Technical Assistance Closure Report Template

Objective of the technical assistance (TA) Closure Report:

- To communicate publicly in one document a summary of progress made and lessons learned during the TA towards the anticipated impact (sections 1-4).
- To document qualitative and quantitative data collected during TA, for use in donor and UN reporting (Annex 1).

Steps for completing the TA closure report:

1. The lead TA implementer submits the closure report at the end of the technical assistance as a final deliverable. The TA closure report will capture outputs, outcomes and impacts of all activities conducted under the TA. Please copy and summarise relevant material from previous TA outputs/deliverables and the Response Plan, as relevant.
2. A CTCN Manager will review and revise the closure report before final approval by the CTCN Deputy Director.

Important note on public and internal use of the closure report:
Once approved by the CTCN Deputy Director, the TA closure report will be a public document available on the CTCN website www.ctc-n.org. Selected content will be used for targeted communication activities. Annex 2 is for internal use only and will not be publicly available.

Closure Report for CTCN Technical Assistance

1. Basic information

Title of response plan	National framework for leapfrogging to Energy Efficient Appliances and Equipment in Zambia (Refrigerators and Distribution Transformers) through regulatory and financing mechanism
Technical assistance reference number	2019000005
Country / countries	Zambia
NDE organisation	Ministry of higher Education
NDE focal point	Mr. Ben Makayi
NDE contact information	Senior Science and Technology Officer, Ben.Makayi@mohe.gov.zm
Proponent focal point and organisation	Mr. Allan K. Chivunda, Ministry of Energy, Policy Working Group (PWG) Chairperson & Technical Committee for refrigerators (TC-REF) Chairperson, allanchivunda@gmail.com
Designer of the response plan	UNEP – The Climate Technology Centre and Network (CTCN)
Implementer(s) of technical assistance	BASE / ICA / SACREEE
Beneficiaries	Ministry of Energy (MoE), Zambia Bureau of Standards (ZABS), Government of Zambia
Sector(s) addressed	Energy Efficiency

Technologies supported	Refrigerators & Distribution Transformers
Implementation start date	January 2021
Implementation end date	September 2022
Total budget for implementation	USD 288,639.70[1]
Description of delivered outputs and products as well as the activities undertaken to achieve them. In doing so, review the log frame of the original response plan and refer to it as appropriate	- 1 Comprehensive market analysis for higher efficiency refrigerators and distribution transformers (DTs) was conducted; - 1 Policy Working Group assembling key stakeholders for the design and future implementation of the national policy roadmap (NPR) for the promotion of higher efficiency refrigerators and DTs was formed and effective including the organisation of 6 PWG meetings; - 2 Technical Committees for refrigerators (TC-Ref) and for distribution transformers (TC-DT) provided forums for effective adoption of the national testing standard and periodic participatory reviews; - 1 NPR for the promotion of higher efficiency refrigerators and DTs was adopted; - Financing mechanisms and options were identified and developed for the promotion of higher efficiency refrigerators and DTs;
Methodologies applied to produce outputs and products	- Desk study - Market assessment including economic and financial analysis - Discussion with stakeholders and consultation of beneficiaries - Finalizing materials and producing working documents - List of members and TOR of members (PWG, TC-Ref, TC-DT) - Minutes of meetings and training reports (PWG, TC-Ref, TC-DT) - National consultation workshops and consultation reports - Proceedings of the training workshops and training evaluation reports and list of participants - Copy of official publication (endorsed national standards and NPR) - Official announcement by the government (NPR)
Reference to knowledge resources	None
Deviations	There were a few deviations from the response plan against the actual implemented activities, outputs and products including: - The finalization and endorsement of the market assessment report was delayed until the second half of 2021. Delays for the final submission of the market assessment were caused due to the difficulties in data collection an in engaging and receiving inputs and feedback from the national stakeholders and PWG members during COVID 19.;

[1] *This value is the total budget approved for the implementers, which excludes activity 4.3; the total amount approved for the Readiness proposal is USD 347,838. The remaining value for activity 4.3 was subject to budget allocation from CTCN as the project progressed.*

