REQUEST FOR CEO APPROVAL

PROJECT TYPE: Medium-sized Project
TYPE OF TRUST FUND:GEF Trust Fund

For more information about GEF, visit TheGEF.org

PART I: PROJECT INFORMATION

Project Title: Promoting Accelerated Transfer and Scaled-up Deployment of Mitigation Technologies through the Climate Technology Centre & Network (CTCN).			
Country(ies):	Global	GEF Project ID:[1]	5832
GEF Agency(ies):	UNIDO	GEF Agency Project ID:	140307
Other Executing Partner(s):	Climate Technology Centre & Network (CTCN), incl. National Designated Entities (NDE)	Submission Date: Re-submission Date:	21.04.2015 02.06.2015
GEF Focal Area (s):	Climate Change	Project Duration(Months)	36 months
Name of Parent Program (if applicable): ➢ For SFM/REDD+ ☐ ➢ For SGP ☐ ➢ For PPP ☐	n/a	Project Agency Fee ($):	171,000

A. FOCAL AREA STRATEGY FRAMEWORK[2]

Focal Area Objectives	Expected FA Outcomes	Expected FA Outputs	Trust Fund	Grant Amount ($)	Cofinancing ($)
CCM-1	Technologies successfully demonstrated, deployed, and transferred	Innovative low-carbon technologies demonstrated and deployed on the ground.	GEF TF	1,800,000	7,200,000
		Total project costs		1,800,000	7,200,000

B. PROJECT FRAMEWORK

Project Objective: To facilitate the implementation of climate technology projects and policies in non-Annex I countries by technical assistance and investment facilitation.

Project Component	Grant Type	Expected Outcomes	Expected Outputs	Trust Fund	Grant Amount ($)	Confirmed Cofinancing ($)
1. Technical assistance for climate technology in response to requests to the CTCN.	TA	1. Accelerated transfer and deployment of selected climate technologies is achieved through facilitation by CTCN.	1.1 Response Plans prepared and implemented for seven CTCN requests on climate technology from NDEs[3] in non-Annex I countries.	GEF TF	1,400,000	350,000
	INV		1.2 Climate technology transfer and deployment projects in target countries piloted.	GEF TF	0	6,050,000
2. Partnerships to accelerate investment and the transfer of climate technology.	TA	2. Partnerships established between stakeholders to spur investment in climate technology and to accelerate innovation	2.1 "Match-making" mechanism between climate technology project developers and financiers in the selected countries.	GEF TF	250,000	275,000

[1] Project ID number will be assigned by GEFSEC.
[2] Refer to the Focal Area Results Framework and LDCF/SCCF Framework when completing Table A.
[3] NDE: National Designated Entity. NDEs serve as national entities for the development and transfer of technologies and act as focal points for interacting with the Climate Technology Centre.

		and technology transfer.				
3. Networks and capacity building for climate technology.	TA	3. Supportive capacities for deployment of climate technologies strengthened in non-Annex I countries.	3.1 Promotional activities on climate technologies for stakeholders in the targeted countries. 3.2 Facilitation of networking between public and private stakeholders to accelerate innovation and the dissemination of climate technologies. 3.3 Collection of field data and best practices from supported investment projects.	GEF TF	124,000	280,000
4. Monitoring and Evaluation.	TA	4. Monitoring and evaluation mechanism implemented in accordance with UNIDO and GEF guidelines.	4.1 Project monitoring and evaluation plan designed and implemented. 4.2 Terminal project evaluation completed.	GEF TF	26,000	45,000
Subtotal					1,800,000	7,000,000
Project management Cost (PMC)[4]				GF TF	0	200,000
Total project costs					**1,800,000**	**7,200,000**

C. SOURCES OF CONFIRMED COFINANCING FOR THE PROJECT BY SOURCE AND BY NAME ($)

Please include letters confirming cofinancing for the project with this form

Sources of Co-financing	Name of Co-financier (source)	Type of Cofinancing	Cofinancing Amount ($)
Others	Project Investors and International Financial Institutions (IFIs)[5]	Soft Loan	6,050,000
Others	CTCN, including country NDEs and Network Members	Cash	350,000
Others	CTCN, including country NDEs and Network Members	In-kind	555,000
GEF Agency	UNIDO (Project Management)	In-kind	200,000
GEF Agency	UNIDO	Cash	45,000
Total Co-financing			7,200,000

D. TRUST FUND RESOURCES REQUESTED BY AGENCY, FOCAL AREA AND COUNTRY[1]

GEF Agency	Type of Trust Fund	Focal Area	Country Name/ Global	(in $)		
				Grant Amount (a)	Agency Fee (b)[2]	Total c=a+b
(select)	(select)	(select)				0
(select)	(select)	(select)				0

[4]PMC should be charged proportionately to focal areas based on focal area project grant amount in Table D below.

[5]This component of co-financing is expected to be secured from private sector entities or project beneficiaries during project implementation, hence after CEO endorsement. Investment opportunities for climate technologies deployment will depend on the ultimate selection of CTCN requests to be treated under this project (see explanation in section A.4). Congruent with the GEF Co-Financing Policy (Art. IV), the project document includes clear requirements that such co-financing be mobilized during implementation at a clearly expressed minimum level.

Total Grant Resources	0	0	0

[1] In case of a single focal area, single country, single GEF Agency project, and single trust fund project, no need to provide information for this table. PMC amount from Table B should be included proportionately to the focal area amount in this table.

[2] Indicate fees related to this project.

F. CONSULTANTS WORKING FOR TECHNICAL ASSISTANCE COMPONENTS:

Component	Grant Amount ($)	Cofinancing ($)	Project Total ($)
International Consultants	40,000	30,000	70,000
National/Local Consultants[6]	350,000	500,000	750,000

G. DOES THE PROJECT INCLUDE A "NON-GRANT" INSTRUMENT?

(If non-grant instruments are used, provide in Annex D an indicative calendar of expected reflows to your Agency and to the GEF/LDCF/SCCF/NPIF Trust Fund).

No.

PART II: PROJECT JUSTIFICATION

A. DESCRIBE ANY CHANGES IN ALIGNMENT WITH THE PROJECT DESIGN OF THE ORIGINAL PIF[7]

During the project preparation process, insights concerning modalities for GEF support to the CTCN have evolved and developed, including the eligibility requirements for CTCN activities to be funded by the GEF. With the CTCN now firmly established and initiated operations, the understanding of the specific role and incremental value of GEF support to the CTCN has also grown[8]: (1) Core funding and institutional support by the CTCN Consortium members are sufficient to support the CTCN Knowledge Management System (KMS), which is the mechanism to collect and share information, knowledge and best practices on climate technologies globally. This support, complemented by active involvement of the CTCN's focal points in the countries (the NDEs) also facilitates participation during relevant events in the country, such as conferences and business events. Activities of this kind originally included in the PIF under Component II (output 2.1) and Component III could therefore be spared, and foreseen resources dedicated to other activities. In the final project design, Component III is now aimed at enabling key stakeholders in the individual countries - including capital providers - to interact more effectively in order to accelerate the adoption of climate technologies. This is a more sustainable and higher-level outcome than proposed at PIF stage. The institutional support by CTCN members and NDEs is reflected by a higher co-financing contribution to this Component (raised from US$ 100,000 to US$ 280,000).

And (2): Component II has been revised in accordance and is now primarily focused on getting the financial sector involved in the development process of relevant climate technologies. It is aimed at both International Financial Institutions (IFIs) and local capital providers in order to boost confidence in such technologies as an investment opportunity and to identify risks and corresponding mitigation measures ("de-risking "), ultimately leading to bankable project proposals and an improved likelihood to access available financing sources (output 2.1). The Project aims to capitalize on GEF's role as a catalyst for attracting financiers in climate mitigation initiatives. Building upon CTCN's ongoing dialogue with the regional development banks to improve capital provision for climate technology investments in early markets, a strong effort will be made to formalize involvement of the financial community under the CTCN. This is reflected under output 2.1. As a result of this fine-tuning of the Project focus, US$ 250,000 GEF funding has

[6] National/Local consultants working for technical assistance Components will be required to complement and ground the services provided by institutions from abroad. The figures provided represent estimates as the exact amounts will depend on the CTCN requests and their nature.

[7] For questions A.1 –A.7 in Part II, if there are no changes since PIF and if not specifically requested in the review sheet at PIF stage, then no need to respond, please enter "NA" after the respective question.

[8] For a background on these topics, see, for example: Addendum to the Report of the Global Environment Facility to the Twentieth Session of the Conference of the Parties to the UNFCCC on "Global Environment Facility consultation with the Climate Technology Center and Network", November 25, 2014.

been allocated to Component II (was US$ 100,000 in the PIF). Both changes are congruent with guidance from the GEF received at PIF stage to better integrate the Components.

CTCN has fine-tuned its internal process for formulating and implementing response plans to NDE requests. As a result, "quick responses", financed by CTCN, are now foreseen as a first step to more extensive TA interventions such as proposed under the Project, aided by GEF funding. This translates into an increased co-financing contribution of the CTCN to the Project and enables step-wise upscaling of the support to identified investment opportunities, ultimately leading to a more mature project portfolio and an increased likelihood to attain the expected environmental GHG reductions. By consequence, the envisaged GEF funding of the response plans has been reduced from US$ 1,500,000 at PIF stage to US$ 1,400,000 (Project Component I). Simultaneously, the envisaged number of response plans for the transfer of climate technologies could be raised from five or six (PIF) to seven.

A.1 National strategies and plans or reports and assessments under relevant conventions, if applicable, i.e. NAPAS, NA national communications, TNAs, NCSA, NIPs, PRSPs, NPFE, Biennial Update Reports, etc.

The present Project is aligned with decisions made at subsequent Conferences of Parties to formalize GEF support to the Climate Technology Center and Network (CTCN), as described in detail in the following sections of this document. Consistency of country requests for technical assistance (TA) with relevant national strategies and plans represents a guiding principle for eligibility. This is verified by the National Designated Entity (NDE), which acts as the local focal point for the CTCN, and by the CTCN. The most relevant of these are Technical Needs Assessments (TNA), National Action Programmes (NAPs), as well as national development plans and sector policies. For the country requests that will be supported under the present GEF Project, specific information on their alignment with national climate policy and priorities is given in the respective CTCN requests.

A.2. GEF focal area and/or fund(s) strategies, eligibility criteria and priorities.

The Project is aligned under GEF-5 CCM-1. GEF support to the CTCN is based on decisions by the Conference of Parties and reiterated by the GEF at the latest COP-20 (November 2014).[9]

A.3 The GEF Agency's comparative advantage:

Since its establishment, UNIDO has built up a long track record assisting countries to implement programmes that support inclusive and sustainable industrial development. UNIDO pursues the integration of low-carbon objectives into industrial development policies and activities, especially with respect to small- and medium-sized industries. The Organisation supports entrepreneurship, industrial upgrading and technological innovation, whilst spurring economic growth within an environmentally sustainable framework. In particular, UNIDO helps its clients solve two fundamental problems: (i) de-linking intensity of material resource use from socio-economic development, and (ii) reducing the environmental impact of industry. The GEF Council document GEF/C.31/5 highlights UNIDO's comparative advantage in capacity building and technical assistance, specifically with respect to its involvement of the industrial / private sector in projects.

In the present Project, UNIDO acts as the Implementing Agency for the Climate Technology Center and Network (CTCN).The CTCN is the operational arm of the United Nations Framework Convention on Climate Change (UNFCCC) Technology Mechanism. The Climate Technology Centre (CTC) is hosted by the United Nations Environmental Programme (UNEP) in collaboration with the United Nations Industrial Development Organization (UNIDO) and supported by 11 partner institutions with specific expertise in climate technologies and regional experience. It benefits from the guidance provided by an Advisory Board.

UNIDO has a long history of cooperation with global and national stakeholders and adheres to high standards of fiduciary responsibility. The CTCN as a whole and the GEF Project in particular will draw on UNIDO's experience and expertise with facilitating the deployment of climate technologies.

[9] See: Addendum to the Report of the Global Environment Facility to the Twentieth Session of the Conference of the Parties to the UNFCCC on "Global Environment Facility consultation with the Climate Technology Center and Network", November 25, 2014.

A.4. The baseline project and the problem that it seeks to address:

Context

There is substantiated scientific and empirical evidence that climate change is to be considered as one of the most pressing contemporary issues Society is facing. Addressing the challenges posed by a changing climate will require holistic, wide-ranging actions. Amongst other aspects, technological solutions are an intrinsic element of climate adaptation and mitigation strategies. Accelerating the transfer, deployment and diffusion of climate technologies represents a key pillar to enhance low-emission, climate-resilient development.

Technology facilitation is multi-faceted in nature, and should be considered in this context as a broad set of processes covering the flows of know-how, experience and equipment for mitigating and adapting to climate change. It comprises a process of learning to understand, utilize and replicate technologies, including the capacity to choose and adapt these to local conditions and integrate them with indigenous technologies and practices. Technology transfer involves a wide range of stakeholders, including governments, private sector entities, financial institutions, NGOs and research/education institutions. The Parties under the UNFCCC are of the view that the deployment of climate technologies in developing countries should be hastened in light of the challenges at hand.

Barriers to climate technology deployment stem from the lacking human, institutional, policy, technology and financial capacities. The underlying causes include: (i) the lack of conducive frameworks (including appropriate policies, regulations and incentives); (ii) the limited access to knowledge and expertise; and (3) the absence of a coordinated community of knowledge and expertise. Although the barriers are to a large extent well understood and documented, progress in the absorption of low-emission, climate-resilient technologies has commonly been slow and limited in scale. Additional efforts are therefore required to support the implementation of technology-related projects following the identification of needs and opportunities, as well as to promote their widespread dissemination and adoption.

Technology transfer has been a priority for the international community since the Rio Summit in 1992, where relevant elements were included in Agenda 21 as well as in Articles 4.3, 4.5 and 4.7 of the United Nations Framework Convention on Climate Change (UNFCCC). Starting with the first Conference of Parties (COP), technology transfer was discussed at various COPs, resulting in GEF funding for a first round of Technology Needs Assessments (TNA) between 1999 and 2004. An important conclusion that emerged from this exercise was that the assessments needed to be further strengthened to support the subsequent preparation of implementable technology action plans. As part of those efforts, the GEF's proposal on the Poznan Strategic Programme on Technology Transfer was endorsed at COP14. Meanwhile, the GEF developed a Long-Term Technology Transfer Programme as a follow up, and reported to the COP accordingly[10].

Background on CTCN[11]

The issue of technology transfer has thus been a cornerstone of the UNFCCC since its establishment. Acknowledging the need to accelerate the transfer of climate change mitigation and adaptation technologies, the Parties to the UNFCCC took a major step forward by establishing the Technology Mechanism at the COP16 in Cancun in December 2010. At the COP17 in Durban, it was decided to establish a new institution suited to address technology transfer. Hence the Technology Mechanism would comprise a Technology Executive Committee and a Climate Technology Centre and Network (CTCN). At COP17, the GEF was requested to support the operationalization and activities of the CTCN, a request that has since been reiterated during subsequent COP18, COP19 and COP20.

[10] As reflected in the guiding principles underpinning the GEF-5 Climate Change Mitigation strategy. See GEF-5 Strategic Programming Document, par. 60, p. 17 (GEF/R.5/31/CRP.1, May 12, 2010).

[11] Detailed information available at http://www.ctc-n.org.

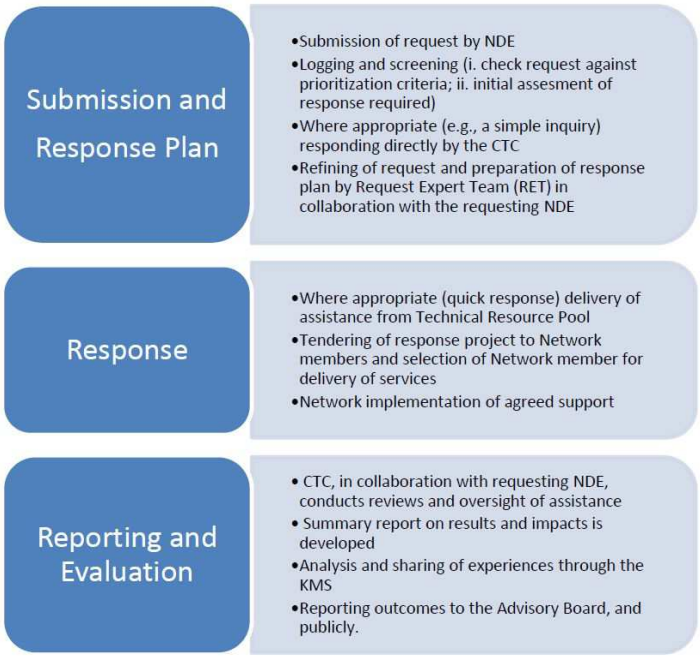
The stated mission of the Climate Technology Centre and Network (CTCN) is to stimulate technological cooperation and to enhance the development and transfer of technologies. The CTCN assists developing country Parties at their request, consistent with their respective capabilities and national circumstances and priorities, "to build or strengthen their capacity to identify technology needs, to facilitate the preparation and implementation of technology projects and strategies taking into account gender considerations to support action on mitigation and adaptation and enhance low emissions and climate-resilient development." Consistent with COP decision 1/CP.16, the CTCN will serve three main functions:

(1) Management of requests and responses in the technology cycle
(2) Fostering collaboration to accelerate technology transfer
(3) Strengthening networks, partnerships and capacity building for technology development and transfer, and fostering collaboration to accelerate technology transfer.

