Monitoring & Evaluation (M&E) Plan and Impact Statement Form

Basic Information	
Title of response plan	National framework for leapfrogging to Energy Efficient Appliances and Equipment in eSwatini (Refrigerators and Distribution Transformers) through regulatory and financing mechanisms
Technical assistance reference number	2019000006
Country/ countries	eSwatini
NDE focal point and organisation	Mr. Bafana Nicholus Simelane Department of Meteorology
Sector(s) addressed	Energy Efficiency
Technologies supported	Refrigeration appliances and distribution transformers
Implementation period and total duration	January 2021 – June 2022 (inclusive, therefore 18 months)
Total budget for implementation	USD 244,100
Designer of the response plan	UNEP – The Climate Technology Centre and Network (CTCN)
Implementer of response plan	Pegasys (Pty) Ltd.

(A) Outputs and Activities as described in the Response Plan	(B) Indicator	(C) Expected results	(D) Method and frequency for data collection	(F) Comments
Overall Output: Completion of technical assistance as per the technical proposal	- Number of tons of CO_2 savings as a result of the implementation of the CTCN TA - Number of beneficiaries of the CTCN TA	- Estimated metric tons of CO_2e emissions reduced or avoided under the project (direct and indirect) - The estimated number of beneficiaries under the project	- Market assessment as per the implementation plan - Stakeholder engagements throughout the project as per the implementation plan (to include general meetings, technical committee meetings and all stakeholder	The final figures and amounts are to be decided based on the success of the implementation and the projected impact

			engagements) - Engagements with the major stakeholders from the ministry of energy after the completion of the project (frequency to be determined at the end of the implementation)	
Output 1: Detailed market assessment for Refrigerators and Distribution Transformers	Climate impact solutions identified both in relation to technological solutions and practically implementable solutions based on governmental policies	A minimum of 1 solution per sector (refrigerators and distribution transformers) suitable as per the Indicator section	Market analysis report for refrigerators and distribution transformers	The Covid-19 travel restrictions should be considered as a challenge in the implementation of household surveys related to refrigerators in particular
Activity 1.1 Conduct a detailed market assessment for refrigerators and distribution transformers	- Number of household surveys conducted - Number of supply chain surveys - Number of governmental sector surveys - Draft and final market assessment reports	- 50 – 100 household surveys - minimum of 10 supply chain surveys - Market assessment report	- Households and supply chain to be interviewed by surveys - Governmental stakeholders to be interviewed via direct questions - Finalisation of draft and final reports	- Household surveys in particular may be challenging due to Covid-19 restrictions
Output 2: Formulation of a Policy Working Group (PWG)	- All key stakeholders that are nominated by the NDA are part of the PWG	-Stakeholders (government, private sector, academia, manufacturer associations, consumer bodies, etc.) are engaged in consultative processes as part of the PWG	- Discussions with the stakeholders - Consultation of beneficiaries - Finalising materials and producing working documents - Meetings of the quarterly PWG meetings	
Activity 2.1: Formulation of the PWG with strategic stakeholders	- Formation of the PWG	- PWG formed	- List of members of the PWG - ToR of the PWG - Minutes of the 2 day kick-off meeting	