	- More efforts than initially planned were put organising 6 quarterly meetings instead of 4 in order to ensure quality review and endorsement of the NPR including national standards by PWG; - It was decided to cover both higher-efficient domestic refrigerators and DTs in one NPR document instead of two separate documents. - The 2nd TC-REF and TC-DT meetings were held on 23 May 2022 and 23 June 2022 due to delays in the discussions on the regional harmonization recommendations. TC-REF and TC-DT required more time than expected to review in detail and recommend the draft national standards. A 3rd TC-DT meeting took place on 07 July 2022; - The public consultation on the recommended national standards took place informally in-between TC meetings and were coordinated by the TC Chairs. Additional consultation efforts on the NPR and national standards took place as part of the 5th PWG meeting as well. Broader public consultations will be part of the national country adoption process for the NPR and the national standards co-led by MoE and ZABS beyond the project end the project end date; - The TC-REF didn't require an additional meeting after the informal public consultation coordinated by the TC-REF Chair to endorse the national standard for refrigerators as inputs and comments received were not substantial. On the DT side, TC-DT required a 3rd TC-REF meeting on 07 July 2022 and informal consultations of local DT manufacturers took much longer than expected. Written confirmation from TC-REF and TC-DT Chairs were received after the 5th PWG meeting. The endorsed national standards were included in the NPR which was then endorsed by the PWG. According to guidance from MoE and ZABS, it is now assumed that the Government of Zambia will be able to complete the country adoption process including additional formal stakeholder consultations on a proactive and timely manner so that the national standards can be first made voluntary early next year and then mandatory in the coming years (as per recommended actions and timeline captured in the NPR); - Based on guidance from the PWG and time constraints, the consultation only included informal consultations through the 5th and 6th PWG meetings and through communications between TC Chairs and key stakeholders from the public on both the NPR and the national standards instead of a formal public consultation process. The NPR cover both higher-efficiency refrigerators and DTs in one document. - The training materials were informed by the NPR and international experience on MV&E for domestic refrigerators; - The training of trainers combined participants from Namibia, Malawi, Zambia, and Zimbabwe to create

	synergies among countries. The format was virtual to increase the number of participants. Participants included custom officials but also other relevant stakeholders; - The training materials were informed by the NPR, international experience, and expertise from international expert on the TCO tool for DTs. The workshop agenda covered DT technology upgrade for manufacturers as well. The training combined participants from Namibia, Malawi, Zambia, and Zimbabwe to create synergies among countries. The format was virtual to increase the number of participants. Participants included procurement and compliance officers but also a few DT manufacturers from the countries and other relevant stakeholders; - The PWG endorsed the final NPR including recommended financing mechanisms as well;
Anticipated follow-up activities and next steps	The Government of Zambia is anticipated to complete the country adoption process on a proactive and timely manner so that the NPR can become a national policy document and the MEPS can be first made voluntary early next year and then mandatory in the coming years (see NPR's actions and timetable for the establishment and implementation of MEPS)

2. Lessons learned

	Lessons learned	**Recommendations**
Lessons learned from the CTCN TA process	- A few challenges were encountered during the project implementation that relate to the closed activities. The pandemic and related measures in place throughout the project implementation, such as international and domestic travel restrictions, and in-person meeting limitations, made it very difficult for the international experts to efficiently gather primary data for the market study, engage the local stakeholders including the PWG, TC-REF, and TC-DT, and receive timely inputs and recommendations to inform the development and finalization of the NPR including the national standards. On the coordination level, considering the number of stakeholders involved, internationally, locally and across the 8 implementing countries, it continued to take more time than first planned to	- The following contingency measures were implemented in order to avoid further project delay: (1) Dedication of more staff time resources from international experts to improve coordination with the national stakeholders in-between workshops and secure timely inputs on recommendations and deliverables to inform output 4; (2) Organization of monthly and quarterly national and international progress and coordination meetings; (3) Creation of synergies with the U4E's regional MEPS project on cooling appliances when possible; (4) Increased reactivity to provide feedback on deliverables from the UNEP-CTCN and U4E project management team; (5) Organization of virtual meetings for easy and continued communication; (6) Organization of hybrid in-person - virtual meetings in case of milestone meetings. - It's recommended that CTCN makes advance payments to the