These core functions of the CTCN are supported by broader outreach and awareness activities and a Knowledge Management System (KMS) that enables learning and enhanced response quality over the life of the CTCN.

Embracing the definition of the Intergovernmental Panel on Climate Change (IPCC), climate technologies cover any piece of equipment, technique, practical knowledge or skills for performing a particular activity that can be used to face climate change. Through adequate responses and effective liaison and capacity building activities, CTCN is expected to accelerate the dissemination and adoption of climate adaptation and mitigation technologies in non-Annex I countries, thereby contributing to the objectives of the UNFCCC and the signatory Parties. The Parties have urged the CTCN to assure that responses to country requests are delivered in a fast and effective way. The operational structure and response cycle have been shaped to meet this demand.

The management cycle of country requests and CTCN's responses is depicted in the following figure.



The CTC is tasked to establish and engage with a truly comprehensive and global network of centres of expertise in covering the entire climate technology cycle. The active involvement of Network Members is critical for success of the CTCN, as it is mostly Network members that will develop and implement technology transfer and deployment projects, both under the auspices of the CTCN and under their own institutional mandates. It is anticipated that the Network will be gradually expanded under the guidance of the Advisory Board, building upon and extending existing networks and initiatives.

The CTC then becomes the hub of the Network and overall success of the CTCN will depend on the establishment of an efficient and effective structure for the CTC and flexible arrangements for future cooperation with the Network Members. Concretely, technical assistance to address CTCN requests will mostly be outsourced to Network members on competitive basis, following standard UNIDO procurement procedures and in consultation with the respective NDE. Membership criteria, current list of Members, as well as other information related to the Network are available at http://www.ctc-n.org/network.

Baseline project:

In its broader context, the baseline scenario is composed of the institutional framework consisting of the CTCN and the National Designated Entities (NDEs) in non-Annex I countries to deliver technical assistance and promotional activities and to mobilize expertise and investment capital through effective networking and liaison, in response to specific requests from eligible countries. Direct funding to this baseline scenario stems from CTCN's funding partners, in-kind and grant contributions by UNIDO, UNEP and the consortium partners[12], and in-kind contributions from the NDEs and the institutions and companies in the target countries who are CTCN's direct beneficiaries. Through the baseline scenario CTCN pursues the delivery and take-up of climate adaptation and mitigation technologies in non-Annex I countries, thereby responding to specific priorities identified and agreed by the convening Parties under the UNFCCC. The baseline scenario is in principle open (non-confined) in terms of time horizon and resources; politically and

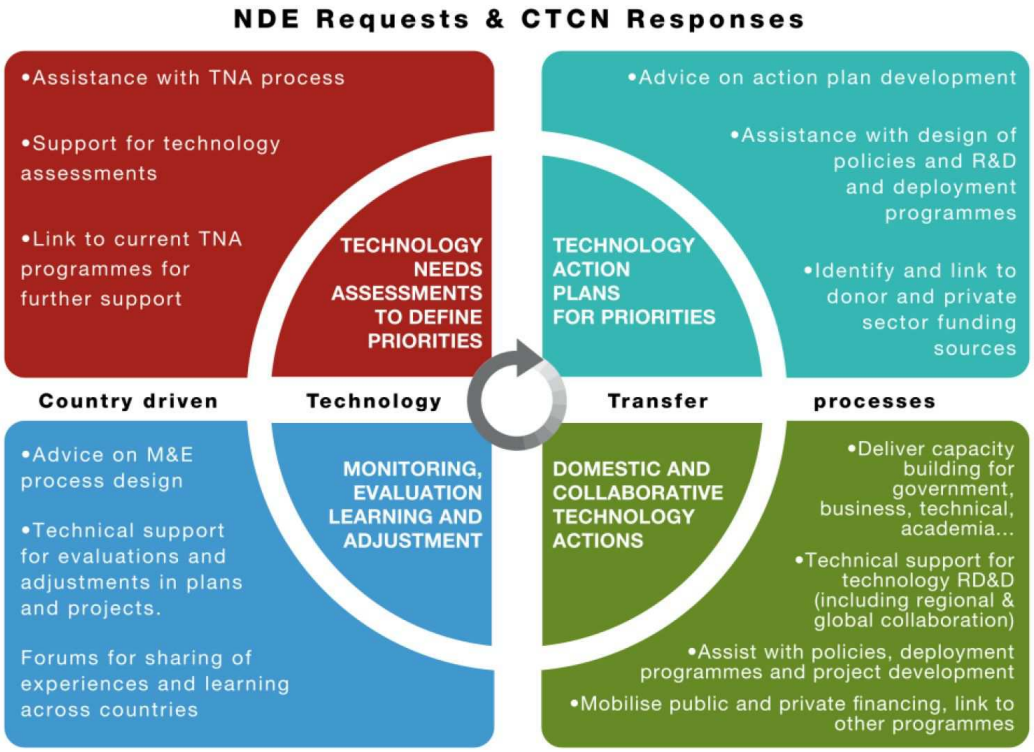
[12] These are: (i) Asian Institute of Technology (AIT), Thailand; (ii) Bariloche Foundation (BF), Argentina; (iii) Council for Scientific and Industrial Research (CSIR), South Africa; (iv) The Energy and Resources Institute (TERI), India; (v) Environment and Development Action in the Third World (ENDA-TM), Senegal; (vi) Tropical Agricultural Research and Higher Education Center (CATIE), Costa Rica; (vii) World Agroforestry Centre (ICRAF), Kenya; (viii) Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ), Germany; (ix) Energy Research Centre of the Netherlands (ECN), The Netherlands; (x) National Renewable Energy Laboratory (NREL), United States of America; and (xi) UNEP Risø Centre, including expertise from UNEP-DHI Centre (URC), Denmark.

geographically, it involves the non-Annex I countries as direct recipients of technical assistance, while technical and financial inputs can be delivered by all countries signatory to the UNFCCC or other stakeholders.

The baseline project is confined in time and resources to the three years of CTCN delivery (2015-2018). Out of a larger portfolio of country requests to be received by the CTCN, the baseline project is limited to a subset of seven requests for technical assistance (partly involving investment in climate technologies) that are characteristic of the CTCN's overall portfolio[13], including on GHG abatement. Global environmental benefits will occur due to the investments materialized during the project's time horizon and as a result of transformational change in the 10-year period thereafter.

Out of the palette of services offered by the CTCN (as visualized in the figure below), the baseline project focuses on the type of requests and responses indicated under "Domestic and Collaborative Technology Actions" (green box). Within this sub-set, the emphasis is primarily on the requests benefiting from more developed market conditions, typically:

- To assist with policies, deployment programmes and project development; and
- To mobilize public and private financing, link to other programmes.



During the project preparation substantial work has been done to nurture the portfolio of NDE requests entailing such attributes. Based on the progress made until the time of drafting for submission, a tentative selection has been made as illustrative subset of requests to be considered. Following the GEF guidance, the tentative selection was made to form a sample of what the CTCN can deliver in various regions, state of technology innovation, sectors, and type of services. The tentative selection represents the most promising leads, at the time of writing, for requests with the desired attributes to satisfy GEF requirements.

For the requests already submitted, response plans (i.e. individual project plans to address the country requests) are being prepared and/or discussed with the national counterparts, and roles and responsibilities are being outlined between

[13] In terms of technology, economic sector, geographical distribution, upstream/downstream intervention, integration in climate change adaptation strategies, and other aspects.

CTCN and its consortium and network members[14], NDEs and local counterparts, and external financiers. Alongside the corporate contributions of CTCN, UNIDO and UNEP, the budgeted response plans are at the core of the baseline project. Specifically, the baseline project is composed of the requests listed in the table in the following section.

Please note that some changes may be made to this list if necessary, since not all requests have been formally approved and submitted by the National Designated Entity. Modifications to this selection however will not alter the overall portfolio quality, committed co-funding resources and expected global environmental benefits of the presented baseline project.

Barriers:

The root causes and barriers affecting the transfer of climate technologies to developing countries are well documented and understood, and have incited the COP to take action by establishing the Technology Mechanism (COP 16) and the CTCN (COP 17). For more information on this process, see Section A.4.

Specific barriers depend on the type of technology and the country context. Without pretending a full barrier analysis – which would go beyond the scope and approach of the CTCN[15], this section will briefly outline the identified barriers to the introduction of climate technology in the countries pre-selected. Please refer to Annex G for a further description of the pre-selected country requests.

Country	Request Title	Market development stage, barriers and anticipated project contribution
1. Chile	To support the replacement of F-refrigerants used in refrigeration system in food processing production and exports (fruits and vegetables)	The use of low-GWP refrigerants in the food processing industry in Chile is hindered by a number of barriers, namely: a) The installed refrigeration capacity in the sector has traditionally relied on hydrochorofluorocarbons (HCFCs), ozone-depleting substances and greenhouse gases; b) As Chile progresses in the implementation of its HCFC Phase-out Management Plan (HPMP), alternative refrigerants are introduced in industrial refrigeration systems; ammonia (R-717) is the predominant refrigerant worldwide, but due to technical issues and toxicity concerns, food processing facilities use hydrofluorocarbons (HFCs) as alternatives. HFCs are potent greenhouse gases, with the most used HFC-based refrigerant in industrial applications (R-404A) having a GWP of 3,922. c) Alternative refrigerants with a low or zero GWP are butane, water, ammonia, and others. The introduction of refrigeration technologies based on these substances requires a process of technology transfer, demonstration, support for investment, promotion and awareness, and embedding in adequate policy.
2. Colombia	Implementation of a pilot waste treatment (MBT) plant	Supported by Government and municipal policy, Colombia has made large progress towards formalizing waste collection and disposal and reducing the environmental burden. Sanitary landfill is presently the technology-of-choice, but Colombia now aims to valorize waste through recycling, reuse, composting and energy generation. Colombia is well advanced in understanding the opportunities of waste valorization. Barriers related to policy, institutional framework, human resources, awareness, information, and business models are being addressed. The main remaining hurdles are: knowledge regarding to and access to state-of-the-art technologies, and attracting investment capital, for which Colombia is working on a sector NAMA. CTCN has been requested to provide technical assistance regarding a Mechanical-Biological waste treatment plant at the city of Cali, with an emphasis on building capacity and supporting the pilot and promoting its replication in other cities. It also includes assisting in seeking financiers for investment.

[14] Through its Network, the CTCN mobilizes policy and technical expertise from academia, civil society, finance and private sectors to deliver technology solutions, capacity building and implementation advice to developing countries. Network Membership provides access to a diverse global community of climate technology users, providers and financiers under the umbrella of the UNFCCC Technology Mechanism. Membership criteria, as per guidance from the CTCN Advisory Board, as well as the list of Network members are available at http://www.ctc-n.org/network

[15] Please note that, different to national GEF CCM projects, TA requests under the CTCN are not based on a full barrier-removal approach.

3. Dominican Republic	Developing a NAMA to leapfrog to advanced energy-efficient lighting technologies	Essentially, the market for energy-efficient lighting is well developed. With among the highest energy costs in the region, many energy saving measures, including energy efficiency, form a solid business case. The main factors affecting the uptake of efficient lighting among a large group of residential users are: weak sector governance, including a lack of enforcement of energy efficiency standards. The tariff for low-income households is very low and commercial losses are high. Grid fluctuations may cause technical failure of CFLs and induce people to revert to incandescent lamps. The CTCN request is focused on: (i) establishing adequate capacities among key stakeholders for the successful implementation of a regional strategy; and (ii) establish financial incentives to increase the market penetration of efficient lighting.
4. Mali	Agricultural Productive Use (crop drying and processing)	This request focuses on the implementation of a commercial business case based on solar-PV technology for productive activities. Rather than pursuing policy development, the response plan will focus on strengthening bankability, on de-risking of potential replication projects, and on strengthening the technical capacity in Mali for developing, designing, and operating solar technology systems for productive uses.
5. Senegal	Development of energy efficiency projects in industries and services	The market for co-generation and tri-generation in Senegal still needs to be developed. All types of barriers exist, including technical capacity, supply chains, maintenance, access to finance (high perceived risks), and information. The response plan will develop a technology deployment strategy with the national proponent. The development of business cases for cogeneration will likely be pursued from a holistic perspective, under which energy efficiency technologies and practices will be included.
6. Uganda	Formulating geothermal energy policy, legal and regulatory framework	A market for geothermal electricity generation technology needs to be fully developed. The request aims to make a start by addressing the absence of specific policy and legislation, and to strengthen the institutional framework. Possibly the full set of barriers needs to be addressed at a later stage, including environmental and permitting issues, economic feasibility and finance, and technical competences to ensure adequate project design and plant performance. Some investors have indicated their interest in the sector, and the potential is significant.
7. Viet Nam	Bio-waste minimization and valorization for low-carbon production in rice sector	A market for the utilization of rice husk residues by different economic sectors in Viet Nam is still at a very early stage. Conversion technologies, sourcing strategies, nutrient balances, economy, business models, and a policy framework would need to be developed and/or assessed. Identified barriers include policy, technology, business models, and finance. The scope of the present Request pertains to demonstrating strategies to valorize biomass residues for energy purposes, focusing on particular enterprises with high opportunities. Options include promoting the utilization of rice husk for paddy drying, which saves mineral coal and increases the resource-efficiency and competitiveness of the rice production chain. Such a transition is backed up by recent Government policy. Also in this case, technology and finance are substantial barriers. The CTCN response plan to the request can provide the necessary technical assistance and liaison with financiers to technology deployment in selected rice milling factories.

A. 5. Incremental /Additional cost reasoning: describe the incremental (GEF Trust Fund/NPIF) or additional (LDCF/SCCF) activities requested for GEF/LDCF/SCCF/NPIF financing and the associated global environmental benefits (GEF Trust Fund) or associated adaptation benefits (LDCF/SCCF) to be delivered by the project:

Problem Statement:

The overarching development problem is global: the identified weak capacities in non-Annex I countries to adopt climate technologies enabling mitigation of global greenhouse gas emission and supporting adaptation to the effects of climate change[16]. Conferences of Parties (COP) conclude that the uptake of low-emission, climate-resilient technologies in non-Annex I countries is insufficient to address climate change. The Climate Technology Center and Network (CTCN) has been established to accelerate the deployment of such technologies in developing countries through the provision of tailored technical assistance (TA) in response to country requests. Specifically, the CTCN can provide technical assistance to developers of climate technology projects and link investment opportunities to the financial community; it can further develop proposals and strategies to address specific market issues or constraints.

The demand-driven, highly focused approach of the CTCN may limit its delivery under the baseline scenario in markets that are less developed and where financiers lack confidence in climate technologies. The effectiveness of CTCN's operations would increase if supported by proactive climate policy and market development programmes in the

[16] With acknowledgement that capacities vary widely between countries and economic sectors.

recipient country. This provides a rationale for GEF involvement which has also been acknowledged and described by the Conference of Parties[17]. GEF's unique role and long-term expertise to establish conducive market conditions for technology deployment can enhance CTCN's performance and accelerate the achievement of global environmental benefits in the targeted countries. Moreover, GEF's financial support to CTCN activities in the countries contributes to project visibility while reducing real and perceived risks, thereby acting as a catalyst for third-party capital providers.

Project Strategy:

Responding to the given problem statement, UNIDO formulated the present GEF Project "Promoting Accelerated Transfer and Scaled-up Deployment of Mitigation Technologies through the Climate Technology Centre & Network (CTCN)" on behalf of the CTCN. The Strategic Results Framework (SRF) as outlined in the PIF has been refined based on the information collected in the meantime and the guidance received from GEF; there are no modifications with respect to the Project's approach and strategy.

The Project's development objective is defined as follows: "To facilitate the implementation of climate technology projects and policies in non-Annex I countries by technical assistance and liaison with financiers." This will be achieved by: (i) supporting a process of technology transfer and deployment; (ii) network building and liaison activities with key stakeholders including the financial sector; and (iii) knowledge dissemination and promotion. In line with the mandate and mission of the CTCN, the Project will focus on a sub-set of climate mitigation technologies that are technologically mature and tested, require moderate investments and can be replicated and scaled-up within the targeted sector and country.