Activity 2.2: Organise quarterly meetings of the PWG	- number of quarterly PWG meetings held - number of policies and regulations impacted/changed/adopted/developed	- Four meetings of the PWG (2 day meetings) - 3 policies (policy roadmaps) informed by the PWG	- Minutes of the quarterly meetings of the PWG	Currently meetings to be held remotely due to Covid-19 but may change in future
Output 3.1: Technical Committee for refrigerators that will establish/adopt the national testing standard	- Creation of the stakeholder group to develop the national standard and to facilitate the standard development	- 1 process of the establishment of the national standard through the formulation of the TC-Ref and facilitation of standard development	- Facilitating TC-Ref formulation - Organisation of TC-Ref meetings - Stakeholder engagements	
Activity 3.1.1: Form TC-Ref with strategic stakeholders	- Formation of the TC-Ref	- TC-Ref established with strategic stakeholders	- List of strategic stakeholders as members of the TC-Ref - Minutes of the kick-off meeting - ToR of the TC-Ref	Meetings to be held remotely with current protocols for Covid-19 – may change as regulations change
Activity 3.1.2: Organise and conduct 3 meetings of the TC-Ref	- Number of meetings of the TC-Ref - Number of testing standards adopted/formulated	- Minimum of 3 meetings held - Minimum of 1 testing standard adopted/developed	- Minutes of the meetings held - Draft National standard for testing	Meetings to be held remotely with current protocols for Covid-19 – may change as regulations change
Activity 3.1.3: Organise public consultations on the draft national standard, analyse feedback and draft feedback report	- Number of public consultations organised - Review of data/feedback received on the draft national standard	- 1 public consultation organised - 1 Revised draft national standard based on feedback of the public consultation	- 1 national consultation workshop - List of participants showing their gender, institutions they work for and the type of institutions - Feedback/workshop report - Updating of the national standard based on the feedback	Covid-19 may affect the consultation process
Activity 3.1.4: Organisation of the TC-Ref meeting to adopt the final national standard	- Endorsement of the national standard for refrigerators - Official publication of the endorsed national standard for refrigerators	- 1 national standard for refrigerators endorsed by the TC and transmitted for approval and	- Meeting of the TC-Ref to endorse the national standard for refrigerators - Minutes of the final TC-Ref meeting - Final publication of	

		official publication - 1 official publication of the endorsed national standard for refrigerators	the National standard for refrigerators	
Output 3.2: Technical Committee for distribution transformers that will establish/adopt the national testing standard	- Creation of the stakeholder group to develop the national standard and to facilitate the standard development	- 1 process of the establishment of the national standard through the formulation of the TC-DT and facilitation of standard development	- Facilitating TC-DT formulation - Organisation of TC-DT meetings - Stakeholder engagements	
Activity 3.2.1: Form TC-DT with strategic stakeholders	- Formation of the TC-DT	- TC-DT established with strategic stakeholders	- List of strategic stakeholders as members of the TC-DT - Minutes of the kick-off meeting - ToR of the TC-DT	Meetings to be held remotely with current protocols for Covid-19 – may change as regulations change
Activity 3.2.2: Organise and conduct 3 meetings of the TC-DT	- Number of meetings of the TC-DT - Number of testing standards adopted/formulated	- Minimum of 3 meetings held - Minimum of 1 testing standard adopted/developed	- Minutes of the meetings held - Draft National standard for testing	Meetings to be held remotely with current protocols for Covid-19 – may change as regulations change
Activity 3.2.3: Organise public consultations on the draft national standard, analyse feedback and draft feedback report	- Number of public consultations organised - Review of data/feedback received on the draft national standard	- 1 public consultation organised - 1 Revised draft national standard based on feedback of the public consultation	- 1 national consultation workshop - List of participants showing their gender, institutions they work for and the type of institutions - Feedback/workshop report - Updating of the national standard based on the feedback	Covid-19 may affect the consultation process
Activity 3.2.4: Organisation of the TC-Ref meeting to adopt the final national standard	- Endorsement of the national standard for distribution transformers - Official publication of the endorsed national standard for distribution	- 1 national standard for distribution transformers endorsed by the TC and transmitted for approval and	- Meeting of the TC-DT to endorse the national standard for distribution transformers - Minutes of the final TC-DT meeting - Final publication of	