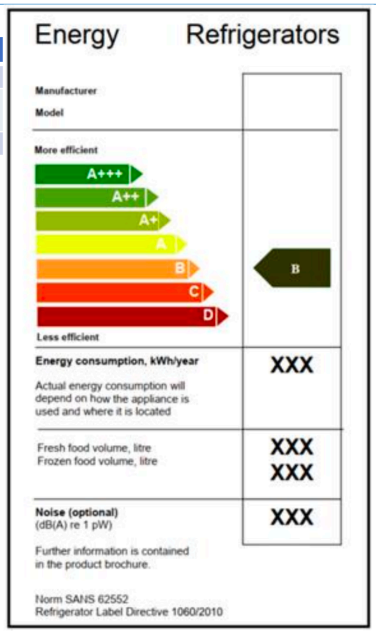
	harmonize activities, inputs and policy recommendations. For all these challenges, more coordination time and communication were overall needed between the parties involved and proper measures were taken for the safety of all. Efforts were made to catch up reasonably and be as much coherent as possible with the timeline, while giving enough time to national stakeholders to review, recommend, and endorse key outputs. - The misalignment of the project payment schedule with the implementers' resource needs for the implementation of the respective activities created some challenges.	implementers to ease the delivery of project activities.
Lessons learned related to climate technology transfer	Not applicable	Not applicable

3. Illustration of the TA and photos

For communication purposes, please provide 2-4 Power Point slides, including illustrations or charts, describing barriers, opportunities, methodology, activities, outputs and achieved results. The illustrations must be copied into the TA Closure report but must also be delivered as power point files. Also, please provide at least five high-resolution pictures in jpg format, capturing technical assistance. The pictures should illustrate how the TA has impacted the lives of the beneficiaries in particular and the communities in general.

Label for Residential Refrigerators

Category	Low	Intermediate 1	Intermediate 2	High
Refrigerators	1.00 ≤ R < 1.25	1.25 ≤ R < 1.50	1.50 ≤ R < 1.75	1.75 ≤ R
Refrigerator-Freezers	1.00 ≤ R < 1.25	1.25 ≤ R < 1.50	1.50 ≤ R < 1.75	1.75 ≤ R
Freezers	1.00 ≤ R < 1.25	1.25 ≤ R < 1.50	1.50 ≤ R < 1.75	1.75 ≤ R



5.1.2 Distribution Transformers

Table 5-2: Action Plan for Establishment of Enabling Policy and Regulatory Environment for Distribution Transformers in Zambia

Action No.	Action	Lead Agency & Other Stakeholders	Timeframe	Budget
F	**MEPS**			
F.1	Develop an implementation plan on the national policy roadmap	MoE (lead), ZCSA, ZABS, ZESCO, ZPPA, ERB , and International/ national advisor	2023	105,600
F.2	Finalise the draft MEPS for voluntary Implementation	ZCSA (lead), ZABS, ZESCO, MoE, ZPPA and relevant stakeholders	2023	35,200
F.3	Establish/designate the Authority (preferably **ZCSA**) to regulate DTs	TWG and International/ national advisor	2023	35,200

F.4	Conduct a capacity-building program for regulated staff and other identified stakeholders (local manufacturers)
	Description: Budget for a capacity-building program covering all aspects of the EE policy implementation and transitioning to the regulated MEPS for local manufacturers:
	• Training needs assessment, designing training courses & material for all relevant stakeholders including organizing the training - US$105,600
	• Benchmarking activities - US$15,000
	• Selection of a technology transfer partner
	  ○ Transformer design software - US$50,000
	  ○ Training for design software - US$12,000 (4 engineers)
	  ○ Hardware and tooling for meeting MEPS - US$720,000*
	  ○ Prototype Tier 1-Tier 3 MEPS - US$120,000 (12 QTY)
	  ○ Temporary export to SA + transportation - US$21,600
	  ○ Type tests at NETFA (South Africa) - US$75,000
		ZCSA, ZABS, ZESCO, MoE, local manufacturers, and International/national advisor	2024	399,200*