CTCN has made a tentative selection of NDE country requests for technical assistance to prepare and implement climate technology projects. CTCN's support will result in maturing this portfolio and promote it among national and international investors. The requests must be compliant with the principles and eligibility criteria set by the CTCN Advisory Board[18], as well as with GEF criteria. The investments facilitated by the Project will result in global environmental benefits by avoiding the emission of greenhouse gases compared to the baseline scenario. The total Project budget has been estimated at US$ 9,000,000, for which a grant of US$ 1,800,000 is requested from the GEF. The total co-financing amounts to US$ 7,200,000.

The Project will consist of the following four components, which are closely aligned with the CTCN's core objectives:

1. Technical assistance for climate technology in response to requests to the CTCN;
2. Partnerships to accelerate investment and transfer of climate technology;
3. Networks and capacity building for climate technology; and
4. Monitoring and Evaluation.

The following paragraphs provide a description of the purpose of the anticipated project outputs and their contribution to the defined outcomes.

Component 1. Technical assistance for climate technology in response to requests to the CTCN.

Outcome #1. Accelerated transfer and scaled-up deployment of prioritized climate technologies is achieved through facilitation by CTCN (GEF: US$ 1,400,000; Cofinance: US$ 6,400,000). This Component will facilitate the transfer of climate technologies to selected countries upon requests from their respective NDEs. The Project will provide technical assistance to ensure the quality of investment projects in such technologies and meet financiers' due diligence criteria, thereby reducing technical and financial project risks, reducing project preparation and implementation throughput times, and contributing to accelerated learning curves in the target countries. The Project aims to develop and implement, in close cooperation with the respective NDEs, the CTCN response plans to selected requests. The requests are prioritized for high-potential sectors where direct opportunities exist for further up-scaling and mainstreaming, and/or where opportunities for follow-up proposals under the GEF CCM Focal Area are expected (presumably under GEF-6). By liaising with potential financiers already during the early stages of project development, the likelihood to secure investment is increased and replication after Project termination facilitated (See also

[17] At the COP17.
[18] Reference to these criteria.

Outcome #3). In less mature markets, response plans will include activities to create conditions to foster investment, for example through capacity building, policy development, or the design of secondary regulation. Enabling conditions are a niche for the CTCN, notably in terms of de-risking investments, thereby reducing a critical market barrier. The project Outcomes #2 and #3 are supportive to the attainment of this Outcome by facilitating and institutionalizing through the CTCN networking with financiers and other stakeholders and the exchange of specific knowledge and best practices. GEF support to Outcome #1 consists of technical assistance activities as detailed in the full response plans to the individual requests. These response plans will build upon initial "quick responses" implemented by CTCN as part of the baseline project for fast delivery of preliminary answers to the requestor, for assessing feasibility aspects, and for scoping of the follow-up full response.[19]

In the End-of-Project (EOP) situation, it is expected that: (a) Seven (7) response plans to NDE requests in selected countries have been successfully implemented. The requests are selected in function of the established CTCN rules and procedures, thriving to ensure a balance of geographical coverage, technologies and type and scale of benefits; (b) CTCN will have tested and demonstrated the pursued response mechanism for swift and "on demand" delivery of TA to climate technology users; (c) Financiers will have increased trust in CTCN's performance to nurture attractive investment opportunities, and can refer to established showcases in the selected countries; and (d) CTCN and GEF will have acquired more insight in the capabilities of the CTCN to generate prospective project proposals for funding under the GEF-6 CCM focal area.

Output 1.1 Responses prepared and implemented for seven CTCN requests on climate technology from NDEs in non-Annex I countries. This output encompasses the final selection of the requests which ought to be in alignment with national TNAs and TAPs or other national priorities, and the further detailing of the response plans in close dialogue with the respective local counterparts (applicants) and the NDEs. As of March 2015, the tentative selection of requests submitted and/or discussed with the NDEs involves the following countries: Chile, Colombia, Dominican Republic, Mali, Senegal, Uganda, and Viet Nam[20]. The response plans will include a division of roles and responsibilities between the CTCN, NDE and local actors, and specify the required inputs from local counterparts and external financiers, including the co-funding commitments under this Project. GEF funding will cover the costs of technical expertise required to address the requests, including project design and engineering, training of stakeholders, support to devise sustainable business models, and legal counselling as needed. TA for investment projects is envisaged to be tailored and specific, in line with the level of maturity of the addressed market sector. In the less developed markets, GEF support will co-finance addressing market barriers related to the policy and regulatory framework, the development of business cases, capacity building and access to finance. During execution of this output, linkages will be established with the financial community (see Outcome #2) to secure financing of the envisaged projects.

Output 1.2 Climate technology transfer and deployment projects in target countries implemented. This project output covers the actual deployment of the climate technology in the framework of the selected requests. Financing will be assumed by the local project owner based on a convenient equity/debt ratio and adequate financing conditions; no direct GEF and CTCN funding for co-investment is foreseen. The financial structure will be determined in function of each project's characteristics and financing needs, and the opportunities for attracting external capital from financiers. The Project will provide technical assistance to facilitate the collaboration between project proponents and the financial community. The NDEs will monitor the technical performance of the established projects and collect lessons learned and best practices to feed into the CTCN Knowledge Management System (see Outcome #3). The environmental benefits (avoided greenhouse gas emissions) of the technology deployment will be evaluated. Where appropriate conditions exist (including demonstrated interest by investors) an effort will be made to replicate the selected projects, thereby generating additional, indirect emission reductions. This approach fits into CTCN's objective to support the development of a pipeline of bankable climate technology projects in non-Annex I countries.

Component 2. Partnerships to accelerate investment and the transfer of climate technology.

[19] As an average, quick responses have a budget of approx. US$ 50,000. GEF support for implementing full response plans amounts to US$ 200,000.

[20] For more information about these requests, please refer to Section A.4 and to the Annexes G and H.

Outcome #2. Partnerships established between stakeholders to spur investment in climate technology and to accelerate innovation and technology transfer (GEF: US$ 250,000; Cofinance: US$ 275,000). The objective of this component is to design and implement a mechanism to involve established financial institutions in climate technology market development and incorporate them as network members in the CTCN. As such, project developers in non-Annex I countries and the financial community can enter into partnerships with mutual benefits. Through CTCN's network, financiers can identify and assess investment opportunities at an earlier stage than presently the case, while involvement of financial entities can contribute to maturing project development, strengthening business cases and identifying potential risks. Financial institutions are also well positioned to highlight policy and legal issues that might jeopardize project integrity, as well as factors influencing local financial markets and lending conditions, which may urge for additional guarantees to reduce project risks.[21] CTCN envisages playing an active role in matching project profiles with the criteria of financing institutions and promoting the establishment of working relations ("match-making") between project proponents and the financial community. This approach would address key barriers presently hampering mainstreaming of climate technologies into the investment portfolios of IFIs and local financial institutions.[22]

In the End-of-Project situation, it is expected that CTCN has established the envisaged match-making mechanism and tested this in the selected countries to link investment opportunities in climate mitigation technologies with financial institutions providing investment capital. Compared to the baseline, this mechanism will expectedly lead to a higher rate of project proposals actually financed and implemented, thereby contributing to the attainment of greenhouse gas reductions and further replication and up-scaling thereof.

Output 2.1 "Match-making" mechanism between climate technology project developers and financiers in the selected countries. The present output will develop the framework for involving financial institutions closely with the work of the CTCN and shaping CTCN's advisory services for request proponents and financiers under the "match-making" mechanism. To this purpose, the Consortium will draw upon the GEF's long-term experience in supporting early-market investment[23] jointly with local equity providers and local and international lenders. This output will be developed in close interaction between the CTCN and interested IFIs in follow-up on discussions and meetings held so far. It is expected that this process will result in a core group of IFIs, including the multilateral development banks, getting acquainted with climate technology market development and ultimately being represented in CTCN as a Network Member. Since the IFIs' role is highly specific, an appropriate modality needs to be defined for their involvement in the technology transfer process. The present output will provide useful inputs and insights for shaping this modality. This output, to be piloted with the selected requests, will also facilitate project developers and financiers to enter into partnerships to shape climate change investment opportunities into bankable projects by setting-up adequate financing models and identifying the most convenient capital sources for a specific intervention, technology and country. The Project will accumulate detailed knowledge of the priorities and conditions of relevant IFIs and national capital providers, and match these with project and proponent profiles as legacy to allow for replication and scaling up *post* Project. Factors influencing the investment climate per country will be analyzed and reflected in the proposed financing model for de-risking the investment. With a view on post-project replication, the Project will prioritize strategic partnerships to enable sustained access to finance after Project termination (exit strategy). GEF funding under this output will be used for the contracting of financial and legal expertise (international consultancies) to support the design of the envisaged mechanism, and expert consultancies to provide advice and guidance to prospective partners. Co-funding resources will cover the costs of travel and office, staff support for setting up and formalizing the match-making mechanism under the CTCN, and the costs of meetings with stakeholders and representatives from financiers.

Component 3. Networks and capacity building for climate technology.

[21] Among other options, CTCN may consider including a formal step into the CTC request response process in particular cases for the screening of requests on financing opportunities, and assign a Financial Expert Team for follow-up, expert assistance and liaison of investment prospects and potential financiers.

[22] These barriers are: low awareness on the investment opportunities offered by climate technologies; inadequate knowledge among financiers to evaluate such investments; and lack of mature investment proposals by project proponents.

[23] Primarily with renewable energy and energy efficiency technologies, which are part of the spectrum of climate mitigation technologies.

Outcome #3. Supportive capacities for deployment of climate technologies strengthened in non-Annex I countries (GEF: US$ 124,000; Cofinance: US$ 280,000). The objective of this component is to increase, in close cooperation with the NDEs, the awareness and capacity levels of key players for the transfer process of climate technologies in the selected countries, with a focus on local and international financial institutions. GEF involvement in the Project will expectedly act as a catalyst, in particular in countries where synergies exist with parallel GEF initiatives (see Section A.7). It is envisaged to enhance the interaction between stakeholders and foster the establishment of networks between the public sector, project developers and the financial community to accelerate the adoption of climate technologies in a country. The Project will support this process through a two-pronged approach: (i) awareness raising and the transfer of basic knowledge to key actors; and (ii) active support to sector organizations to link with the financial community and public sector entities, during and beyond the Project lifetime. Indeed, it is anticipated that NDEs and key stakeholders in the targeted countries will be better equipped to address similar issues following the intervention. This exercise will support the establishment of a common agenda per economic sector, which can serve as an anchor point for interacting with higher policy levels. Information about climate technologies, implementation strategies and best practices will be drawn from CTCN's Knowledge Management System (KMS). Towards finalization of the Project, results from the implemented response plans will be collected and lessons learned will be drawn and shaped into "knowledge products" to enrich the KMS.

At End-of-Project, it is expected that stakeholders in the selected countries will be able to interact more effectively and push forward the adoption and deployment of climate technologies. In particular, project proponents will be better positioned to engage with the financial community, while policy makers will be more aware of the relevance and potential of these technologies. The added value of GEF involvement is to facilitate interaction between key stakeholders and create awareness about remaining policy, legal, and financial barriers that may exist. As and if appropriate, stakeholders may explore opportunities to develop GEF-6 CCM proposals to address such barriers.[24] Moreover, synergies will be sought with multilateral and bilateral climate change programmes and international climate technology financing mechanisms, as well as GEF-funded initiatives by peer agencies in the recipient countries.

Output 3.1 Promotional activities on climate technologies for stakeholders in the selected countries. This output aims to increase the awareness level of key actors for the technology transfer process and provide these with sufficient information and knowledge to understand the characteristics, relevance and market opportunities of selected climate technologies. These actors include national policy makers, local and government authorities, representatives of branch associations and industry, as well as domestic and international financial institutions (IFIs). In line with the objective of the Project, emphasis will be placed on interacting with the financial sector. Activities envisaged under this output include participation at regional and national exhibitions and business conferences; presentations and short workshops providing up-to-date market information on selected technologies and business concepts, presentation of technological progress and case studies, market development approaches, and financing models. Activities will be selected and shaped in function of the needs and context of a specific country. The NDEs will assist in identifying opportunities for promoting climate technologies in their countries and can draw on support from the Consortium and the Network members. These activities will be financed using baseline resources. GEF resources are available for the implementation of workshops and the design and publication of promotional and workshop materials.

Output 3.2 Facilitation of networks between public and private stakeholders that accelerate innovation and the dissemination of climate technologies. This output will facilitate building linkages between key actors in the targeted countries, including research institutions, project developers and financiers. It will foster the establishment of a common agenda among stakeholders in specific sectors of the economy to accelerate the adoption of climate technologies. Identified opportunities in the pre-selected countries include: electricity sector (renewable energy), agro- and flower industries (phase-out of HFCs), and industry (energy and resource efficiency). This output will facilitate branch organizations to identify and evaluate opportunities and constraints for investment and open a dialogue with local financiers. Representatives from IFIs will be invited to provide guidance and present experiences and case studies. The NDEs are expected to provide inputs for shaping the process in each of the countries and involve public entities such as

[24] In accordance with the established project cycle for national GEF projects.

line ministries, technological institutes, government advisers and other relevant public officers, as and if appropriate. GEF funding will be used for contracting of Network Members to provide temporary support to the NDEs.

Output 3.3 Collection of field data and best practices from supported investment projects. This output pursues the collection of project information, technical and operational performance data, business and financing models, as well as best practices for project design and preparation, interaction with stakeholders (including local groups, CSOs, vulnerable groups and women), socio-environmental benefits and issues. Interviews with project initiators and stakeholders will be held to complement and verify collected data. Public information will be categorized and stored into the KMS. Fact sheets, project profiles and press releases will be produced based on extracted information. GEF funding will be used for funding of contracted services to review the information collected by the national NDEs and project proponents as part of the in-country monitoring and reporting process, and to deliver this information to the CTCN in an agreed format for further processing. Other costs will be borne by the national counterparts and the CTCN.

Component 4. Monitoring and Evaluation.

Outcome #4. Monitoring and evaluation mechanism implemented in accordance with UNIDO and GEF guidelines (GEF: US$ 26,000; Cofinance: US$ 45,000). Monitoring of project progress is essential for the adequate and timely delivery of results. This project component covers project monitoring and oversight by UNIDO in close coordination with CTCN and the NDEs, as well as the terminal evaluation of the Project.

Output 4.1 Project monitoring and evaluation plan designed and implemented. This output covers the organization of an inception workshop, the definition of progress and impact indicators and the design of a detailed monitoring plan and methodology. Gender aspects will be paid particular attention to. The following activities will be implemented using GEF and UNIDO cash resources: (i) subcontract for design of monitoring plan and tools for data collection and recording; and (ii) subcontract for M&E and gender specialists to provide backstopping.

Output 4.2 Terminal project evaluation completed. This project output consists of the GEF terminal evaluation, to be carried out by one or more, independent, international consultants. This involves logistic support by and inputs from CTCN and UNIDO Project staff and the national counterparts. The terminal evaluation will be held in the last months before project termination. GEF funding to this output will cover the costs of international consultancy to conduct the terminal evaluation.

Global Environmental Benefits

The global environmental (GHG) benefits of the Project are associated with:

(1) The implementation of low-emission, climate-resilient technology projects with technical assistance from the CTCN in response to country requests; and

(2) Replication of such projects through up-scaling and mainstreaming, as a result of increased mobilization of investment capital through the match-making mechanism.

Additional GHG benefits can be expected as a result of the Project's contribution to market transformation in the recipient countries, resulting in an accelerated penetration of climate technologies. These effects are expected to be small in the markets targeted by CTCN's responses supporting investment projects (since barriers are relatively low in these more advanced markets). For simplicity, it is assumed that these market effects are part of the baseline shift. In the less developed markets, CTCN's responses will likely be more policy-oriented than investment-related, without pretending a full barrier removal effort. These types of responses have the potential to evolve into prospective GEF-6 project proposals. The associated GHG benefits in these cases are not claimed by the present Project to avoid any double-counting under future GEF projects.

In order to produce an indication of the climate change mitigation potential of prospective GEF-6 proposals, representative project values are taken in line with earlier projects in the GEF CC portfolio. For simplicity one figure is given combining both direct (investment-related) and indirect (market-transformation) benefits. A hypothetical GEF-causality factor of 40% (Level 2, "modest and substantial") is used for all cases.

The following table summarizes the direct and indirect GHG benefits expected for the project, as well as the indicative GHG reduction potential of prospective GEF-6 initiative that can be developed as a result of the Project.