	transformers	official publication - 1 official publication of the endorsed national standard for distribution transformers	the National standard for distribution transformers	
Output 4.1: National policy roadmap for the promotion of high efficiency refrigerators, through MEPS-HEPS, labelling scheme, consumer awareness, capacity building and MV&E framework; adopted by the eSwatini government	- Development of the national policy roadmap for refrigerators for eSwatini	- A complete plan for the government to drive eSwatini through to higher energy efficiency refrigerators	- Stakeholder engagements - Desk studies - Formulations of PWG and related minutes of meetings	
Activity 4.1.1: Develop MEPS and HEPS from PWG input	- Analysis of existing work and report to PWG - Defining MEPS and HEPS based on feedback and analysis	- MEPS and HEPS limits	- Minutes of the PWG meetings - Draft MEPS and HEPS	
Activity 4.1.2: Review of labelling options	- Analysis of existing labelling schemes (particularly SA) - Draft of labelling support scheme	- Analysis of 2 countries related to labelling scheme	- Draft of national labelling scheme for refrigerators - Report on outcome of review of options to PWG	
Activity 4.1.3: Review of experiences in other countries	- Summary of international experience	- Analysis of at least 2 countries	- Report on experiences of other countries	
Activity 4.1.4: Design a consumer awareness campaign	- Design of a national consumer awareness campaign for refrigerators - Development of an implementation plan for eSwatini once the MEPS are adopted	- 1 national consumer awareness campaign - 1 implementation plan	- Consumer awareness campaign presentation - Minutes of the PWG meetings	

Activity 4.1.5: Organise public consultations on national policy roadmap	- Organisation of public consultations on national policy roadmap for refrigerators - Review of draft national policy roadmap after consultations	- 1 public consultation - 1 revised draft national policy roadmap after consultation feedback	- National stakeholder consultation workshop and relevant minutes - Consultation report - List of participants showing their gender, institutions they work for and the type of institutions	
Activity 4.1.6: Finalisation of national policy roadmap	- Finalisation of the national policy roadmap for refrigerators - Implementation plan for the eSwatini government	- 1 Final national policy roadmap incorporating MEPS & HEPS, labelling regulations, consumer awareness plan, communication plan, MV&E framework - 1 Implementation plan and budget	- Final National Policy Roadmap - Minutes of PWG meetings	
Activity 4.1.7: Development of national MV&E plan for refrigerators	- Development of a national MV&E plan for refrigerators - Action plan for implementation of the MV&E process	- 1 National MV&E plan for refrigerators - 1 action plan for implementation of the MV&E Process	- National MV&E report	
Activity 4.1.8: Design training material for MEPS for customs officials and retail market inspectors	- Design of training curriculum for customs officials and retail market inspectors - Approval of the curriculum by the PWG	- 1 training curriculum for MEPS - 1 Approval by the PWG	- Finalising training material - Minutes of the PWG meetings	
Activity 4.1.9: Organise train the trainer training	- Development of the training plan - Number of training the trainers on MEPS for refrigerators - Number of local trainers trained on MEPS for refrigerators - Number of female	- 1 training of the trainers - 10 local trainers trained on MEPS for refrigerators - Minimum of 3 female trainers trained on MEPS for refrigerators	- List of participants showing their gender, institutions they work for and the type of institutions - Proceedings of the training workshop - Training evaluation report	- Covid-19 may force remote training, which would not be ideal

	trainers trained on MEPS for refrigerators			
Output 4.2: National policy roadmap for the promotion of high efficiency distribution transformers, through MEPS-HEPS, consumer awareness, capacity building and MV&E framework; adopted by the eSwatini government	- Development of the national policy roadmap for DTs for eSwatini	- A complete plan for the government to drive eSwatini through to higher energy efficiency refrigerators	- Stakeholder engagements - Desk studies - Formulations of PWG and related minutes of meetings	
Activity 4.2.1: Develop MEPS and HEPS from PWG input	- Development of MEPS and HEPS - Liaison with PWG and international expert	- 1 MEPS and HEPS limits/levels	- Minutes of the PWG meetings - Draft MEPS and HEPS	
Activity 4.2.2: Conduct training workshop for procurement officers on Total Cost of Ownership (TCO)	- Number of training workshops for procurement officers on TCO - Number of participants trained - Number of female participants trained	- 1 training workshop for procurement officers on TCO - 10 procurement officers trained - Minimum of 3 out of 10 procurement officers trained to be female	- List of participants showing their gender, institutions they work for and the type of institutions - Training/workshop material - Training evaluation report	
Activity 4.2.3: Organize public consultation on the recommended national policy roadmap (including recommended levels of MEPS and HEPS)	- Organisation of public consultation related to the national policy roadmap for DTs - Review of the national policy roadmap after consultation	- 1 public consultation on national policy roadmap for DTs - 1 National policy roadmap after consultation	- National roadmap consultation workshop minutes - List of participants showing their gender, institutions they work for and the type of institutions - Consultation report	
Activity 4.2.4: Finalisation of the National Policy	- Finalisation of the national policy roadmap for DTs	- 1 revised and final National Policy Roadmap	- National policy roadmap revision documentation	