	Note: *Cost for new tools and manufacturing equipment for local manufacturers is not included.			
F.5	Conduct public consultation on the voluntary MEPS to become mandatory	ZCSA (lead), ZESCO, ZABS, ZPPA, MoE, and International/ national advisor	2024	35,200
F.6	Develop a regulatory mechanism to enforce and implement mandatory MEPS and the testing method	MoE, ZCSA, ZABS	2025	35,200
F.7	Promulgate the mandatory MEPS	MoE/ZPPA/BRRA, Cabinet, and Parliament	2025	Included in F.3
F.8	Enforce the mandatory DTs MEPS	ZCSA/MoE	2026	Included in F.3
F.9	Review and adjust the MEPS level based on the analysis of statistical data collected and the regional harmonisation trend	ZESCO lead enforcement of DT MEPS	Every 5 years	17,600
G	**Communication Program**			
G.1	Develop and implement an educational program on DT MEPS and TCO for utility procurements to communicate on financial benefits of more stringent MEPS and updated formulas for computation of the Total Cost of Ownership (TCO) in the procurement guidelines	ZCSA, ZABS, ZESCO, MoE, and International/ national advisor	2023	27,600
G.2	Develop and implement an educational program on DT MEPS and TCO for non-utility procurements to communicate on financial benefits of procurement of energy efficient DTs updated formulas for computation of the Total Cost of Ownership (TCO) in non-utility applications	ZCSA, ZABS, ZESCO, MoE, International/ national advisor, and relevant stakeholders	2024	27,600
H	**Financing Mechanisms**			
H.1	Establish finance/procurement strategies and detailed implementation plan for each financing mechanism	MoE leads, with support from ZESCO, ERB, ZCSA, ZABS, MoFNP, and ZPPA, and international/ national advisor	2023	35,200
H.2	Engage potential donors and prepare technical assistance project proposals for the proposed financial mechanisms	MoE and International/ national advisor	2023	35,200

H.3	Develop and implement the proposed financing mechanisms through technical assistance projects supported by international donors and experts	MoE leads, with support from ZESCO, ZCSA, ZABS, ERB, MoFNP, ZPPA, and with technical assistance projects supported by international donors and experts.	2024	250,000 (per mechanism)
H.4	Seek and develop partnerships with financial Institutions and ZESCO including T&C and agreements signing for the proposed financing mechanisms	MoE and ZESCO/financial institutions	2024	Included in H.3
H.5	Assess eligibility and negotiate with ESCOs and/or technology providers, including MOU signing	MoE and ZESCO/ESCOs/technology providers	2024	Included in H.3
H.6	Implement marketing and promotion strategy and activities to promote the pilot demonstration program(s)	MoE and ZESCO/financial institutions and ESCOs/technology providers	2024 onwards	50,000
I	**Monitoring, Verification, and Enforcement**			
I.1	Develop a regulatory & enforcement mechanism - to address managing compliance activities and clearly specify roles and responsibilities of related enforcement authorities on all related MV&E activities including liability measures with a penalty structure	MoE (lead), ZCSA, ZABS, ZRA, ZESCO, ERB, ZPPA	Draft by end of 2023 and full enforcement by 2024	158,400
I.2	Organize consultation workshops with other GCF countries and the SADC region (public utilities) to ensure alignment with the national MV&E framework and harmonization of the DT product registry	MoE, ZCSA, ZABS, ZRA, ZESCO	2023	35,200
I.3	Develop administrative procedures/ operational manual for enforcing regulations on the MEPS program	MoE, ZCSA, ZABS, ZRA, ZESCO	2023	35,200
I.4	Develop a product registration system (PRS) for distribution transformers	MoE, ZCSA, ZRA, ZESCO	2024	65,200
I.5	Train responsible officers in charge of management and maintenance of PRS	MoE, ZCSA, ZRA, ZESCO	2023	8,800
I.6	Develop national regulations on mandatory registration of distribution transformers	MoE, ZCSA, ZRA, ZESCO	Draft by end of 2023 and full	Included in I.1

			enforcement by 2024	
I.7	Design communication plan for DT suppliers, customs, and other stakeholders on enforcement obligations	MoE/ZCSA/ZRA	2023	17,600
I.8	Develop information materials on regulatory compliance requirements and obligations (e.g., procedures to obtain registrations and import permits)	MoE/ZCSA/ZRA	2023	27,600
I.9	Develop and publish annual reports to maintain market transparency and declare non-compliance cases for manufacturers, distributors, power utilities, and end users	MoE/ZCSA/ZRA	2023	Included in I.6
I.10	Plan and implement the evaluation program on MEPS registration & certification process, compliance and impact	MoE/ZCSA/ZRA	2025 and on an annual basis for the following years	17,600
			TOTAL	**1,454,400**

Note: The total budget is based on one financial mechanism (H.3) chosen for implementation

4. Impact Statement

The information in the table below will be used to communicate results and anticipated impacts of this technical assistance publicly. Please copy information from impact statement developed in the M&E Plan and update as relevant.