SUMMARY OF GHG BENEFIT OF SELECTED COUNTRY REQUESTS UNDER THE PROJECT (IN TON CO2EQ).				
Country	Technology	Avoided Greenhouse Gas Emissions through GEF/CTCN project		GHG reduction potential follow-up GEF project[25]
		Direct investment	Indirect[26]	
1. Chile	Replacement F-refrigerants	17,000	68,000	-
2. Colombia	MBT municipal waste	280,000	840,000	-
3. Dominican Republic	Energy-efficient lighting	11,000	33,000	-
4. Mali	Agricultural productive use	2,750	8,250	-
5. Senegal	Energy efficiency industry	n/d	n/d	
6. Uganda	Geothermal energy	-	-	1,500,000
7. Viet Nam	Rice husk utilization	180,000	540,000	2,500,000
TOTAL		490,750	1,489,250	4,000,000

The direct greenhouse gas emission reductions are approx. 490 kton CO2eq; indirect emission reductions through replication under the financial match-making mechanism are approx. 1,500 kton CO2eq.

A detailed description of the used methodology and assumptions made for each request is given in Annex H.

A.6 Risks, including climate change, potential social and environmental risks that might prevent the project objectives from being achieved, and measures that address these risks:

The main risks to the effective implementation of the proposed GEF project are described in the following table:

RISK	**LIKELIHOOD**	**IMPACT**	**REMEDIAL ACTIONS**
Inability to implement and execute the Project	Low	High	UNIDO will mitigate this risk through the development of appropriate managerial tools, such as detailed workplan, in close cooperation with in-country project stakeholders, as well as by establishing dedicated communication and reporting lines. It will rely on the experience and lessons learnt gathered through managing similar activities. The CTCN will rely on established rules and procedures, based on guidance from the Advisory Board, to strive to deliver quality and timely technical assistance services to address developing countries requests. Ultimately, the quality of the services provided depends on the expertise available to the CTCN. With this in mind, all efforts are undertaken to nurture the Network in order the equip the mechanism with the necessary knowledge base, and that in addition to the expertise already available within the Technical Resource Pool formed by the consortium partners. Substantial differences in capacities between country NDEs have been identified by CTCN at an early stage. Therefore, strengthening of institutional and individual capacities and skills among NDEs is foreseen by the CTCN as part of its business plan. Initially, CTCN and its Consortium members will work closely with the NDEs during the identification and detailing steps of the request preparation process. With

[25]Indicative combined direct and indirect benefits, based on a hypothetical GEF causality factor of 40%.
[26]Post-project investment and upscaling through "match-making mechanism" with financiers.

RISK	LIKELIHOOD	IMPACT	REMEDIAL ACTIONS
			time, it is expected that the NDEs can work with great autonomy, which is essential to perform their role and assume full country ownership concerning their respective requests for technical assistance.
Persistent barriers to the deployment of climate technologies in the selected countries	High	Medium	Limitations in terms of technical, financial, operational and managerial capacities will affect the implementation of climate technologies during all stages of the project cycle. Addressing this barrier is at the core of CTCN's mandate. It is acknowledged that developing adequate in-country capacities is a gradual process typically yielding tangible benefits at a time-scale of a decade, hence beyond the direct time horizon of the Project. Within the timeframe of the Project, this risk is mitigated by carefully assessing the requests to verify the existence of minimum conditions for ensuring successful project implementation. Shortages in terms of national policy and regulatory frameworks would affect accelerated deployment and up-scaling of climate technologies. All-encompassing interventions to address policy barriers are outside the scope of the Project and the CTCN's mandate. Within the Project boundary, the scope for deployment of the technologies promoted under the selected NDE requests may be affected by national policy constraints. These are, to a limited extent, addressed by the Project through advocacy and linking up with supportive programmes and initiatives. Moreover, the selection process of requests will verify that an acceptable policy framework in the selected countries is actually in place. The lack of willingness of financiers to co-invest in climate technology projects is a critical risk for large-scale deployment. While the general business climate (global and national) is beyond control of the Project, specific measures have been conceived to stimulate investors' interest on the benefits and potential revenues of climate technologies. The Project can contribute by providing tailored expertise and know-how to assist Governments to improve investment conditions and proponents to de-risk potential projects. The Project will focus on sectors and countries with relatively good prospects for investors, which is a necessary condition for demonstrating new technologies and securing committed co-finance resources. Poor adaptation of technologies into a given context undermines performance and overall sustainability. Climate technologies may need customized designs and materials. The Project strives at accumulating best practices and learning experiences into a resource base for project developers, investors and authorities in countries world-wide. The CTCN Network of Members is ideally positioned to probe localized solutions and to act as a platform for South-South cooperation.
The sustainability of the technologies deployed under the Project would be jeopardized by global climate change.	Low	Low	Changing climatic conditions can affect the baseline situation and the effectiveness of proposed mitigation (as well as adaptation) interventions. Given the localized character of climate change effects, the Project will address this issue at the level of the CTCN response plans to NDE requests to ensure that the technology promoted is climate resilient. Where infrastructural works are planned, their exposure (vulnerability) to climate risks (such as flooding) will be taken into account during the design phase. Another case is the use of biomass resources for energy generation, which urges for assessing and securing the robustness of the full supply chain. The project risks associated to climate change are deemed low, assuming that proper planning and design processes are applied, including best practices accumulated so far.

A.7. Coordination with other relevant GEF financed initiatives

The Project will benefit from and promote the experience, expertise and tools developed through the numerous climate change and technology transfer initiatives led or co-led by UNEP and UNIDO.

In terms of relevant GEF-financed and other initiatives, a myriad of technology transfer initiatives have been undertaken. The Project will coordinate and collaborate with these and other partnerships and projects to facilitate the deployment of climate technologies and minimize duplication while maximizing synergy. Examples of such initiatives, being led by the agencies involved in setting up the CTCN or others, include, but are not limited to:

- Four regional projects (Pilot Asia-Pacific Climate Technology Network and Finance Center; Pilot African Climate Technology Finance Center and Network; Regional Climate Technology Transfer Center in Europe and Central Asia; and Climate Technology Transfer Mechanisms and Networks in Latin America and the Caribbean) receive funding from the GEF Trust Fund for mitigation as well as from the SCCF-B in support of adaptation. These are expected to generate lessons learned to help inform the ongoing process to operationalize the Technology Mechanism, in particular the CTCN, in conjunction with other efforts underway to facilitate coordination and cooperation.
- The "Sustainable Energy Technology Development" project in Mexico by the World Bank, which supports the development of new and innovative clean energy technologies (energy efficiency, renewable energy) through the linking of the public, academic and productive sectors in Mexico. The project will be coordinated with the IDB project "Climate Technology Transfer Mechanisms and Networks in Latin America and the Caribbean" and with the forthcoming CTCN to make use of potential complementarity and avoid redundancy and duplication of efforts.
- The TNA project concept, under the Poznan Strategic Program, which was implemented by UNEP and completed in 2013. Total SCCF-B funding for this project amounted to $9 million. The TNA project aimed to provide targeted financial and technical support to assist 36 countries in developing and/or updating their TNAs and to support them in preparing Technology Action Plans (TAPs). The project sought to use methodologies from the updated TNA Handbook and to provide feedback for their fine-tuning through an iterative process.
- A further project by UNEP supporting additional TNAs focusing on 24 low- and medium-income countries, which was approved by the GEF Council in April 2013. This project takes into consideration the lessons learned from previous TNA project. It will, in particular, seek the involvement of the funding community at an early stage in the technology action planning process in order to improve the prospects of funding project proposals emanating from TAPs and TNAs. The project will also seek close coordination with the CTCN and the regional Climate Technology Transfer and Financing projects funded by the GEF in Asia, Africa, Europe and Latin America, referred above, which are expected to become operational prior to, or, during the Project implementation.
- Two national projects in China and South-Africa, which were approved by the GEF during FY2013, focusing on the preparation of National Communication and Biennial Update Reports (BURs) that include activities to update existing TNAs in these countries.
- The GEF/UNIDO Global Cleantech Programme for SMEs aims at encouraging innovation through a competition and incubation pilot. This programme is focused on enhancing both emerging cleantech startups in each country and the local entrepreneurial ecosystem and policy framework. A competition-based approach is used to identify the most promising entrepreneurs across a country, whilst a local acceleration programme supports, promotes and "de-risks" the participating companies and connects them to potential investors, partners and customers.
- The joint UNIDO/UNEP Resource-Efficient and Cleaner Production (RECP) programme, which supports a global network of RECP service providers (including National Cleaner Production Centers), will be utilized to facilitate execution of the Project in the selected countries.

The Project will also explore opportunities for strategic partnerships, such as collaboration with CTI-PFAN[27] in the context of investment facilitation and match-making between project proponents and financiers.

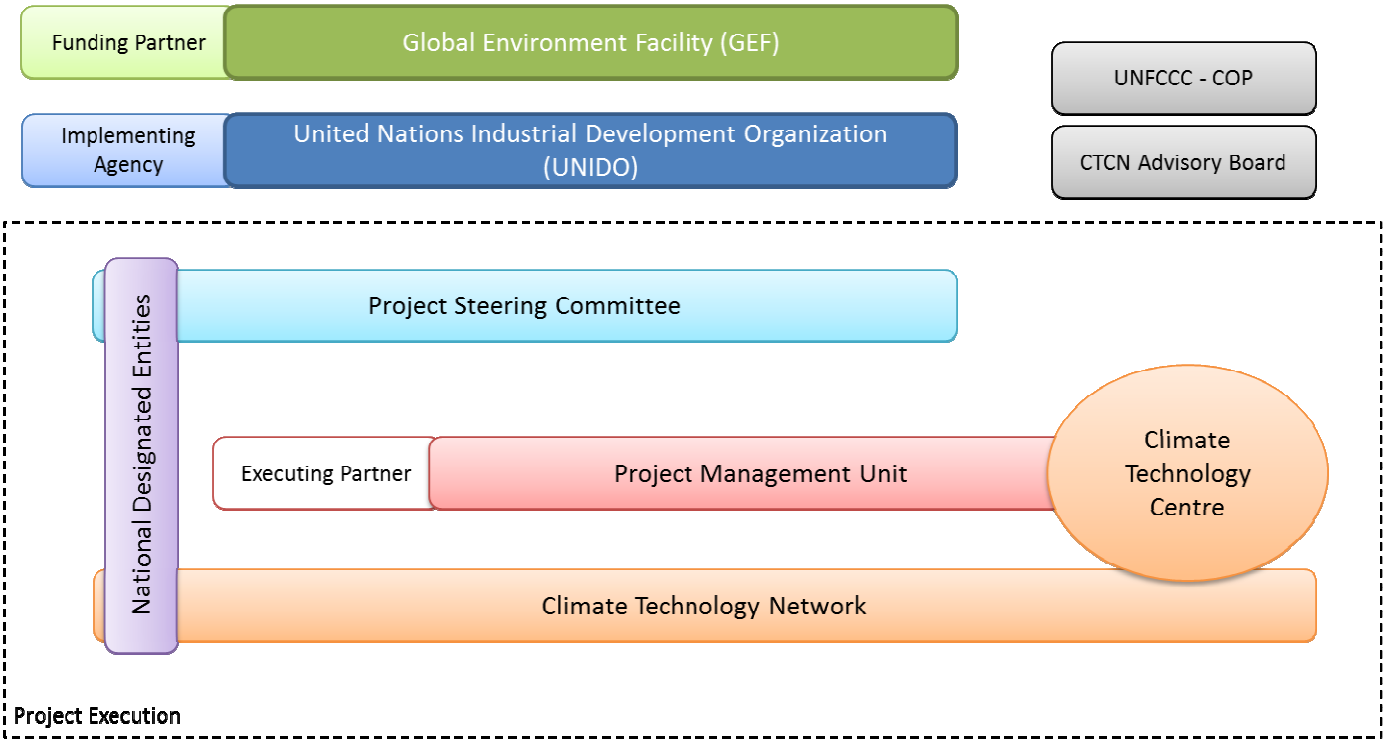
B. ADDITIONAL INFORMATION NOT ADDRESSED AT PIF STAGE:

B.1 Describe how the stakeholders will be engaged in project implementation.

The GEF Implementing Agency for the Project will be UNIDO. The executing counterpart will be the Climate Technology Centre and Network (CTCN), which is hosted and managed by UNEP in collaboration with UNIDO, and

[27] CTI-PFAN is the Climate Technology Initiative - Private Financing Advisory Network, a multilateral public-private partnership that nurtures promising, innovative clean and renewable energy projects by bridging the gap between investors and clean energy entrepreneurs and project developers. See: http://climatetech.net/ctipfan/.

holds office in Copenhagen, Denmark. The CTCN is the operational arm of the UNFCCC Technology Mechanism established by the Conference of Parties in Cancun, 2010 (COP16). Together with 11 Centres of Excellence worldwide it forms a consortium aimed at promoting the transfer and deployment of climate technologies.



The Climate Technology Centre (CTC) is responsible for overall coordination and development of the network of member organizations (Climate Technology Network - CTN), and liaison with the national focal points (National Designated Entities - NDEs). The CTCN, whose mandate is defined by the Conference of the Parties (COP) under the United Nations Framework Convention on Climate Change (UNFCCC), is guided by an Advisory Board (AB). Delivery of CTCN services is facilitated through the Centres of Excellence (Consortium Partners) and the growing network of international, regional and national member organizations that can respond effectively and efficiently to country requests.[28]

Management arrangements

The Project will be implemented directly by UNIDO. The responsibility for the Project's execution lies with CTCN. The CTCN Director will be designated Project Director (PD), who will be responsible for the successful execution of the Project and attainment of the objectives set forth, in line with the stipulated Project strategy and budget. The PD will represent the Project at the highest levels and be responsible for the overall communication strategy in support of the interest of the Projects and its key partners (CTCN, UNIDO, UNEP, and the GEF).

UNIDO will assign a qualified staff member as the Project Manager (PM). The Project Manager can be assisted by additional personnel provided by UNIDO, UNEP, and/or CTCN, establishing the Project Management Unit (PMU). The PMU will be responsible for daily management and coordination of project activities, including: (i) communication with the NDEs; (ii) overall technical and financial aspects of the Project, (iii) coordination and preparation of contracting; and (iv) monitoring activities. UNIDO, through the CTCN, will provide in-kind support (office, communication, transport, staff).

Project Steering Committee

[28] A public list of CTCN network members is available at: http://www.unep.org/climatechange/ctcn/Network/Networkmemberslist/tabid/1036859/Default.aspx.

Upon inception, a dedicated Project Steering Committee (PSC) will be constituted. The PSC should have at least seven (7) voting members, including: (a) the Project Director (CTCN Director) who will chair the committee; (b) a representative of UNIDO; (c) the Project Manager; (d) the National Designated Entity of the countries from where the selected requests stem or the respective UNFCCC national focal point. The responsibilities of the Steering Committee include: (i) review and approval for annual work plans; (ii) review and approval of annual GEF reporting (PIRs); (iii) review and approval of annual budgets; (iv) monitoring of Project progress; and (v) guidance on strategic issues and activities. Changes/amendments proposed by the Project Steering Committee ought to be in accordance with the approved project document and the GEF policy C.39.09 and UNIDO rules and regulation.
The Project Manager will be responsible for conveying meetings, preparing the agenda, including issues requiring decision, and issuing minutes of meeting. The PSC will meet 2 times per year in person or through videoconference.

Role of the NDE

At the national level, the Project will be represented by the NDEs that are directly involved in the Project (through the selected requests). The NDEs will be involved in the development and implementation of the response plans and will act as a local facilitator for their implementation, as per their mandate. The NDEs will be responsible for setting up a monitoring system and for collecting verifiable data on response implementation, achieved results, mobilized investment, and socio-economic and environmental impact, including climate mitigation and adaptation benefits.
The responsibilities and liabilities of local project proponents, providers of technical assistance services and other stakeholders, including local subcontractors, will be outlined in service contracts issued by UNIDO on behalf of the CTCN.

Project partners and stakeholders

It must be noted that the CTCN is participatory by design. The CTCN Advisory Board (AB), which provides strategic guidance to the operations of the CTCN, is formed by and represents various consistencies, including Research and Independent Non-governmental Organizations (RINGOs), Business and Industry Non-Governmental Organizations (BINGOs), and Environmental Non-Governmental Organizations (ENGOs). The (AB) meetings are also open to Observers who are invited to contribute to the deliberations.

The Project will engage with a range of partners and stakeholders at the various stages of its implementation. Their role can be to benefit from the Project, to provide or share knowledge, to represent the interests of civil society and vulnerable groups, to assist in formalizing the Project's outcomes into a country's legal and administrative systems, and to advocate for the global and local goals set forth. An overview of the envisaged partners and their roles and responsibilities is given in the following table.