Roadmap by the PWG of the DTs	- Provision of action plan and recommendations for the eSwatini government to continuously implement and promote the national roadmap and drive for more energy efficient DTs	- 1 action plan for continuous implementation of the policy roadmap	- Minutes of the PWG meetings - Final implementation of the National Policy Roadmap	
Activity 4.2.5: Development of national MV&E plan for refrigerators	- Development of a national MV&E plan for DTs - Action plan for implementation of the MV&E process	- 1 National MV&E plan for DTs - 1 action plan for implementation of the MV&E Process	- National MV&E report	
Output 5.1: Financial mechanisms to support and drive the move towards energy efficient refrigerators	- Formulations and recommendations of policies on financial mechanisms that would assist in driving energy efficient refrigeration	- 1 report on Financial Mechanisms required to drive energy efficient refrigeration appliance promotion	- Analysis of international best practice - Organisation of stakeholder workshops - Drafting and finalising recommendations for financial mechanisms that would drive energy efficient refrigeration in eSwatini	
Activity 5.1.1: Review international experience and national conditions and prepare a report with recommendations on finance mechanisms	- Development of recommendations on financial mechanisms suited for implementation in eSwatini in relation to energy efficient refrigerators	- 1 report on proposed financial mechanisms to support energy efficient refrigerators based on international best practice and suitability to eSwatini	- Study of international best practice/experience - Analysis of national conditions through stakeholder engagements - Drafting a report outlining financial mechanisms including fiscal incentives, utility take-back options, and utility financing schemes for refrigerators	
Activity 5.1.2: Organise capacity	- Number of workshops held	- 1 participant workshop	- Workshop training material	

building workshop on finance mechanisms and options for refrigerators	- Number of participants from relevant stakeholders trained	- 10 relevant stakeholders trained	- List of participants showing their gender, institutions they work for and the type of institutions - Workshop evaluation report	
Activity 5.1.3: submission of recommendations for finance mechanisms and options for refrigerators.	- Technical reports on recommendations based on desk top studies	- Submitted final recommendations for financial mechanisms for refrigerators	- Draft recommendations for financial mechanisms - Final recommendations for financial mechanisms	
Output 5.2: Financial mechanisms to support and drive the move towards efficient DT	- Formulations and recommendations of policies on financial mechanisms that would assist in driving energy efficient DTs	- 1 report on Financial Mechanisms required to drive energy efficient DTs promotion	- Analysis of international best practice - Organisation of stakeholder workshops - Drafting and finalising recommendations for financial mechanisms that would drive efficient DTs in eSwatini	
Activity 5.2.1: Review international experience and national conditions and prepare a report with recommendations on finance mechanisms	- Development of recommendations on financial mechanisms suited for implementation in eSwatini in relation to efficient DTs	- 1 report on proposed financial mechanisms to support energy efficient DTs based on international best practice and suitability to eSwatini	- Study of international best practice/experience - Analysis of national conditions through stakeholder engagements - Drafting a report outlining financial mechanisms including fiscal incentives, utility take-back options, and utility financing schemes for DTs	
Activity 5.2.2: Organise capacity building workshop on finance mechanisms and options for DTs	- Number of workshops held - Number of participants from relevant stakeholders trained	- 1 participant workshop - 10 relevant stakeholders trained	- Workshop training material - List of participants showing their gender, institutions they work for and the type of institutions - Workshop evaluation	