Challenge	Low efficient appliances and electricity-using equipment result in huge losses, which bring a heavy burden on the government's budget (electricity is subsidized) and hampers the country's electrification potential. The lack of information and awareness, lack of dedicated policies for energy efficient products and appliances including absence of minimum energy performance standards prevents Zambia from inducing a sustainable market transformation in favor of higher efficiency products. With improvement of the economic situation, demand for domestic refrigerators is increasing rapidly, and may already account for over 25% of domestic electricity consumption. Without the development of energy-efficient policies, inefficient products will continue to enter the market and remain strained on the grid for their useful life.
CTCN Assistance	In coordination and harmonization with similar CTCN projects in neighboring countries, CTCN will: • Validate the data collected by the CTCN from stakeholders on the existing initiatives and use of refrigerators and DTs • Undertake detailed market assessments and feasibility of implementation of technologies with highest efficiency

	• Develop a technology roadmap and action plan for promoting and adoption of efficient appliance in the country. • Propose draft MEPS-HEPS, and labeling for refrigerators and procurement specifications for DTs. • Assist decision makers and stakeholders to put the draft MEPS-HE for refrigerators and procurement specification for DTs into practice. • Gather information on financing lines and business models for financing energy-efficient refrigerators and/or DTs. • Develop proposal for financial/market-based mechanism on energy-efficient refrigerators and/or DTs.
Anticipated impact	Short term: (1) Strengthened existing policies and regulatory frameworks (2) Increased technical capacity on energy efficient refrigerators and DTs Mid/long-term: (3) Higher energy efficiency of refrigerators and DTs / lower energy consumption (4) reduction of GHG emissions
Co-benefits: Achieved or anticipated co-benefits from the TA	This readiness proposal through notification of MEPS and labelling scheme created an enabling policy and regulatory environment for refrigerators and distribution transformers to support market transformation. The project will reduce strain on the electricity grid and ability to extend the electricity grid, increase disposable income for households (reduced electricity bill), and potentially reduce GHG emissions, since it is anticipated that the planned increase in grid connections and electrification would move Zambia towards the use of fossil fuels for electricity generation.
Gender aspects of the TA	The TA aimed to pursue thorough and gender responsive integration and ensure stakeholder involvement at all levels. Energy efficiency policies and financing mechanisms were designed based on a gender-differentiated understanding of opportunities and constraints to optimize their social and climate impact. The market assessment aimed to include an

	assessment of the gender considerations related to refrigerators and distribution transformers and gender considerations were considered in the analysis of and choice of financing mechanisms selected.
Anticipated contribution to NDC	Contribute to Zambia's INDC submitted in 2015 which aims to promote the switching from conventional and traditional energy sources to energy efficiency and renewable sources and practices including energy-efficient grid extension to non-electrified rural areas.
The narrative story	With only 31.4% of the Zambian population that has access to electricity (2015), electrification is a priority for the Government. With financial constraints and subsidized electricity, reducing electricity losses is the first and most economical measure to be adopted. Low efficient appliances and electricity-using equipment result in huge losses, which bring a heavy burden on the government's budget and hampers the country's electrification potential. The lack of information and awareness, lack of dedicated policies for energy efficient products and appliances including absence of minimum energy performance standards prevents Zambia from inducing a sustainable market transformation in favor of higher efficiency products. With improvement of the economic situation, demand for domestic refrigerators is increasing rapidly, and may already account for over 25% of domestic electricity consumption. Without the development of energy-efficient policies, inefficient products will continue to enter the market and remain strained on the grid for their useful life. In this context, Zambia requested the support of CTCN through UNEP to implement a GCF Readiness proposal that aimed to develop a national framework for leapfrogging to energy-efficient refrigerators and distribution transformers through regulatory and financing mechanism. CTCN assistance will result in Zambia having: • Mandatory Minimum Energy Performance Standards (MEPS), High Energy Performance Standards (HEPS), and labeling schemes for refrigerators and distribution transformers