PROJECT PARTNER	**ROLE AND RESPONSIBILITY**
UNIDO	UNIDO will be the implementing agency for the present, global GEF CCM Project.
CTCN	The Climate Technology Center and Network, which included the NDEs, will be the Executing Agency for the Project.
CTC	The Climate Technology Centre, physically located in Copenhagen, is responsible for overall coordination of the CTCN, Network development, and liaison with NDEs. It operates with the support of a Technical Resource Pool comprising the Consortium Partners.
CTN	It is through the Network that the CTCN will deliver the bulk of its services, notably to execute response plans for country requests to the CTCN. Members form a network of regional and sectorial experts from academia, the private sector, and public and research institutions.
National Designated Entities (NDEs)	To serve as national entities for the development and transfer of technologies and act as focal points for interacting with the Climate Technology Centre
Project proponents	To put forward requests for assistance and submit these to CTCN through their respective NDE.

National decision makers	To advocate for the adoption of climate technologies in line with national policies, plans and priorities (TNAs, TAPs, and other policy instruments) and facilitate the implementation of the Project.
Financial institutions	To provide financing for climate technology projects and inputs for shaping favorable financing conditions for investment.
Sector associations and chambers of commerce and industry	Sector associations unite companies of various economic sectors and are an important channel to disseminate knowledge and information. They are also a strong player to protect sector interests at the society and policy level, and can play a leading role to promote best practices and technological innovation downstream the sector. The Project aims to liaison with sector associations relevant for the technologies promoted under Component 1.
Civil society organizations (CSOs)	Relevant civil society organizations will be involved during the preparation and implementation stage of the interventions (investment projects) under Component 1. As and if applicable, their viewpoints and inputs will be used to enhance project design and avoid externalities to the extent possible. The collection of feedback of CSOs is critical to extract lessons learnt and as input for fine-tuning national normative frameworks for climate technology projects.
Indigenous people	The selected response projects under Component 1 do not involve indigenous people.
Gender Equality and Empowerment of Women (GEEW) Groups	Relevant gender expert, CSOs and NGOs focusing on gender equality issues and advocating women's empowerment, such as women's associations and ministerial gender focal points will be consulted and participate, whenever possible, actively in project implementation, providing advice on effective gender mainstreaming and support especially regarding outreach to women in the industrial sectors. As and if appropriate, corrective action will be taken based on recommendations from these groups.
GEF Operational Focal Points (OFPs)	The GEF OFP will be informed of any GEF-financed initiatives in their country. Where GEF-6 proposals will be developed as a result of the present Project, the OFPs will be involved in the prioritization and endorsement process in alignment with the established procedures for GEF national projects.

B.2 Describe the socioeconomic benefits to be delivered by the Project at the national and local levels, including consideration of gender dimensions, and how these will support the achievement of global environment benefits (GEF Trust Fund/NPIF) or adaptation benefits (LDCF/SCCF):

The proposed Project fits into national strategies to promote climate technologies, enhance sector productivity and competitiveness, preserve natural resources, protect the local and global environment and diversify a country's energy mix by increasing the share of renewable energies. The Project is expected to deliver tangible socio-economic benefits in the sectors targeted in selected countries as a whole and as individual businesses, as well as for the men, women and their families involved. The socio-economic benefits at national level (country) are achieved as a result of expected economic growth in the targeted sectors and the establishment of new services based on technologies having reduced environmental externalities, including reduced emissions of global greenhouse gases.

Based on specific demands in line with national priorities, the Project will provide, through the CTCN Consortium and its Network members, direct technical assistance to private and public entities that can contribute to the reduction of GHG emissions. These entities will benefit from the Project by acquiring essential know-how for speeding up the adoption and deployment of climate technologies in their country. Relevant fields of know-how include technology, planning and design, but also managerial and operational skills, project organization, business models, financial engineering and risk management, and others. The Project directly contributes to building technological, human and social capital in the beneficiary countries, creating opportunities to add value to product chains, strengthen economic competitiveness and reduce environmental externalities in the targeted sectors.

Through the transfer of technological and project concepts, the Project contributes to the development of a professional sector able to design, implement and operate climate technology systems and equipment, including the provision of adequate operation and maintenance services. This entails high-quality jobs in areas including engineering, construction, economy, consultancy, project development and finance, thereby offering opportunities for local professionals to attain higher incomes and sustain the growth of human capital resources.

Due to the fact women usually face stronger negative impact from environmental pollution, climate change and poverty all related interventions have the potential to improve their quality of life. For instance, interventions supported under CTCN have the potential: (a) to promote job creation for both women and men to meet their personal needs, and contribute to the functioning of households (improved nutrition, education & children's clothing etc.); (b) to diversify livelihood activities of both women and men e.g. fishing, forestry, livestock etc. will improve safety nets for vulnerable households; (c) to generate opportunities for both women and men to become entrepreneurs, by making available training, transfer of technologies, access to financial resources and increase opportunities in accessing markets; and (d) to enhance a country's or industrial sector's knowledge and capacity to manage natural resources promoting a better conservation of natural resources (waters, land and forests) and deliver various environmental services (clean energy, water purification, transportation, less degraded lands, etc.). In addition, potential socio-economic benefits can also be generated through empowering women in the following ways: (i) development of women's capacity as decision-makers, planners and managers; (ii) design of financial products to suit the circumstances of women; (iii) support of women's access to information, knowledge, innovations and training.

Gender equality

UNIDO recognizes that gender equality and the empowerment of women have a significant positive impact on sustained economic growth and inclusive industrial development, which are key drivers of poverty alleviation and social progress. Commitment of UNIDO towards gender equality and women's empowerment is demonstrated in its policy on Gender Equality and the Empowerment of Women (2009), which provides overall guidelines for establishing a gender mainstreaming strategy that:

- Ensures that a gender perspective is reflected in its programmes, policies and organizational practices;
- Advances the overall goal of gender equality and the empowerment of women, particularly the economic empowerment of women;
- Benefits from the diversity of experiences and expertise within the United Nations system to advance the internationally agreed development goals related to gender equality and the empowerment of women;
- Accelerates the Organization's efforts to achieve the goal of gender balance, in particular at decision-making levels.

At the operational level, UNIDO has developed an energy-gender guide to support gender mainstreaming of its sustainable energy programmes and initiatives at all stages of the project cycle. In addition to an introduction of basic concepts and strategic approaches, it also includes tools that can be used at relevant points of the project cycle to guide the thought processes and activities. These tools include:

- Gender categorization tool, which assesses how much direct impact a project will have on gender dimensions;
- Gender mainstreaming check list, which summarizes key considerations which must be considered during project development;
- Gender analysis tool which provides specific questions that can guide the project developer in considering gender dimensions of a project, before full gender analysis is conducted by an expert;
- Gender mainstreaming the project cycle tool, which lists key activities to be considered at each step of the project cycle;
- Gender indicator framework that encourages results based management by indicating potential gender dimensions and quantitative indicators for specific energy interventions.

This intervention is expected to have overall limited direct influence over gender equality and/or women's empowerment in the countries and therefore could be classified as a project with "limited gender dimensions" according to the UNIDO Project Gender Categorization Tool. Due to the fact that this Project plans interventions in several countries, using diverse kind of technologies and having different budgets, the influence of this Project on gender in a

certain country is difficult to anticipate and can vary substantially from country to country and between interventions. Nevertheless, UNIDO recognizes that all interventions dealing with technologies and or natural resources (such as the climate) are expected to have an impact on people and are, therefore, not gender-neutral. In fact, due to diverging needs and rights regarding natural resources, energy consumption and production, women and men are expected to be affected differently by the Project (in terms of their rights, needs, roles, opportunities, etc.). Therefore, regardless of the project's gender category, the project aims to be gender responsive and to demonstrate good practices in mainstreaming gender aspects into climate change technology projects, wherever possible, and avoid negative impacts on women or men due to their gender, ethnicity, social status or age.

Likewise, since climate effects will vary among regions, between generations and income groups they are not gender-neutral. It is important to ensure that gender relations do not become invisible under assumptions of neutrality especially in projects related to climate technologies. Women and men have different roles, perceptions and opportunities in contributing to and benefitting from climate technologies, such as energy efficient (industrial) technologies and/or renewable energy technologies, which need to be taken into consideration. In many countries women possess valuable knowledge relevant to sustainable energy solutions due to their roles in households and communities and can, therefore, play a critical role in energy provision and consumption (for instance as entrepreneurs or decision takers regarding energy efficient household appliances).

During project formulation, a preliminary gender analysis has been conducted, based on which potential gender dimensions of project outcomes and outputs, as well as potential entry points for gender equality and women's empowerment (GEEW) were identified in the project logical framework. These proposed gender dimensions will be used as a guide during the implementation of the project as well as during M&E.

Guiding principle of the project will be to ensure that both women and men are provided equal opportunities to access, participate in, and benefit from the project, without compromising the technical quality of the project results. In practical terms,

- Gender-sensitive recruitment will be practiced at all levels where possible, especially in selection of project staff. Gender responsive TORs will be used to mainstream gender in the activities of consultants and experts. In cases where the project does not have direct influence, gender-sensitive recruitment will be encouraged. Furthermore, whenever possible existing staff will be trained and their awareness raised regarding gender issues.
- All decision-making processes will consider gender dimensions. At project management level, Project Steering Committee meetings will invite observers to ensure that gender dimensions are represented. Also at the level of project activity implementation, effort will be made to consult with stakeholders focusing on gender equality and women's empowerment issues. This is especially relevant in policy review and formulation.
- To the extent possible, efforts will be made to promote participation of women in training activities, both at managerial and technical levels. This can include advertising of the events to women's technical associations, encouraging companies to send women employees, etc.
- When data-collection or assessments are conducted as part of project implementation, gender dimensions will be considered. This can include sex-disaggregated data collection, performing gender analysis as part of ESIAs, etc.

B.3. Explain how cost-effectiveness is reflected in the project design:

Bearing in mind that the GEF allocation of resources for this project is US$ 1,800,000, the cost-effectiveness is estimated at US$ 3.8/ton CO2eq, considering only the direct GHG benefits over the initiative's lifetime (490,000 tons CO2eq). If the indirect GHG benefits (total 1,500,000 tons CO2eq) are included, the cost-effectiveness improves to approximately US$ 0.96/ton CO2eq.

C. DESCRIBE THE BUDGETED M &E PLAN:

Project monitoring and evaluation (M&E) will be conducted in accordance with established UNIDO and GEF procedures. It will also be aligned with the reporting requirements as established for the CTCN in COP decisions. The M&E activities are defined by Project component #4 and the activities for M&E are specified and budgeted in the M&E

plan (please refer to the table below). Monitoring will be based on the indicators defined in the Strategic Results Framework (which indicates the means of verification) and the Annual Work Plans. M&E will make use of the GEF CCM Tracking Tool, which will be submitted to the GEF Secretariat two times during the implementation of the Project (at CEO Endorsement and upon submission of the Terminal Evaluation).

It is noted that the NDEs must ensure the existence of adequate monitoring capacities in the countries. The resources involved will not be charged to the Project. The NDEs will facilitate M&E activities by UNIDO and GEF and provide relevant information on request. According to the Monitoring and Evaluation policy of the GEF and UNIDO, follow-up studies like Country Portfolio Evaluations and Thematic Evaluations can be initiated and conducted. All project partners and contractors are obliged to: (i) make available studies, reports and other documentation related to the Project; and (ii) facilitate interviews with staff involved in the project activities.

MONITORING AND EVALUATION PLAN AND BUDGET (INDICATIVE)

The following table outlines the indicative monitoring and evaluation plan for the Project including the allocated GEF and co-funding budget. Please note that a formal mid-term review exercise is not considered given the short timeframe of the Project (3 years) and the institutional context involving UNIDO, UNEP, the CTCN, and the COP meetings, which expectedly offers sufficient opportunity for feedback and reflection.

Type of M&E activity	Responsible Parties	Budget USD*		Time frame
		GEF	UNIDO	
(4.1) Tracking tool measurement and any associated monitoring expenses	Project Management Unit (PMU); expert consultancy	0	20,000	As needed
(4.1) Monitoring of all project indicators, including assessment and inventory stocktaking for chemicals, pollution reduction, and/or documenting, evaluation project changes	Project Management Unit (PMU); Project Steering Committee (PSC); expert consultancy	0	10,000	As needed
(4.1) Periodic monitoring of project progress and indicators (as per SRF)	Project Management Unit (PMU); Project Steering Committee (PSC); expert consultancy	0	7,500	Semi-annually
Independent GEF terminal project evaluation	Independent evaluator managed by UNIDO ODG/EVA.	26,000	7,500	Project completion (at least one month prior to the end of the project and no later than six months after project completion)
TOTAL indicative cost		26,000	45,000	

According to the Monitoring and Evaluation policy of the GEF and UNIDO, follow-up studies like Country Portfolio Evaluations and Thematic Evaluations can be initiated and conducted. All project partners and contractors are obliged to: (i) make available studies, reports and other documentation related to the Project; and (ii) facilitate interviews with staff involved in the project activities.

Legal Context:

It is expected that each set of activities to be implemented in the target countries will be governed by the provisions of the Standard Basic Cooperation Agreement concluded between the Government of the recipient country concerned and

UNIDO or – in the absence of such an agreement – by one of the following: (i) the Standard Basic Assistance Agreement concluded between the recipient country and UNDP, (ii) the Technical Assistance Agreements concluded between the recipient country and the United Nations and specialized agencies, or (iii) the Basic Terms and Conditions Governing UNIDO Projects. It must be noted here that the collaboration between UNIDO and UNEP for the CTCN has been captured in a Letter of Agreement. The collaboration between UNEP-UNIDO and the CTCN Consortium Partners is the object of a Memorandum of Understanding with the respective institutions. Finally, a Host Agreement for the CTCN has been signed with the Government of Denmark.

The decision (FCCC/SBI/2012/L.54) by the Subsidiary Body for Implementation at its Thirty-seventh session in Doha in 2012 stipulates that the UNEP, as the leader of the consortium of partner institutions, is selected to host the Climate Technology Centre.

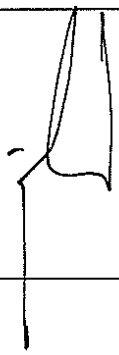
PART III: APPROVAL/ENDORSEMENT BY GEF OPERATIONAL FOCAL POINT(S) AND GEF AGENCY(IES)

A. RECORD OF ENDORSEMENT OF GEF OPERATIONAL FOCAL POINT(S) ON BEHALF OF THE GOVERNMENT(S):): (Please attach the Operational Focal Point endorsement letter(s) with this form. For SGP, use this OFP endorsement letter).

NAME	POSITION	MINISTRY	DATE *(MM/dd/yyyy)*

B. GEF AGENCY(IES) CERTIFICATION

This request has been prepared in accordance with GEF/LDCF/SCCF/NPIF policies and procedures and meets the GEF/LDCF/SCCF/NPIF criteria for CEO endorsement/approval of project.

Agency Coordinator, Agency Name	Signature	Date *(Month, day, year)*	Project Contact Person	Telephone	Email Address
Philippe R. Scholtès, Managing Director, Programme Development and Technical Cooperation Division - PTC, UNIDO GEF Focal Point		06.02.2015	Patrick Nussbaumer, Industrial Development Officer, PTC/ENE/CPN, UNIDO	+43 1 26026 3812	p.nussbaumer @unido.org

ANNEX A: PROJECT RESULTS FRAMEWORK (either copy and paste here the framework from the Agency document, or provide reference to the page in the project document where the framework could be found).