			report	
Activity 5.2.3: submission of recommendations for finance mechanisms and options for DTs.	- Technical reports on recommendations based on desk top studies	- Submitted final recommendations for financial mechanisms for support of efficient DTs	- Draft recommendations for financial mechanisms - Final recommendations for financial mechanisms	
Output 6: Coordination by the NDE	- Establish effective coordination between the major stakeholders such as the NDE, NDA, MoE	- 1 effective coordination between the major stakeholders (NDE, NDA, MoE)	- Quarterly reports to the relevant stakeholders - Monitoring plans to ensure effective coordination and flag issues early - List of key contacts within stakeholders	

Impact Statement	
Challenge	Household appliances (in particular refrigeration appliances) and electrical transformers (particularly distribution transformers due to their number on the network) contribute greatly to electrical losses. In turn this requires greater electrical generation to supply such appliances due to the losses experienced and there are the associated emission of harmful greenhouse gases. The challenge for eSwatini is that it has no minimum energy performance standards for such products that would enable it to reduce losses, improve efficiencies of products, drive imports (and possibly manufacturing) of highly efficient products thus improving efficiencies, reducing electrical energy losses and associated CO_2 emissions.
CTCN assistance	The CTCN assistance will: - Perform a market assessment to understand the possibility and most effective implementation of energy efficient refrigeration and distribution transformer technologies - Develop the mandatory MEPS and HEPS for refrigerators and distribution transformers and the associated labeling schemes - Develop a national technology policy roadmap and related action plan to enable adoption and promotion of energy efficient standards and labels for refrigerators and distribution transformers within the country - Develop consumer awareness campaigns related to energy efficiency of refrigerators and distribution transformers - Develop financial models and mechanisms to enable the implementation of the related policies and mechanisms related to use of energy efficient refrigerators and distribution transformers in the country - Provide a framework for the country that will enable it to further

	implement the strategies of this project into the promotion of energy efficiency in other products and industry sectors
Anticipated impact	The anticipated impact that will be obtained through the implementation of this project is as follows: - The adoption of national testing standards for refrigerators and distribution transformers - The adoption of mandatory Minimum Energy Performance Standards (MEPS) and High Energy Performance Standards (HEPS) - The adoption of a labelling scheme for the country - The design of a consumer awareness campaign - Capacity building on finance mechanisms related to energy efficiency within the refrigeration and distribution transformer sectors
Anticipated co-benefits from the TA	The development of the relevant MEPS and HEPS and the associated testing standards will enable the government of eSwatini to drive the refrigeration and distribution transformer industries towards improved energy efficiencies, thereby reducing electrical power demand and reducing CO_2 emissions. This will further reduce the country's reliance of energy imports and will aid in the development of local high quality manufacturing. The excess available electrical energy could also be used for further electrification of the population (currently less than 70%). The reduction of energy consumption could also provide greater disposable income for households and the training provided to the various stakeholders will enable further expansions of the implementation of the project within eSwatini even after project conclusion.
Gender aspects of the TA	The technical assistance and the entire project implementation is underpinned by a plan for gender inclusivity. In predominantly male oriented engineering industries that these projects are related to the engagements are often biased. The implementation team includes female and male experts and the plan is to source input from male and female stakeholders in order to have a more complete input. Furthermore, the training plans and plans for workshops are to have gender inclusivity and in this regard have a lasting impact on inclusion of both genders in the implementation stages in the future. Therefore, a gender analysis will be performed in the project and the expected benefits are that the project inputs will be more rounded and have varied perspectives, making them more complete and that in the future there will be an inclusion of a more varied gender representation in the government implementation agencies related to energy efficiency.
Anticipated contribution to NDC	• eSwatini (Swaziland at the time) submitted its INDC document to the UNFCCC in 2015. In that document underlies a commitment to energy efficiency as part of the key adaptation contributions • Energy efficiency is part of the three primary objectives of the National Adaptation Plan of 2020. • Therefore, enabling the country to improve its energy efficiency in two key sectors such as refrigeration and distribution transformers will be a key aspect towards assisting eSwatini to deliver on its goals
The narrative story	eSwatini currently has an electrification percentage of 66% (61% rural, 83% urban) and has a target of complete electrification of its population by 2025).

