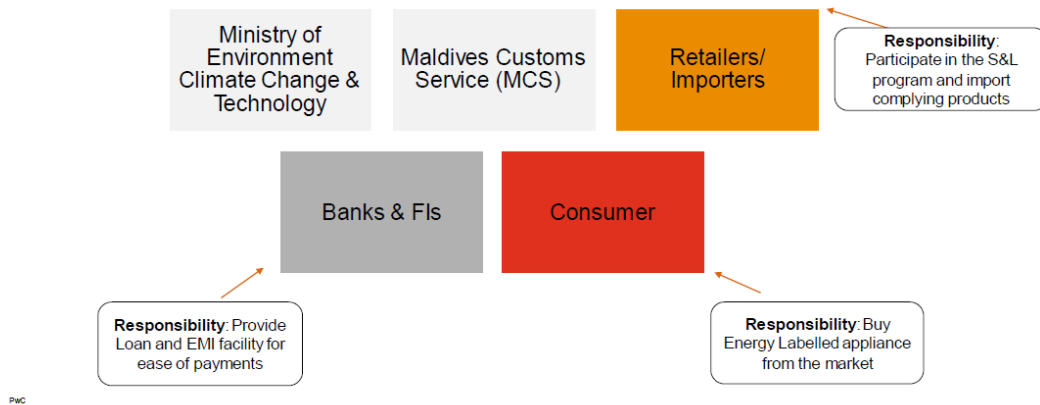
Benefits for Banks/FIs



4 Implementing Organizations & Roles

Key stakeholders for the uptake of EE Labelling Programme in Maldives' appliance market (External Stakeholders)

Stakeholders Involved for Uptake of EE Appliances



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Implementing Organizations and their Roles

Govt. of Maldives through Ministry of Environment, Climate Change and Technology

Grant Provider & Nodal Agency for implementation of the programme

- Facilitate selection of banks/FIs for creation of the financing facility
- Empanelment of banks/FIs
- Developing and maintaining list of EE equipment/appliances to be financed through the program
- Develop measurement, reporting and verification (MRV) framework for the programme
- Create outreach platform to disseminate information

FIs / Banks

(Financing Institutions)

Intermediary Banks & Executing Agency (empaneled by ME)

- Responsible for design and operationalization of financial program and any additional credit enhancement mechanisms
- Availing co-finance for the programme through collaboration with international development agencies
- Empanelment of EE technology suppliers (vendors / ESCOs / Retail Chains / etc.) through market assessment and technical due diligence
- Maintain records of funds disbursed and EE appliances purchased
- Report the programme progress and benefits as per the MRV framework

EE Appliance Pre-Approved Vendors

Technology Supplier (vendors/ Retail Chains / etc.)

- Maintain approved list of EE equipment/appliances by coordinating with Banks/FIs from time to time
- Facilitate consumers for filing loan application with empaneled FIs/Banks
- Responsible for the overall supply and installation of the EE equipment/appliances and maintain the desired product quality and energy performance levels as laid out in the empanelment criteria

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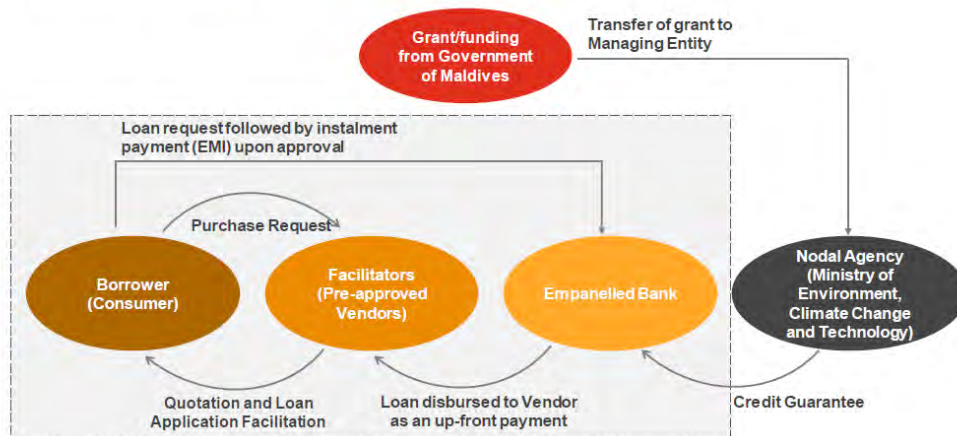
5