UNIDO/GEF Project: Promoting Accelerated Transfer and Scaled-up Deployment of Climate Technologies through the Climate Technology Centre & Network (CTCN)					
Applicable GEF Strategic Objective and Program: CCM Objective 1 "Promote the demonstration, deployment, and transfer of innovative low-carbon technologies"					
Applicable GEF Expected Outcomes: CCM-1 "Technologies successfully demonstrated, deployed, and transferred"; and "GHG emissions avoided".					
Applicable GEF Outcome Indicators: CCM-1 "Percentage of technology demonstrations reaching its planned goals"; and "Tons of CO2 equivalent"					
	Indicator	**Baseline**	**Targets (End of Project)**	**Means of verification**	**Assumptions**
Project Objective	**To facilitate the implementation of climate technology projects and policies in non-Annex I countries by technical assistance and investment facilitation.**				
	A. Number of climate technologies successfully demonstrated, transferred and deployed (-); **B. Avoided greenhouse gas emissions (Tons of CO2eq);** **C. Number of follow-up GEF proposal based on selected requests (-).**	**A. No technologies demonstrated (0);** **B. No greenhouse gas emissions avoided (0);** **C. No follow-up GEF proposals developed (0).**	**A. Seven (7) technologies demonstrated, transferred and deployed;** **B. 490 kton (direct) and 1,500 kton (indirect) CO2eq avoided GHG emissions;** **C. Three follow-up GEF proposals developed (3).**		
Component 1	**Technical assistance for climate technology in response to requests to the CTCN.**				
Outcome 1. Accelerated transfer of selected climate technologies is achieved through facilitation by CTCN.	**(a) Number of climate technologies successfully transferred;** **(b) Investment in climate technology projects mobilized (US$).**	**(a) No (0) technologies transferred;** **(b) No investment (US$0);**	**(a) Seven (7) technologies transferred;** **(b) At least US$ 7 mln directly invested and 3-fold mobilized investment (US$ 21 mln)**	**statements by project proponents and investors; official publications of sector authorities; visits to project sites**	**Stable institutional and market context for submitted requests.** **Effective mitigation of identified project risks resulting in bankable projects.** **Sustained commitment of financiers.**
Output 1.1 Responses prepared and implemented for seven CTCN requests on climate technology from NDEs in non-Annex I countries.	Number of implemented response plans [-]	No (0) response plans implemented (NDE requests selected and some draft responses prepared);	Seven (7) response plans implemented in agreement with country requests.	project progress reports; project documents (by subcontractors); interviews with NDE and requesting entities.	Country requests meet CTCN and GEF criteria. Feasible response plans can be devised. Stable institutional and market context for submitted requests. CTCN Consortium and Network members are able to provide high-quality assistance at agreed costs.
Output 1.2 Climate technology transfer and deployment projects in target counties implemented.	Achieved climate technology investments (number [-], investment	No investments (0, US$0)	3-4 investment projects leveraging at least US$ 7 mln.	Official statements by proponents and financiers; visits to	Sustained commitment of local project developers and equity providers. Effective mitigation of identified project risks

	[US$])			project sites	resulting in bankable projects. Successful liaison with financial community to provide debt capital.
Component 2	**Partnerships to accelerate investment and the transfer of climate technology.**				
Outcome 2. Partnerships established between stakeholders to spur investment in climate technology and to accelerate innovation and technology transfer.	**(a) Number of investment partnerships established [-].**	**(a) No partnerships established (0).**	**(a) Four (4) partnerships established.**	**project progress reports; statements by proponents and financiers; interviews with stakeholders**	**Sustained interest of multilateral and national financiers in engagement within CTCN** **Agreement within CTCN about structure of match-making mechanism.**
Output 2.1 "Match-making" mechanism between climate technology project developers and financiers in the selected countries.	(a) Status of proposal for mechanism; (b) Number of IFIs involved in CTCN (c) Number of countries in which match-making mechanism is implemented [-]; (d) Number of partnerships between project developers and financiers established [-].	(a) Informal ideas for mechanism; (b) No IFIs formally involved (0) (c) No countries (0); (d) No partnerships established (0).	(a) Mechanism detailed and approved by CTCN; (b) Four IFIs have become Network Member (4) (c) Mechanism implemented in four (4) countries; (d) Four (4) partnerships established.	project progress reports; statements by proponents and financiers; interviews with stakeholders	Sustained interest of multilateral and national financiers in engagement within CTCN Agreement within CTCN about structure of match-making mechanism. Effective promotion of mechanism among stakeholders. Effective interaction between CTCN, project proponents and financiers in target countries.
Component 3	**Networks and capacity building for climate technology.**				
Outcome 3. Supportive capacities for deployment of climate technologies strengthened in non-Annex I countries.	**(a) Number of local organizations associated to climate technology networks;** **(b) Number of people (m/f) trained on climate technology.**	**(a) No organizations associated in networks (0);** **(b) No people trained (0).**	**(a) At least fifteen local organizations associated in networks (15);** **(b) At least two hundred people trained (200: 100m/100f).**	**participation lists of training activities; project reports; statements by local counterparts**	**Effective promotion of CTCN among stakeholders.** **National Designated Entities have adequate capacity to implement and/or coordinate monitoring activities.** **Successful implementation of scheduled activities.**
Output 3.1 Promotional activities on climate technologies for stakeholders in the targeted countries.	Implemented promotional activities	No activity (0)	At least three (3) activities per year.	CTCN reports, reports from stakeholder groups in countries.	Successful implementation of scheduled activities.
Output 3.2 Facilitation of networks between public and private stakeholders that accelerate innovation and the dissemination of climate technologies.	(a) Number of events contributed [-]; (b) Number of in-country climate technology networks established [-].	(a) No events (0); (b) No networks established (0).	(a) At least 20 events; (b) Seven (7) networks established through CTCN involvement.	project progress reports; proceedings of events; statements by local organizations	Effective promotion of CTCN among stakeholders. Successful implementation of scheduled activities.
Output 3.3 Collection of field data and best practices from supported investment projects.	Number of collated best practices and project datasheets.	No best practices (0) and data sheets (3).	Five (5) best practices collated per investment project; three (3) project data sheets verified and	Project reports; data and reports from KMS; interviews with project	National Designated Entities have adequate capacity to implement and/or coordinate monitoring activities.

			published.	stakeholders	Successful implementation of scheduled activities.
Component 4	**Monitoring and Evaluation.**				
Outcome 4. Monitoring and evaluation mechanism implemented in accordance with UNIDO and GEF guidelines.				**Project reports; M&E plan (report); annual progress reports**	**Successful implementation of project activities.**
Output 4.1 Project monitoring and evaluation plan designed and implemented.	Status M&E plan	No M&E plan (0)	M&E plan successfully implemented (1)	project reports; M&E plan (report); annual progress reports	Successful implementation of project activities.
Output 4.2 Terminal project evaluation completed.	GEF terminal evaluation	No evaluation (0)	GEF terminal evaluation conducted and report finalized (1)	project final evaluation report	Successful implementation of project activities.

ANNEX B: RESPONSES TO PROJECT REVIEWS (from GEF Secretariat and GEF Agencies, and Res
Comments from Council at work program inclusion and the Convention Secretariat and STAP at PIF).

Comments	Response	Reference in documents
Comments from the GEF Council		
None received.		
Comments from the GEF Secretariat		
7. Are the components, outcomes and outputs in the project framework (Table B) clear, sound and appropriately detailed? Details are expected by CEO approval request on how capacity building and awareness raising interventions of Component 3 will target the specific project and investment opportunities identified under component 1.	The scope of outcome 3 has been revised and focused more on the direct stakeholders of the (investment) interventions supported by component 2. Outcome 3 specifically aims to bring together national stakeholders and facilitate this process through expertise and promotion. Where in place, the Project will draw on existing branch organizations representing the private sector, and link these to financiers and the public sector. As a result of this outcome, it is expected that local financiers and public officers have acquired basic knowledge on relevant technologies, including case studies and success stories by CTCN and IFIs and be open to enter into dialogue with project developers in their countries.	Section A.5
8. (a) Are global environmental/adaptation benefits identified? (b) Is the description of the incremental/additional reasoning sound and appropriate? By CEO endorsement, details are expected on the estimation of the GHG emission reduction impact of the project activities.	The GHG emission reduction impact of the Project has been estimated based on an assessment of the envisaged investment activities in each of the selected countries. This pre-selected portfolio of NDE requests is presented as being representative for GEF-eligible interventions under the CTCN. Such interventions should deliver relevant, tangible GHG benefits as a result of CTCN and GEF involvement, and/or have potential to evolve into GEF CCM project proposals. The applied methodology to assess GHG benefits is described in detail in Annex H of the Document.	Section A.5; Annex H

13. Comment on the project's innovative aspects, sustainability, and potential for scaling up. • Assess whether the project is innovative and if so, how, and if not, why not. • Assess the project's strategy for sustainability, and the likelihood of achieving this based on GEF and Agency experience. • Assess the potential for scaling up the project's intervention. By CEO approval request, details are expected on how sub-projects will combine TA in line with the CTCN work plan and activities enabling the implementation, replication and scaling up and sustainability of related activities.	Specific requests (sub-projects) have been identified and assessed based on their potential to generate greenhouse gas reductions, as well as their scope for follow-up as a GEF-6 CCM project proposal. The portfolio of requests presented aims to balance technologies, regions, type of countries and beneficiaries (see Section A.4). The majority of requests are firmly embedded into national priorities and/or policy; where investment is pursued, bankability and financial robustness will be demanded as a requisite for sustainability. Strategic engagement with financiers is taken as a basis for replication and upscaling.	Section A.4; Annex G
25. Items to consider at CEO endorsement/approval. (a) Details are expected by CEO approval request on how capacity building and awareness raising interventions of Component 3 will target the specific project and investment opportunities identified under component 1. (b) By CEO approval request, details are expected on how sub-projects will combine TA in line with the CTCN work plan and activities enabling the implementation, replication and scaling up and sustainability of related activities. (c) For CEO approval request, the full project proposal is expected to detail how this project will serve as a pilot to highlight possible options for future CTCN-related outputs to be further developed as GEF-6 projects with concrete mitigation benefits, using GEF country allocations, in a country-driven manner.	(a) See response under 7). (b) See response under 11). (c) The present Project design responds to the comments made by the GEF at the COP-20 in its document "Global Environment Facility consultation with the Climate Technology Center and Network". The document intends to clarify baseline activities and structure the project, including the underlying country requests, in line with the GEF's incrementality principle. Requests are pre-selected in accordance with the eligibility criteria for GEF-5. Per individual requests, the proponents have tried to quantify the expected GHG benefits. In some cases, such quantification was not possible given the stage of request development. However, benefits are tangible and can expectedly be assessed ex-post. Also per request, the proponents have assessed the scope for follow-up as a GEF-6 project. The methodology to assess the country requests, as presented in the document, may serve as a pilot to shape future collaboration between CTCN and the GEF.	Annex H

ANNEX C: STATUS OF IMPLEMENTATION OF PROJECT PREPARATION ACTIVITIES AND THE USE OF FUNDS[29]

A. PROVIDE DETAILED FUNDING AMOUNT OF THE PPG ACTIVITIES FINANCING STATUS IN THE TABLE BELOW:

No funds have been requested from the GEF Trust Fund for project preparation.

PPG Grant Approved at PIF:			
Project Preparation Activities Implemented	***GEF/LDCF/SCCF Amount ($)***		
	Budgeted Amount	***Amount Spent To date***	***Amount Committed***
Total	0	0	0

[29] If at CEO Endorsement, the PPG activities have not been completed and there is a balance of unspent fund, Agencies can continue undertake the activities up to one year of project start. No later than one year from start of project implementation, Agencies should report this table to the GEF Secretariat on the completion of PPG activities and the amount spent for the activities.

ANNEX D: CALENDAR OF EXPECTED REFLOWS (if non-grant instrument is used**)**
Provide a calendar of expected reflows to the GEF/LDCF/SCCF/NPIF Trust Fund or to your Agency (and/or revolving fund that will be set up)

No reflows to the GEF Trust Fund are foreseen under this Project

ANNEX E: BUDGET ALLOCATION

BUDGET ALLOCATION (INDICATIVE)							
COMPONENTS & ACTIVITIES							
		GEF	**UNIDO**	**Other Partners**		**UNIDO Budget lines**	
			cash	**in-kind**	**cash**	**code**	**description**
		(US$)	**(US$)**	**(US$)**	**(US$)**		
COMPONENT 1. Technical assistance for climate technology in response to requests to the CTCN.							
1.1	(i) one or more subcontracts to CTCN network members (or other service providers) to draft detailed response plans	**0**	**0**	**0**	**350,000**		
	(ii) one or more subcontracts to CTCN network members (or other service providers) to implement TA activities under response plans for selected projects	**1,400,000**	**0**	**0**	**0**	21-00	subcontracts
1.2	(i) preparation and permitting costs for seven climate technology projects	**0**	**0**	**0**	**650,000**		
	(ii) procurement of equipment (including transport, insurance, and installation) for climate technology projects by selected suppliers	**0**	**0**	**0**	**5,000,000**		
	(iii) subcontracts for warranty and service (including O&M training) with suppliers during test period of projects	**0**	**0**	**0**	**400,000**		
	Subtotal	**1,400,000**	**0**	**0**	**6,400,000**		
COMPONENT 2. Partnerships to accelerate investment and transfer of climate technology.							
2.1	(i) one or more contracts with legal and financial service providers on relevant aspects of matchmaking mechanism	**65,000**	**0**	**100,000**	**0**	21-00	subcontracts

BUDGET ALLOCATION (INDICATIVE)							
COMPONENTS & ACTIVITIES							
		GEF	**UNIDO**	**Other Partners**		**UNIDO Budget lines**	
			cash	**in-kind**	**cash**	**code**	**description**
		(US$)	**(US$)**	**(US$)**	**(US$)**		
	(ii) one or more contracts with legal service providers to develop model contracts[30]	**25,000**	**0**	**25,000**	**0**	21-00	subcontracts
	(iii) hosting and support of meetings between project stakeholders and financial community (in-country, regional, and/or global under CTCN)	**0**	**0**	**150,000**	**0**		
	(iv) one or more subcontracts to CTCN network members to provide guidance and advice to local project developers and financiers in the target countries	**135,000**	**0**	**0**	**0**	21-00	subcontracts
	(v) one or more subcontracts to CTCN network members (or other selected national institutions) for implementing market studies for selected technologies in the targeted countries	**25,000**	**0**	**0**	**0**	21-00	subcontracts
	Subtotal	**250,000**	**0**	**275,000**	**0**		
COMPONENT 3. Networks and capacity building for climate technology.							

[30] A common problem in the development of renewable energy and other low-emission technology projects, is the absence of a corpus of legal documents defining ownership and environmental, social, and financial liabilities. As a result, uncertainty is created, increasing the risk profile of an investment. Private entrepreneurs are not well positioned to develop such legal documents (the "model contracts") because they cannot or do not want to assume these as upfront project costs; and, as an interested party, they lack the authority to have such model contracts generally accepted. The Project will facilitate external parties, specifically sector organizations and authorities, to develop legal documents that can be applied by project developers.

BUDGET ALLOCATION (INDICATIVE)							
COMPONENTS & ACTIVITIES							
		GEF	**UNIDO**	**Other Partners**		**UNIDO Budget lines**	
			cash	**in-kind**	**cash**	**code**	**description**
		(US$)	**(US$)**	**(US$)**	**(US$)**		
3.1	(i) one or more subcontracts to network members (or other service providers) to design and implement promotional activities and workshops.	**40,000**	**0**	**0**	**0**	21-00	subcontracts
	(ii) supportive promotional activities and events by CTCN Network Members and NDEs in the target countries			**210,000**			
3.2	(i) one or more subcontracts to CTCN network members to provide guidance and technical back-stopping to local networking organizations	**70,000**	**0**	**0**	**0**	21-00	subcontracts
	(ii) hosting and supportive activities by national NDEs	**0**	**0**	**40,000**	**0**		
3.3	(i) one or more international experts on technology transfer to review and collate field data and best practices	**14,000**	**0**	**0**	**0**	11-00	international experts
	(ii) supportive activities by national NDEs for collecting field data.	**0**	**0**	**30,000**	**0**		
	Subtotal	**124,000**	**0**	**280,000**	**0**		
COMPONENT 4. Monitoring and Evaluation.							
4.1	(i) inception workshop and guidance	**0**	**15,000**	**0**	**0**	16-00	staff travel

BUDGET ALLOCATION (INDICATIVE)							
COMPONENTS & ACTIVITIES							
		GEF	UNIDO	Other Partners		UNIDO Budget lines	
			cash	in-kind	cash	code	description
		(US$)	(US$)	(US$)	(US$)		
	(ii) international M&E specialist to provide backstopping	**0**	**10,000**	**0**	**0**	11-00	international experts
	(iii) international expert on progress monitoring	**0**	**7,500**	**0**	**0**	11-00	international experts
	(iv) international expert on gender	**0**	**5,000**	**0**	**0**	11-00	international experts
4.2	(i) international expert for Terminal Evaluation	**26,000**	**7,500**	**0**	**0**	11-00	international experts
	Subtotal	**26,000**	**45,000**	**0**	**0**		
TOTAL (COMPONENT 1-4)							
	TOTAL	**1,800,000**	**45,000**	**555,000**	**6,400,000**		

SUMMARY KEY BUDGET LINES (COMPONENT 1-4)				
UNIDO Allotment line	Funding Source (in USD)			
	GEF	UNIDO (cash)	Other partners (in-kind)	Other partners (cash)
international experts (11-00)	40,000	30,000	n/a	n/a
national experts (17-00)	0	0	n/a	0
subcontracts (21-00)	1,760,000	0	n/a	n/a
staff travel (16-00)	0	15,000	n/a	n/a
others	n/a	n/a	555,000	6,400,000

PROJECT MANAGEMENT BUDGET ALLOCATION AND PROCUREMENT						
COMPONENTS & ACTIVITIES	**BUDGET ALLOCATION**					
	Funding Source		**Procurement**			
	GEF	**Other Partners**	**UNIDO Allotment line**		**responsible entity**	
	(US$)	**(US$)**	**code**	**description**		
PROJECT MANAGEMENT						
Project Manager (part-time 3 yrs.)[31]	**0**	**150,000**		staff	UNIDO	
PMU Support Staff	**0**	**50,000**	11-00	staff	UNIDO	
Communication	**0**	**0**	-	-	UNIDO	
Office space (UNIDO)	**0**	**0**	-	-	UNIDO	
Transport	**0**	**0**	-	-	CTCN	
Travel	**0**	**0**	-	-	CTCN	
Supervision CTCN (incl. PSC meetings)	**0**	**0**	-	-	CTCN	
TOTAL PROJECT MANAGEMENT COSTS						
TOTAL	**0**	**200,000**				

[31]Contribution from other groups, i.e. other than lead Branch, on specific requests, such as Industrial Resource Efficiency or Montreal Protocol Units.