	• National policy roadmap and enabling environment for implementation of standards and label for refrigerators and distribution transformers • Appropriate financing mechanisms to accelerate deployment of energy efficient refrigerators and distribution transformers. • Strengthened national capacity to develop standards and labels for other appliances in future. The CTCN assistance contributed to improve the country programming process through the identification and prioritization of appropriate climate technology solutions in accordance with national strategies and plans for climate adaptation and mitigation, periodic participatory review and updating of the climate finance country programme, while strengthening the stakeholder engagement consultative processes. Finally, CTCN assistance strengthened climate finance strategies and project pipeline through market preparation and business planning for deployment and scale-up of prioritized climate technology solutions.
Contribution to SDGs A complete list of SDGs and their targets is available here: https://sustainabledevelopment.un.org/partnership/register/	• SDG 1: End poverty in all its forms everywhere: Energy efficiency is a major contributor in the reduction of fuel poverty. • SDG 7: Ensure access to affordable reliable, sustainable and modern energy for all: By 2030, double the global rate of improvement in energy efficiency: Energy efficiency will be improved in the buildings sector through energy efficient appliances. • SDG 9: Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation: The standard and labelling programmes will promote product innovation among local manufacturers to improve the performance and sustainability of refrigerators and DTs. • SDG 13: Take urgent action to combat climate change and its impacts: Strengthen resilience and adaptive capacity to climate-related hazards and natural disasters in all countries: The long-term impact of reduced electricity consumption mitigates dependency on climate sensitive

	electricity. Improve education, awareness-raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction and early warning: Future awareness raising, in accordance with the strategy developed in this TA, informs consumers and manufacturers about the benefits of energy efficient appliances.

Annex 1 Technical assistance data collection

Please add quantitative and qualitative values for the indicators selected in the M&E plan and monitored throughout the technical assistance in the tables below. Indicators which have been monitored in addition to the proposed indicators below may be added at the end of table A. Non-relevant indicators should be left blank.

A. Output and outcome indicators

Indicator Please note indicators below highlighted as **anticipated**	**Quantitative value** *Numerals only; disaggregates must sum to the total*	**Qualitative description** *List the various elements corresponding to the quantitative value as well as timelines and responsible institutions*
Total number of events organized by proponents and implementing partners	*10*	- 1st PWG meeting on 16 July 2021; - 1st and 2nd TC-REF meetings were held on 12 October 2021 and 23 May 2022; - 1st, 2nd, and 3rd TC- DT meetings were held on 12 October 2021, 23 June 2022, and 07 July 2022; - 4 coordination meetings NDE, NDA, MME, and implementers held on 24 September 2021, 14 April 2022, 22 August 2022, and 30 September 2022;
Number of participants in events organized by proponents and implementing partners	*137*	
a) Number of men	*116*	- 24 participants from 13 different institutions and including 3 women (1st PWG) - 20 participants from 18 different institutions and including 5 women (1st TC-REF) - 9 participants from 7 different institutions and including 0 women (2nd TC-REF) - 20 participants from 18 different institutions and including 5 women (1st TC-DT) - 13 participants from 10 different institutions and including 1 woman (2nd TC-DT) - 11 participants from 8 different institutions and including 1 woman (3rd TC-DT)

		- 9 participants from 5 different institutions and including 2 women (1st coordination meeting); - 9 participants from 6 different institutions and including 1 woman (2nd coordination meeting); - 11 participants from 7 different institutions and including 1 woman (3rd coordination meeting); - 11 participants from 8 different institutions and including 2 women (4th coordination meeting);
b) Number of women	21	See above
Number of climate technology RD&D related events		
Number of participants in climate technology RD&D events	*List total number here*	
a) Number of men		
b) Number of women		
Number of training organized by proponents and implementing partners	7	- 1 training on market assessment and recommended policy measures and financing mechanisms (2nd PWG meeting on 02 Nov 21); - 1 training on recommended national standards, policy measures, and financing mechanisms for refrigerators (3th PWG meeting on 09 Feb 22); - 1 training on recommended national standards, policy measures, and financing mechanisms for DTs (4th PWG meeting on 11 Mar 22); - 1 training on recommended national standards, policy measures, and financing mechanisms (5th PWG meeting on 27 Apr 22) - 1 training on final NPR document (6th PWG meeting on 30 Sep 22) - 1 training on MEPS for customer officials on 15 Sep 22; - 1 training on TCO for procurement officers and technology upgrades for DT manufacturers on 20 Sep 22;
Number of participants in trainings organized by proponents and implementing partners	168	- 19 participants from 10 different institutions and including 6 women (2nd PWG)