	Poor energy efficiency of appliances results in higher generation capacity required to supply these appliances. This causes a direct increase to the cost of generation and also an indirect cost in terms of greenhouse gas emissions related to generation. Therefore, a reduction in energy efficiency would effectively reduce the load and "free up" some existing generation capacity for further electrification of the population. With a limited budget and without real minimum energy performance standards and the related infrastructure it is extremely difficult for eSwatini to implement the energy efficiency programmes that are required. In response the government of eSwatini has embarked on this programme through the assistance of the CTCN, which will develop the MEPS and HEPS for refrigeration appliances and distribution transformers thereby enabling it to implement the required policies to drive energy efficiency in these sectors. Furthermore, through stakeholder engagements and action plans that are to be implemented as part of this project the long term sustainability of these policies will be enabled. Furthermore, through the local key stakeholder participation in the development of the standards and regulations and through key stakeholder training and workshops the continuous implementation of the programme will be in the hands of the eSwatini government and its people so that the benefits can be truly realised and maintained.
Contribution to SDGs	The work performed as part of this project will enable eSwatini to contribute to the realisation of some of the Sustainable Development Goals. The ones that will in all likelihood most be affected are: SDG 7: Ensure access to affordable, reliable, sustainable and modern energy for all. The improved energy efficiency of refrigeration appliances and distribution transformers will mean that more energy is available for the electrification of the general population thus contributing to this goal. Also the cleanest form of energy generation is energy saving through energy efficiency. SDG 9: Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation. Through energy efficiency and the resulting increase in available electrical energy for electrification the eSwatini government will be able to provide the energy for industrialisation within its borders. Access to electrical energy drives economic growth and supports industrialisation. Saving energy through energy efficiency also shows the eSwatini government and its people what is possible through innovation and application of informed policies and regulations. SDG 13: Take urgent action to combat climate change and its impacts. Through the implementation of this programme the eSwatini government will reduce energy emissions through the savings in energy consumption due to ore energy efficient refrigerators and distribution transformers. This will have a direct impact on the reduction of greenhouse gas emissions that it generates. These numbers will be quantified and estimated during this project and will directly contribute to SDG 13 and its aims.
Reference to knowledge products	Various documents and products will be used to assist in the implementation of the technical assistance. Some of the documents related to refrigeration and distribution transformer energy efficiency that are found on the UNFCC

	TEC knowledge database and that we feel will be useful are: - Refrigeration, air conditioning and foam blowing sectors technology roadmap – performed by GIZ - Industrial Energy Efficiency and Material Substitution in Carbon-Intensive Sectors Of course, other documents are likely to be used as the need arises during the project execution phases. Additionally, amongst others, the following UNFCCC document was researched during the compilation of the TA request and will be useful during the implementation phase: - Report of the global environment facility to the twenty-fifth session of the conference of the parties to the united nations framework convention on climate change Furthermore documents such as the SADC EAC market assessment on cooling and the technical notes on refrigerators and air conditioners provided by the UNEP will provide relevant and important background to the project and the U4E model regulation guidelines will be useful in the development of various models, strategies, policy frameworks and implementation plans specific to the relevant country. Therefore, with the wealth of available knowledge in the UN archives and in particular in the UNFCC TEC knowledge products there is a strong support mechanism for the successful implementation of this project and for novel approaches to certain problems and solutions.