ANNEX F: ANNUAL BUDGET

				PLANNING		
				YEAR 1	YEAR 2	YEAR 3
	GEF	Co-Financing		GEF	GEF	GEF
		in-kind	cash			
	(US$)	(US$)	(US$)	(US$)	(US$)	(US$)
COMPONENT 1. Technical assistance for climate technology in response to requests to the CTCN.						
1.1 Responses prepared and implemented to seven requests to the CTCN for climate technology transfer by NDEs in non-Annex I countries.	**1,400,000**	**350,000**	**0**	400,000	600,000	400,000
1.2 Climate technology transfer and deployment projects in target counties implemented.	**0**	**0**	**6,050,000**	0	0	0
Sub-total 1	**1,400,000**	**350,000**	**6,050,000**	**400,000**	**600,000**	**400,000**
COMPONENT 2. Partnerships to accelerate investment and the transfer of climate technology.						
2.1 "Match-making" mechanism between climate technology project developers and financiers in the selected countries.	**250,000**	**275,000**	**0**	110,000	80,000	60,000
Sub-total 2	**250,000**	**275,000**	**0**	**110,000**	**80,000**	**60,000**
COMPONENT 3. Networks and capacity building for climate technology.						
3.1 Promotional activities on climate technologies for stakeholders in the targeted countries.	**40,000**	**210,000**	**0**	15,000	15,000	10,000
3.2 Facilitation of networks between public and private stakeholders that accelerate innovation and the dissemination of climate technologies.	**70,000**	**40,000**	**0**	15,000	30,000	25,000
3.3 Collection of field data and best practices from supported investment projects.	**14,000**	**30,000**	**0**	0	0	14,000
Sub-total 3	**124,000**	**280,000**	**0**	**30,000**	**45,000**	**49,000**
COMPONENT 4. Monitoring and Evaluation.						
4.1 Project monitoring and evaluation plan designed and implemented.	**0**	**0**	**37,500**	0	0	0
4.2 Terminal project evaluation completed.	**26,000**	**0**	**7,500**	0	0	26,000
Sub-total 4	**26,000**	**0**	**45,000**	**0**	**0**	**26,000**
SUBTOTAL	**1,800,000**	**905,000**	**6,095,000**	**540,000**	**725,000**	**535,000**
PROJECT MANAGEMENT	**0**	**0**	**200,000**	**0**	**0**	**0**
TOTAL PROJECT COSTS	**1,800,000**	**905,000**	**6,295,000**	**540,000**	**725,000**	**535,000**

ANNEX G: DESCRIPTION OF SELECTED NDE REQUESTS (INDICATIVE)

1. Chile: To support the replacement of F-refrigerants used in refrigeration system in food processing production and exports (fruits and vegetables).

Proponent of the request is the Climate Change Department of the national Ministry of Environment (CONAMA), which is responsible for the Ozone Programme in Chile. The request is under preparation by the National Designated Entity, the National Council for Clean Production (Consejo Nacional de Producción Limpia - CNPL) in dialogue with the CTCN team. The request aims to assist Chile in demonstrating the feasibility of energy efficient, low global warming potential (GWP) and sustainable refrigerants including natural refrigerants for cold storage in the food industry, as an alternative to hydrofluorocarbons (HFCs).

Context:

Industrial refrigeration systems are characterised by heat extraction rates ranging from 100 kW to 10 MW. For large size refrigeration units not linked to food processing, ammonia (R-717) is the predominant refrigerant worldwide; however, the market share of R-717 for smaller industrial refrigeration systems ranges from 5% (India and China) to 25% (Europe). In addition, toxicity concerns limit even further the application of R-717 in food processing facilities. As a result of this, small and medium-size food processing facilities heavily rely on hydrochorofluorocarbons (HCFCs) and their most readily-available replacement, hydrofluorocarbons (HFCs). HCFCs and HFCs are potent greenhouse gases, with HCFCs also being ozone depleting substances.

Since 2011, Chile is implementing the First Stage of its national HCFC Phase-out Management Plan (HPMP), by which the country is committed to first reduce and eventually halt the consumption of these ozone depleting substances. The HPMP sets the institutional and technical framework to reduce the availability of HCFCs in the market, thereby favouring the introduction of alternative refrigerants. In line with the agreement between the country and the Multilateral Fund for the Implementation of the Montreal Protocol (MLF), and in line with the applicable decisions from the Executive Committee of the MLF, the HPMP does not support the conversion of cold storage facilities from HCFC-22 to energy efficient, low GWP and sustainable refrigerants, including natural refrigerants. In the absence of such support, the baseline scenario in the country's food processing sector will show an increase in the use of HFCs, more specifically, HFC-404A, with a global warming potential (GWP) of 3922. This increase will be proportional to the conversion of already existing facilities operating with HCFC-22, plus the contribution of new facilities.

Requested assistance by NDE:

The request seeks assistance from CTCN to assist in addressing the barriers to the use of energy efficient, low GWP and sustainable refrigerants, including natural refrigerants, to HCFC-22 and HFC-404A in industrial food processing refrigeration and facilitate the technology transfer of alternative refrigeration technologies. A synergistic approach is requested covering the following three dimensions: creation of enabling environment; mechanism for technology transfer; and capacity building.

The technology transfer and technical assistance mechanisms will put in place (i) pilot facility conversions; (ii) a financial scheme for facility owners to convert their facilities to the new technology; and (iii) targeted technical support that will identify energy efficiency measures and refrigerant options, including the implementation of pilot projects.

The envisaged activities include:

- Support for the development of a regulatory framework to support the adoption of energy efficient, low GWP and sustainable refrigerants including natural refrigerants as an alternative to HCFC and HFC refrigerants;

- Awareness raising among legislators and regulators of the need for improved regulations;
- Establishment of pilot facility conversions to demonstrate the effectiveness of energy efficient, low GWP and sustainable refrigerants including natural refrigerants in reducing ODS and GHG emissions to policy-makers and facility owners/operators;
- Design an set-up of a financial incentive scheme to be built into the current scheme by the Chilean Agency of Energy Efficiency (Agencia Chilena de Eficiencia Energetica, AChEE);
- Capacity building and transfer of best practices for management of replaced refrigerants and refrigeration systems to ensure proper disposal and avoid leakage of refrigerants and other harmful substances.; and
- Creation of a local knowledge base on alternative refrigerants, including the provision of training and capacity building.

Direct results:

- Demonstration of energy efficient, low GWP and sustainable refrigerants including natural refrigerants in cold storage facilities in the food sector in Chile;
- Design of conducive policy and regulation to minimize the introduction of HFCs as substitutes to HCFCs. HFC refrigerants such as R32 are explicitly excluded from the Project;
- Design and integration of a financial incentive scheme with AChEE; and
- Increased awareness and capacities among stakeholders and professionals.

Prospects for GEF-6 CCM Project:

The request is focused on preventing and eliminating the use of HFCs for cold storage in Chile's food sector. HFCs have a large global warming potential and as such relevant to the GEF-6 CCM objectives. The CTCN provides a direct mechanism to provide technical assistance to contribute to the depicted lines of action. The scope of the request is very broad and may potentially develop into a GEF prospect that could create synergies with the country's ongoing efforts to reduce HCFC consumption under the Montreal Protocol by means of supporting activities non-eligible for funding under the Multilateral Fund for the Implementation of the Montreal Protocol.

Readiness for liaison with financiers:

Among its activities, the request aims to facilitate access to credits lines for reconversion of cooling systems and implement one or more investment pilots (to be selected and detailed under the response plan). International financiers may be interested to meet additional financing needs, or may provide lending capital to the Government, to be channeled to the AChEE's financing instruments. Given Chile's well-developed, stable economy and experience with market-based incentive mechanisms, early engagement with the financial community is likely to take place as part of the response plan.

Associated GHG benefits:

This project will bring about global environmental benefits as a result of reductions in emissions of greenhouse gases. Direct emission reductions will be attained through: (i) conversion of cold storage facilities from HCFC-22 and HFC-404A to low-GWP refrigerants, thereby avoiding the introduction of additional HFCs into the refrigeration systems and the related emissions to the atmosphere; and (ii) lower typical energy use of proposed alternative refrigeration technologies, as compared to systems using HFC-404A, thereby offsetting CO_2 emissions from thermal power generators in the electricity sector. Additional information is needed to quantify the direct and indirect emission reductions that can be ascribed to the response plan.

Source document:

Chile - To support the replacement of F-refrigerants used in refrigeration system in food processing production and exports (fruits and vegetables), (10 December 2014).

2. Colombia: Implementation of a pilot waste treatment (MBT) plant.

Proponents of the request are the Ministry of Environment and Sustainable Development, and the Ministry of Housing, City and Territory, which are the relevant policy-making entities in the national Government for solid waste. The request is under preparation by the National Designated Entity, the Climate Change Division of the Ministry of Environment and Sustainable Development in dialogue with the CTCN team. The request aims to assist the Colombian Government to test new waste treatment technologies such as Mechanical-Biological Treatment (MBT), which are critical to move away from conventional landfill disposal and produce commodities such as recyclables, compost, and refuse-based fuel (RDF).

Context:

In order for Colombia's waste sector emissions per capita to decrease, new policies and technologies need to be promoted in the country. Over the last decade, Colombia has performed well to promote the collection and sanitary disposal of solid waste. Currently, the country is attempting a paradigm shift by introducing a transition towards Integrated Solid Waste Management that considers waste disposal as a last option, giving preference to waste minimization, recycling, energy recovery, etc. To move away from landfill disposal, Colombia has started to assess the range of proven technologies already used globally. A pre-feasibility study was performed as part of the design process of a Nationally Appropriate Mitigation Action (NAMA) for the solid waste sector, which found out that not all technologies are suitable for Colombia. Mechanical-biological treatment (MBT) was found as a promising, low-emission alternative to conventional waste disposal.

As part of the development of this NAMA, the Government has recognized the need to develop a pilot project to demonstrate alternative treatment methods, strengthen confidence of key stakeholders, and boost the commitment of local authorities. Development of a MBT pilot plant will help Colombia to underpin the Solid Waste NAMA and reduce GHG emissions from the sector. However, such technology is not yet available in Colombia and there is a lack of technical capacity and know-how in the sector for implementing this pilot. After identification of these constraints the proponents decided to invoke the technical assistance of CTCN for the development of this MBT pilot project.

The Solid Waste NAMA is a combination of unilateral and supported actions including: (a) regulatory and policy reform; (b) promotion of alternative waste management technologies and processes; (c) creation and funding of innovative financing mechanisms; (d) national and sub-national capacity building efforts; and (e) city-level action for integrated waste management policies, better environmental management and formalization of informal waste sector workers.

The city of Cali, among some other cities in Colombia, is currently designing a source separation policy for solid waste. Such a policy increases the quality of recyclables from the waste stream, as well as the quality of compost from organic waste. Cali is the third-largest city in Colombia and responsible for 8% of the national waste generation. The NAMA has strong buy-in of the local government, which makes Cali an ideal candidate for the first MBT facility under the program.

Requested assistance by NDE:

The request seeks assistance from CTCN to support the proponent to: (i) install a MBT facility for the pilot project of the NAMA in the city of Cali in order to test this technology and possibly replicate it in

other cities; and (ii) build in-country capacity for the operation of this plant and for project development and plant design at future other sites.

Direct results:

- Established example of MBT technologies in an operational context;
- Increased national capacity to develop, design and operate MBT waste management plants;
- Fine-tuning of business models based on advanced waste management technologies; and
- Increased confidence among key stakeholders and investors.

Prospects for GEF-6 CCM Project:

Colombia is well advanced in understanding the opportunity of valorization of waste. Barriers related to policy, institutional framework, human resources, awareness, information, and business models are being addressed. The main remaining hurdles are: access to state-of-the-art technologies and attracting investment capital, for which Colombia is working on a sector NAMA. In this context, it is unlikely that Colombia will need and pursue GEF assistance in the field of low-emission waste treatment.

Readiness for liaison with financiers:

The Request is highly specific and describes a specific waste treatment technology (MBT) with a specific counterpart and at a defined site (Municipality of Cali). Moreover, the Request asks CTCN to facilitate the search for financing of the described pilot. Business models for waste disposal (landfill) are already operational in Colombia but need to be adapted. The project seems ready for a mix of technical and training solutions (TA) and financial fine-tuning (risk mitigation, tariff setting) to establish a bankable project.

Associated GHG benefits:

Direct greenhouse gas emission reductions can result from this request through investment in MBT technology at the pilot plant in Santiago de Cali. By liaison with financiers, indirect emission reductions can be achieved through upscaling and replication.

Source document:

Colombia – Development of a Mechanical-Biological Treatment (MBT) pilot project of the Waste NAMA (signed by NDE on 19 March 2014).

3. Dominican Republic: Energy-efficient lighting

Proponent is the National Energy Committee (CNE). The request is under preparation by the National Designated Entity, the Directorate for Climate Change of the Ministry of Environment and Natural Resources in dialogue with the CTCN team. The request aims to assist the Dominican Republic to implement the regional strategy for efficient lighting for Central America[32].

Context:

[32] Developed by UNEP and its regional partners: the Mesoamerica Project, the Central American Integration System (SICA), the Central American Commission for Environment and Development and the Mexican Electric Power Saving Trust Fund (FIDE). UNEP en.lighten (2013). Regional Lighting Efficiency Strategy in Central America.

The Dominican Republic and other countries in the region have undertaken numerous initiatives and campaigns to improve energy energy-efficient lighting. The national programme for energy conservation (Programa Nacional de Ahorro y Uso Racional de Energía) aims at reducing the energy consumption in all sectors, covering both public institutions and the private sector. The National Energy Committee (CNE) also implemented a country-wide energy-efficiency programme (Programa Nacional de Eficiencia Energética) along various lines of action: (i) enactment of an energy efficiency law, (ii) energy audits in government institutions, (iii) energy management in public buildings, (iv) certification, and (v) awareness raising. CNE also pushed forward a project to install LED lighting in government buildings.

The Dominican Republic, as well as other countries in the region (e.g. Panama and Honduras) has reached high market penetration levels of compact fluorescent lamps (CFL). However, the lack of sustainability plans and end-user incentives means that incandescent lights are picking up again. The regional lighting efficiency strategy in Central America, developed by UNEP and its partners, pursues a systematic approach to address the persistent barriers, and includes the following elements:

- Establishment of regional minimum standards for efficiency, quality, safety and environmental impact for all lighting devices imported and sold.
- Approval of the mandatory Central American Technical Regulations for Lighting for the eight countries in the region.
- Introduction of a labelling system to help consumers understand the technical properties of lighting devices.
- Introduction of an award label for lighting devices with the highest efficiency and quality in the market.
- Introduction of tax benefits (tax holidays) for suppliers offering reduced price for eligible, efficient lighting devices.
- Implementation of a replacement program for incandescent light bulbs among low-income families.
- Establishment of a monitoring, verification and enforcement system to certify lighting devices and verify compliance with mandatory requirements.
- Implementation of a collection and recycling system for lighting devices at the end of their life to avoid the diffusion of mercury into the environment.

Requested assistance by NDE:

The request seeks assistance from CTCN to address the barriers to a widespread, systematic, and sustainable deployment of efficient lighting as outlined in the regional strategy. The priorities are to be identified with the main stakeholders (notably CNE) during the development of the response plan. Tentatively, the following activities are considered:

- Advice on fiscal and economic instruments such as tax incentives, subsidies, financial assistance programmes for low-income families;
- Advice on regulatory instruments such as minimum energy performance standards;
- Capacity building and training of professionals;
- Design and implementation of awareness raising campaigns;
- Technical advice on recycling/disposal and control of mercury; and
- Scoping of legislation how to handle CFL waste under the national regulation for hazardous and non-hazardous waste management, treatment and disposal.

Direct results:

- Increased national capacity for implementing the regional lighting strategy; and
- Proposals for regulation and incentives developed and discussed.