		- 22 participants from 14 different institutions and including 4 women (3rd PWG) - 11 participants from 10 different institutions and including 0 women (4th PWG) - 11 participants from 10 different institutions and including 1 woman (5th PWG) - 10 participants from 7 different institutions and including 1 woman (6th PWG) - 56 participants from 23 different institutions and including 7 women (training on MEPS for custom officials); - 39 local trainers trained from 19 different institutions and including 8 women (training on TCO and technology upgrades);
a) Number of men	141	
b) Number of women	27	
Total number of institutions trained	93	
a) Governmental (national or subnational)		*List the name of organisations trained here*
b) Private sector (bank, corporation, etc.)		*List the name of organisations trained here*
c) Nongovernmental (NGO, University, etc.)		*List the name of organisations trained here*
Percentage of participants reporting satisfaction with CTCN training (from CTCN training feedback form)		*Satisfied= 4+ on 5-pt scale*
Percentage of participants reporting increased knowledge, capacity and/or understanding as a result of CTCN training (from CTCN training feedback form)		*Increased knowledge, capacity and/or understanding= 4+ on 5-pt scale*
a) Percentage of men		
b) Percentage of women		
Total number of deliverables produced during the assistance (excluding mission, progress and internal reports)	36	
a) Number of communication materials, including news releases, newsletters, articles, presentations, social media postings, etc.		*List the name of the documents*
b) Number of tools and technical documents strengthened, revised or developed	6	- 1 comprehensive market assessment report endorsed by the NDE, NDA, and PWG; - 1 report on climate mitigation finance strategy for the promotion of higher-efficiency domestic refrigerators;

		- 1 report on climate mitigation finance strategy for the promotion of higher-efficiency DTs; - 1 National Policy Roadmap (NPR) for higher-efficiency domestic refrigerators and DTs (in Word document format) by the PWG; - 1 national testing standards for refrigerators endorsed by the TC-REF and PWG; - 1 national testing standards for DTs endorsed by the TC-DT and PWG;
c) Number of other information materials strengthened, revised or created (For example training and workshop reports, Power Points, exercise docs etc.)	30	- 3 training PPT (2nd PWG) - 2 training PPT (3rd PWG) - 2 training PPT (4th PWG) - 2 training PPT (5th PWG) - 1 training PPT (MEPS for custom officials) - 1 training PPT (TCO for procurement officers & technology upgrades for DT manufacturers) - 1 feasibility study for DT technology upgrades - 1 public sensitisation PPT (refrigerators & DTs) - 17 meeting minutes / workshop reports
Total number of policies, strategies, plans, laws, agreements or regulations supported by the assistance	*List total number here*	
a) Adaptation related		*List the type and name of documents supported*
b) Mitigation related		*List the type and name of documents supported*
c) Both adaptation- and mitigation related		*List the type and name of documents supported*
Anticipated number of policies, strategies, plans, laws, agreements or regulations proposed, adopted or implemented as a result of the TA	3	
a) Adaptation related		*List the type of documents anticipated to be proposed, adopted or implemented*
b) Mitigation related	3	- 1 National Policy Roadmap (NPR) for higher-efficiency domestic refrigerators and DTs; - 1 national testing standards for refrigerators endorsed by the TC-REF and PWG; - 1 national testing standards for DTs endorsed by the TC-DT and PWG;
c) Both adaptation- and mitigation related		*List the type of documents anticipated to be proposed, adopted or implemented*

Anticipated number of technologies transferred or deployed as a result of CTCN support	*List total number here*	*Instruction: List the type of technologies supported by this assistance. Technologies must be identified from the CTCN taxonomy of climate sectors and technologies (download in pdf format and choose from column C): https://www.ctc-n.org/resources/ctcn-taxonomy*
Anticipated number of collaborations facilitated or enabled as a result of technical assistance	*List total number here*	
a) Number of South-South collaborations		*List the names of the organisations (excluding the CTCN or TA implementers)*
b) Number of RD&D collaborations		*List the names of the organisations (excluding the CTCN or TA implementers)*
c) Number of private sector collaborations		*List the names of the organisations (excluding the CTCN or TA implementers)*
Number of countries with strengthened National System of Innovation as a result of CTCN support		*List names of countries*
Insert any additional indicators here		

B. Core impact indicators

Please fill in the tables for anticipated impacts of the CTCN assistance. Every technical assistance should contribute to at least one of the indicators below. For guidance on how to report on core indicators see the 'M&E Guidance Document for TA Implementers'.