Financing Modalities

Customer Journey



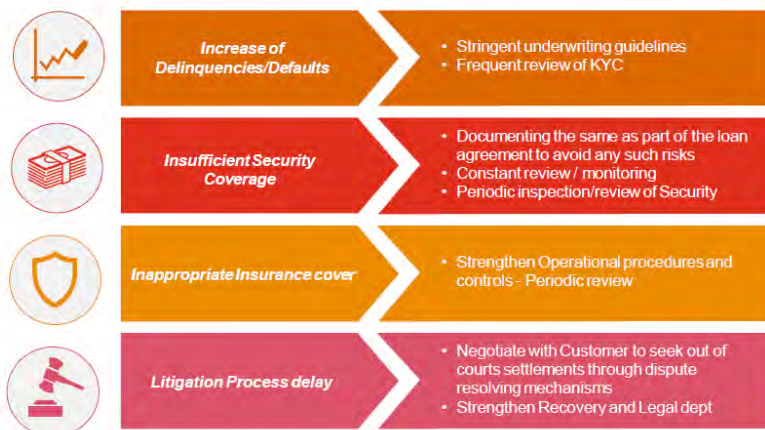
Financing Model



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Risk Mitigation

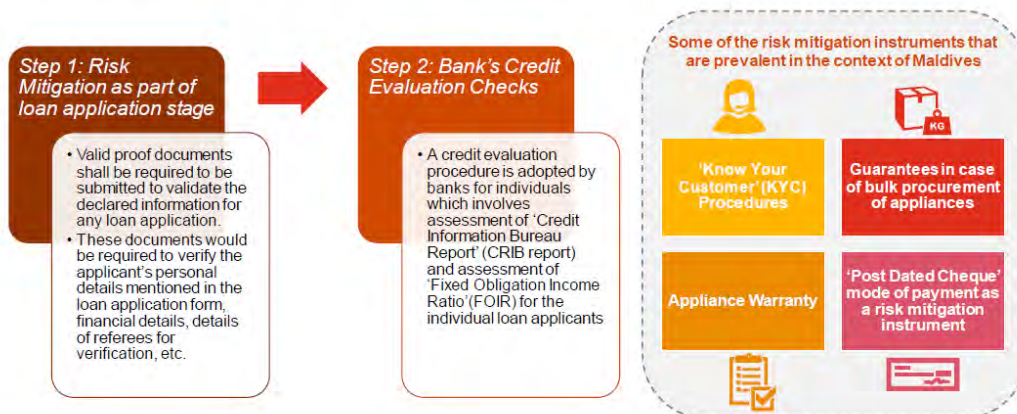
Risk Mitigation Measures



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Typical risk mitigation steps followed by banks



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Reporting and Verification Process

Measurement, Reporting & Verification

- The empanelled bank/financial institution will have to provide certain information to the Ministry of Environment, Climate Change and Technology at a **frequency decided by the Ministry**
- The details to be provided are mentioned in the table
- The Ministry in consultation with the Bank / FI shall develop a **Management Information System (MIS)** with predefined reporting formats and templates

The details required for reporting are mentioned here

1. Name of the borrower
2. Loan disbursement amount (MVR)
3. Loan disbursement date
4. Loan tenure
5. Interest Rate
6. Monthly EMI (MVR)
7. Appliance type (AC / Refrigerator / Washing Machine)
8. Appliance model and make
9. Star Rating of Appliance
10. Proof of purchase from borrower (Yes / No)

8

Quiz

Interactive Quiz

1. What is the need for a financial programme?
2. Which appliances are considered for this loan?
3. What is the role of the Financing Institutions?
4. Can you describe the flow of funds in the process?
5. Mention the ways in which the bank can mitigate their risks?
6. How will the banks select the pre-approved vendors?



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Thank you

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Annex 3: List of Participants

No.	Organization	Participant	Designation
1	Bank of Ceylon	Mr. Wasiru Abdul Gadir	Credit Card Officer
2	Bank of Ceylon	Ms. Fathimath Shuhaila	Credit Officer
3	Bank of Ceylon	Mr. Chamara Rajapakasha	Senior Credit Manager
5	HDFC	Mr. Ahmed Waseem	Technical Officer
6	HDFC	Mr. Muhannadhu Musthafa	Technical Officer
7	HDFC	Ms. Aishath Naseera	Credit Officer
8	HDFC	Mr. Ahmed Azeem Ali	Executive Officer - Accounts
9	Maldives Islamic Bank	Fathimath Mohamed Manik	Officer - Business Department
10	Maldives Islamic Bank	Samaha Hussain	Officer - Business Department
11	Maldives Islamic Bank	Mariyam Saidha	Officer - Business Department
12	Maldives Islamic Bank	Aminath Lubna	Senior Officer - Risk Management & Compliance Unit
14	SDFC	Ms. Sofoora Ali	Senior Credit Analyst
15	SDFC	Ms. Aminath Muha	Senior Credit Analyst
16	SDFC	Mr. Ali Maiz Asad	Senior Credit Analyst
17	SDFC	Mr. Ahmed Misbah	Senior Credit Analyst
18	State Bank of India	Mr. Himanshu Agrawal	Assistant Vice President (Credit 2)
19	State Bank of India	Mr. Shobhit Mathur	Assistant Vice President (Credit1),
20	State Bank of India	Mr. Mohamed Rafsan Hassan	Assistant Manager
21	State Bank of India	Ms. Aishath Samahath Mohamed	Assistant Manager