Core indicator 1	**Anticipated metric tons of CO_2 equivalent (CO_2e) emissions reduced or avoided as a result of CTCN TA** *Please add your calculations in word or excel format as an Annex to this Closure Report, where applicable.*	
	Anticipated metric tons of CO_2e reduced or avoided as a result of the TA **on annual basis**	Anticipated metric tons of CO_2e reduced or avoided as a result of the TA **in total**
Quantitative value *(emissions reductions)*	In 2040 (if MEPS are being adopted in 2022): 0.37 million tons (domestic refrigerators) + 0.36 million tons (DTs) = 0.73 million tons (total)	By 2040 (if MEPS are being adopted in 2022): 3.19 (refrigerators) + 2.69 (DTs) = 5.88 million tons (total)
Unit	tCO_2e	tCO_2e
GHG assessment boundary (project emissions) Identify expected post-TA activities, associated		

effects and assess boundary for quantification of GHG emission reductions		
Baseline emissions Describe baseline scenario, baseline candidates, emission factors and emissions calculated	- U4E's Zambia Savings Policy Assessment for residential refrigerators and distribution transformers (2022); - The savings potentials are calculated based on the assumption that Minimum Energy Performance Standards are implemented in 2022 at a level derived from the United for Efficiency Model Regulation Guidelines; - U4E's country savings assessments methodology and assumptions (2022)	- U4E's Zambia Savings Policy Assessment for residential refrigerators and distribution transformers (2022); - The savings potentials are calculated based on the assumption that Minimum Energy Performance Standards are implemented in 2022 at a level derived from the United for Efficiency Model Regulation Guidelines; - U4E's country savings assessments methodology and assumptions (2022)
Methodology Explain the method or process of verifying the indicator and how data was gathered	- idem	- idem
Assumptions Describe assumptions made during calculation and quantification of GHG reductions	- Annual energy consumption from residential refrigerators in 2040 of 1.23 TWh (BAU) and of 0.93 TWh (Minimum Ambition) resulting to energy savings of 0.3 TWh; - Annual energy consumption from DTs in 2040 of 874 GWh (BAU) and of 576 GWh (Minimum Ambition) resulting to energy savings of 298 GWh;	- Cumulative savings (2022 – 2040)

Core indicator 2	**Anticipated increased economic, health, well-being, infrastructure and built environment, and ecosystems resilience to climate change impacts as a result of technical assistance** *Please provide a **qualitative** description of the anticipated impacts on the categories below*
Infrastructure and built environment Anticipated increased infrastructure resilience (avoided/mitigated climate induced damages and strengthened physical assets)	
Ecosystems and biodiversity Anticipated increased ecosystem resilience (areas with increased resistance to climate-induced disturbances and with improved recovery rates)	
Economic	

Anticipated increased economic resilience (e.g. less reliance on vulnerable economic sectors or diversification of livelihood)	
Health and wellbeing Anticipated increased health and wellbeing of target group (e.g. improved basic health, water and food security)	

Core indicator 3	**Anticipated number of direct and indirect beneficiaries as a result of the TA**	
	Quantitative value	**Means of verification**
Total beneficiaries	*Total number*	
Number of adaptation beneficiaries		*Describe calculation methods and assumptions made*
Number of mitigation beneficiaries		*Describe calculation methods and assumptions made*
Number of adaptation-and mitigation beneficiaries		*Describe calculation methods and assumptions made*

Core indicator 4	**Anticipated amount of funding/investment leveraged (USD) as a result of TA (disaggregated by public, private, national, and international sources, as well as between anticipated/confirmed funding)**			
	Quantitative value confirmed *in USD*	**Quantitative value anticipated** *in USD*	**Qualitative description** *List the institutions, timelines, and description or title of the investment*	**Methods** *Describe methods used for quantification of funds leveraged*
Total funding	*Total number in USD (numerals only, no rounding or abbreviations)*	*Total number in USD (numerals only, no rounding or abbreviations)*		
Anticipated amount of public funding mobilised from national/domestic sources				
Anticipated amount of public funding mobilised from				

international/ regional sources				
Anticipated amount of private funding mobilised from national/domestic sources				
Anticipated amount of private funds mobilised from international/regional sources				

Annex 2 (for internal use – to be filled in by the CTCN)

CTCN evaluation

This section will be completed by the relevant CTCN Technology Manager.

- Evaluation of the timeliness of the TA implementation as measured against the timeline included in the response plan;
- Evaluation of TA quality as defined in the response plan;
- Overall performance of the Implementers;
- Overall engagement of the NDE and Proponent;
- Lessons learned on the CTCN process and steps taken by the CTCN to improve.