Prospects for GEF-6 CCM Project:

Multiple barriers are in place hampering the introduction of energy-efficient technologies and energy saving measures in the Dominican Republic. The root causes are well understood and baseline information is available. The electricity tariff for low-income households is subsidized, so there is no strong incentive among most residential users to save energy. Moreover, commercial losses are a persistent problem. Grid quality issues, including frequent outages, may cause technical failure of CFLs and induce people to revert to incandescent lamps. Sector governance is relatively weak, adversely influencing the effectiveness of a prospective GEF project. Arguably, technical assistance through multiple, well-focused CTCN responses may be faster and easier to manage and adjust to upcoming priorities than a comprehensive GEF barrier-removal initiative.

Readiness for liaison with financiers:

The Request does not pursue a specific bankable investment (demonstration) project. However, suitable financing mechanisms to promote efficient lighting may be arranged, such as a subsidy on the purchase price of equipment meeting a certain standard (as done by FIDE in Mexico). Multilateral financiers, including the IDB, have demonstrated interest to support the country to implement EE technology. In the present context, financial incentives can prove more effective to influence consumer behaviour than restrictive policy.

Associated GHG benefits:

Direct or indirect greenhouse gas emission reductions can result from this request through the establishment of a financing mechanism for energy-efficient lighting. In dialogue with CNE and the financial community, quantified targets can be set in terms of delivered equipment and market penetration. Baseline information is available to estimate the GHG reductions by a reduced consumption of fossil-based electric energy.

Source document:

Dominican Republic - Roadmap towards efficient lighting (26 November 2014).

4. Mali: Agricultural Productive Use (crop drying and processing)

This request on renewable energy technology for productive uses has been submitted by the NDE. The national project developer is the Support Group for Agricultural Modernization (*Groupe d'Appui à la Modernisation d'Agriculture* – GAMA), an agricultural cooperative which receives coaching from CTI-PFAN[33]. The project was selected as finalist and presented at the WAFCEF Forum in Accra[34]. The project may serve as a model for other agro-processing facilities in Mali, thereby contributing to socio-economic development and displacing fossil fuels.

Context:

The project aims to install PV-powered processing and storage technologies for mangoes, potatoes and gombo (okra) on a site in Southern Mali owned by the proponent GAMA. The products will be purchased

[33]The Climate Technology Initiative - Private Financing Advisory Network.

[34]The West African Clean Energy Finance Forum (WAFCEF) was hosted by the ECOWAS Regional Centre for Renewable Energy and Energy Efficiency (ECREEE) in October 2013. See: www.ecreee.org.

on local markets and sold locally, regionally and internationally after processing (drying) or storing (in controlled cool storage environments). GAMA is the brainchild of Moussa Doumbia, a Malian entrepreneur with a long history of local representation for international donors, and six other owners. GAMA is the owner of the site and contributes to the project's costs supplying the site and the buildings already partly constructed.

The key value proposition of the project is that for the three crops considered, simple semi-industrial processing and/or professional storage allow for accessing different markets, or marketing off-season (beyond the time immediately after harvest). This means accessing higher margins. The processing and storage is made possible through continued access to energy needed for drying or cooling. The envisaged installed solar-PV capacity is 80 kW.

The total project cost is about USD 1.55 M. Of this, the project is looking for USD 1.37 M. The developers are looking for a loan of USD 0.52 M, reimbursable within 3 years, as well as an equity contribution of USD 0.54 M. The remaining project cost will be covered by self-financing working capital and a small additional contribution by the developers.

According to the CTI-PFAN, the WAFCEF process has contributed to mature the project. It has a transparent and simple business model, and an engaged management team contributing at least a minimal level of equity. The project has very clear social benefits and promotes food security through local processing. Several technical aspects need to be clarified and/or detailed. The key difficulty for reaching financial closure is the size of the investment and the risks associated to the proposed distribution model.

Requested assistance by NDE:

As of February 2015, a formal request has not been drafted but supportive documents have been shared with the CTCN team and are being discussed. The upcoming request will presumably consist of assistance on technical and market aspects of the project, ensuring financial robustness and bankability, and drawing the attention of potential financiers. Activities include:

- Full design of technical systems for the Ferme Fakoly project, incorporating best practices through the CTCN;
- Optimized structuring of investment and financing to reduce project risks and strengthen financial robustness; and
- Active liaison with international financing community.

Direct results:

- Operating PV-powered agro-processing company serving as a pilot for replication;
- Direct emission reductions compared to baseline scenario (diesel operation); and
- Socio-economic benefits through continuous operation.[35]

We emphasize that the technical assistance provided with GEF funding will be targeted on low-GHG energy systems (solar energy). However, we also want to point out that the business case for the project proponent is an integrated one; and we expect that external financiers will evaluate the profitability and robustness of the overall business case (improved agricultural outputs versus reduced energy costs) in order to take a loan decision. The project will implement renewable energy technologies (solar PV) to displace fossil fuel (diesel is the baseline option), thereby contributing to global GHG emission reductions. Although the GHG benefits associated with the Mali request are relatively small, projects of this type have a large added value in terms of local economic development and improvement of human

[35]The proposed business is based on reliable, controlled drying and cold storage processes that need uninterrupted power supply. Diesel supplies under the baseline scenario are not fully reliable effectively inhibiting the new business.

development indicators. The introduction of low-emission, renewable technologies offers a new paradigm for communities and enterprises in the region to become energy self-reliant and to make local value chains more robust.

Prospects for GEF-6 CCM Project:

The request is in a too early stage to assess the potential prospects for follow-up under GEF-6.

Readiness for liaison with financiers:

The project has been included in the WAFCEF with a view on generating exposure among the financing community. The CTCN response plan will build upon this work in an effort to facilitate financial closure of the Fakoly project.

The approach is innovative by establishing a new paradigm for rural communities and enterprises in the region. The sustainability issue is deemed positive, since solar PV is a proven technology in Mali; the response will further strengthen operator capacities and mitigate weaknesses in the supply chain (for example by having critical spare parts on-site). Economical and financial sustainability are secured through the ex-ante evaluation of costs and benefits (revenues) of the investment. Market risks remain, but can be mitigated by demanding a robust business case.

The availability of investment capital has been identified as a major barrier for this type of projects. The request is aimed at reducing this barrier through demonstration and promotion, and collecting best practices. As a result, the likeliness of replication is increased. However, it is acknowledged that the investment climate for Mali (country risk) is delicate.

Associated GHG benefits:

According to the proponent, the project will replace an annual volume of 95,340 l diesel, thereby avoiding greenhouse gas emissions totaling 274,579 kg CO2eq per year. Indeed, the baseline scenario is one of an increased reliance on fossil fuels to cater for the energy requirements. It is also characterized by a limited capacity to leverage financing to facilitate the investment required in new technologies to unleash the business model.

Solar irradiation levels in Mali are, as an average, very high, in the order of 5.5-6.3 kWh/m2-day[36]. Over the last decade, Mali has been developing solar PV systems, contributing to maturing this technology in the country. An IEA report[37] summarizes the status of PV in Mali: (a) a 216 kWp system implemented in 2011 through cooperation between national utility EDM and a private operator; (b) World Bank and AfDB funding to the SREP project, including PV arrays in combination with existing diesel plants in 40 communities (total 5 MWp); (c) a programme by rural electrification agency AMADER for hybrid power supply to 17 localities (1 MWp); and (d) several private operators planning hybrid (PV-diesel) generation, including Kama SA (200 kWp), SSD Yeelen Kura (300 kWp), and Tilgaz (22 kWp).

Source documents:

1. CTI-PFAN Final Project Coaching Report for WAFCEF, “P16 – Production et transformation agricoles par énergie solaire à la Ferme Fakoly”, M. Schlup, 19 November 2013.

2. Business plan GAMA *“Plan d’Affaires Projet: Production et transformation agricoles par énergie solaire à la Ferme Fakoly”*, August 2014.

[36] Source: UNEP-Riso Project Feasibility of Renewable Energy Resources in Mali; http://www.frsemali.org/Project_reports.htm
[37] IEA-PVPS T9-13:2013, page 15

5. Senegal: Development of energy efficiency projects in industries and services.

Proponent is the national Energy Efficiency Agency AEME. The request is under preparation by the National Designated Entity, the Renewable Energy Study and Research Centre (CERER)[38] in dialogue with the CTCN team. The request aims to assist the Senegal to implement energy efficient technologies and practices in the industry and services.

Context:

Senegal has the fourth largest economy in West Africa, which is based on tourism, agro-industries, mining and fisheries. It benefits from a strong presence of multinational companies concentrated in urban areas. Yet, socio-development is hampered by constraints to structural change due to relatively low productivity and a hefty (half of GDP) informal sector. Industry, contributing to 12% of GDP, faces a number of challenges, including: availability and cost of energy, shortfall of qualified manpower, deficient access to affordable financing, lack of support to SME, and insufficient production diversity.[39] Installed electricity generating capacities in Senegal are insufficient to meet up with annual demand growth (4%). The country is also heavily reliant on important fossil fuels.

Energy efficiency is one of the key components of the national energy policy. The potential is very high: studies indicate that 43% energy savings are attainable. The industry makes up 36% of total energy consumption (2013). In order to boost industrial development and competitiveness, Senegal has set up the so-called *Fond de Mise à Niveau* to support policies, strategies, and programmes for enterprises and institutions and to facilitate investments in technological upgrading. The initiative builds upon various projects and programmes implemented by the Government of Senegal, with assistance from its development partners, including the French Development Agency (AFD), UNIDO, Germany, and Italy.

In the framework of the Plan Sénégal Emergent, a number of key avenues are pursued which receive the highest political backing. One key priority is the development of integrated industrial hubs, which are expected to foster rapid economic development as well as transfer and adaptation of technology, knowledge and skills. As such, they represent engines of industrialization. When matched with higher standards of environment and social responsibility, application of resource efficient production and reuse of waste energy and waste materials, such hubs can deliver shared prosperity while safeguarding the environment and climate.

The industrial park in Diamniadio, run jointly by the Government and the private sector for the period 2014-2017, represents a flagship industrial project. A power plant will ensure the required energy supply. A 10,000 cubic meter reservoir will provide water, and a drainage canal and wastewater treatment plant will manage water effluent. Infrastructure and construction are financed by the Taiwanese Cooperation, and 91.5 hectares will be made available to foreign and domestic investors. Six local companies have started operations in iron manufacturing, industrial gas, household products, and the production of natural mineral water. Sixty-eight other companies have reserved space at Diamniadio. The park is expected to generate 8,000 jobs and twice as many will be created indirectly.

In terms of technology upgrading, Senegal has carried out an exhaustive assessment of the key needs. The Technology Needs Assessment (TNA) work provides guidance on technology priorities.: (i) direct biomass combustion from non-edible sources (waste stream or bi-product); (ii) cogeneration respond to the demand of electricity and thermal energy; (iii) energy efficiency[40]; (iv) thermal solar energy for

[38]Centre d'Etudes et de Recherches sur les Energies Renouvelables.

[39]The challenges faced and the opportunities for Senegal are well documented, notably in the landmark document "Plan Sénégal Emergent".

[40]In particular through improvement of the power factor (management of reactive power) to reduce generation and transmission losses and associated costs.

industrial applications including hot water production as well as for cooling; and (v) photovoltaic systems to displace or complement grid electricity. Among this palette of technologies, the present request is focused on the introduction of cogeneration and trigeneration systems in Senegal.

Requested assistance by NDE:

The CTCN is requested to support the design of a strategy for the proposed co/tri-generation technology, including capacity building, promotion and management issues. Activities should focus on:

- Technical advice on policies for technology adoption;
- Technical advice to adapt co/tri-generation technology to the local context, including the specific needs of local industries and services and the use of locally available fuels;
- Project development and demonstration of the technology; and
- Support for promotion of the technology among relevant industries.

Direct results:

- Removal of barriers to the deployment of prioritized technologies;
- Investment in technologies at a pilot scale; and
- Reduced emissions of greenhouse gases from thermal power systems.

Prospects for GEF-6 CCM Project:

The request is aligned with priorities under GEF-6, specifically "Acceleration of low emission technology innovation and uptake through demonstration, deployment, and transfer using policies and mechanisms". The request is focused on private sector development and promotes energy efficiency and renewable energy technologies. Both investment opportunities and scope for barrier removal activities are present. Depending on Senegal's priorities to utilize its allocated funds, a GEF-6 proposal may evolve from the present request.

Readiness for liaison with financiers:

Several multilateral and bilateral financiers (including the World Bank and the Taiwanese Cooperation) have demonstrated interest and are financing supportive studies to upgrade industries and industrial parks in Senegal. In this context, opportunities for co/tri-generation can be explored and developed. Involvement of the financing community in the design and implementation of the response plan is therefore deemed very likely.

Associated GHG benefits:

Direct or indirect greenhouse gas emission reductions can result from this request through investment in co/tri-generation systems. The expected greenhouse gas reductions will derive from the savings of fossil fuel for conventional thermal energy and electricity generation. A quantitative estimate of the benefits will require more specific information on the design and size of the pursued installations, as well as on the definition of the baseline situation.

Source documents:

1. Senegal – Development of energy efficiency projects in industries and services, 25 December 2014 (signed by NDE on 30 December 2014).

2. Senegal - Green technology deployment in industrial zones (1 December 2014).

Noteworthy is also that the request will be treated in close coordination with other planned or on-going activities, including on WB-UNIDO-GEF Sustainable Cities IAP and IFAD-UNIDO-GEF Food Security IAP child projects. Senegal is also a pilot country for the implementation of UNIDO's Partnership Country Programme.

6. Uganda: Formulating geothermal energy policy, legal and regulatory framework.

Proponent is the national Ministry of Energy and Mineral Development. The request is under preparation by the National Designated Entity, the Uganda National Council of Science and Technology (UNSCT) in dialogue with the CTCN team. The request aims to assist Uganda to strengthen its institutional and policy framework to tap into its geothermal energy potential and attract project developers and investors.

Context:

A secure and sustainable energy mix is one of the central challenges Uganda faces. The country currently mostly relies on hydropower with a generation capacity of 800 MW. However, droughts and erratic rainfall have made hydro power unreliable; hydropower dams in Uganda have persistently produced less power than the initially projected capacity. Uganda has an estimated geothermal energy potential of 400 MW, which can be used to expand the capacity of the national electricity system.

The development of geothermal energy in Uganda however is still in its infancy and faces a number of challenges and risks, specifically: (i) resource development risk; (ii) large up-front capital investment; (iii) lack of legal and regulatory regime; and (iv) lack of supportive institutional framework. Notwithstanding, there is growing interest from the Government, development partners and private companies to engage in geothermal energy development in Uganda. To move forward, the Government is in the process of creating a geothermal resources department within the Ministry of Energy and Mineral Development.

The lack of supportive policy is currently a major barrier. Geothermal exploration and development is presently bound by the Mining Act, which does not make any provisions to enable and promote this technology for energy generation. There is a need for a specific legislation and regulation to regulate geothermal activity in Uganda. The absence of a supportive institutional, policy and regulatory regime has been the main constraint for geothermal energy exploration in Uganda. Within this context, the existing set of policies and programs supporting the development of renewable energy and low-emission technologies in Uganda may also need to be reviewed.

Requested assistance by NDE:

The request seeks assistance from CTCN to support the proponent with: (i) formulation of geothermal energy policy; (ii) drafting of legislation; and (iii) drafting of regulation and implementation rules. The envisaged activities include:

- Identification of options for geothermal energy policy;
- Guidance to consultation process with stakeholders;
- Drafting of a white paper on geothermal energy, covering legislation, regulation and contract modalities;
- Drafting of detailed text for geothermal law and regulation, and consistency checks with related law;
- Drafting of specific sub-sector provisions including safety, health, environmental aspects, fiscal regime, energy self-supply; and:
- Review and drafting of model contracts and agreements.

Direct results:

- Geothermal resources department strengthened and organized; and

- Consistent, effective and efficient regulatory framework for geothermal energy in place.

Prospects for GEF-6 CCM Project:

The establishment of a policy and institutional framework for geothermal energy is a necessary step to strengthen sector governance. Uganda is a UNEP-GEF ARGeo member country and is receiving technical support. UNEP has provided assistance to Uganda through the "Eastern Africa Regional Study on geothermal legislation and related institutions and policies", as well as by USAID. However, technology, information and market barriers will likely remain after implementation of the response plan. Environmental aspects of specific projects must be assessed and cleared before multilateral financiers will finance geothermal technology. GEF involvement may be considered with the aim to strengthen the supply chain for geothermal technology in Uganda.

Readiness for liaison with financiers:

As of February 2015, the Request does not indicate a specific bankable investment project. Several project leads that may materialize in the coming years exist in the country. As part of the response plan, CTCN will advocate for engagement with interested investors as part of a process of maturing projects and reducing financial risks.

Associated GHG benefits:

At the present stage of market development, it is unlikely that direct or indirect greenhouse gas emission reductions will result from this request. However, a prospective GEF-6 project targeting geothermal energy in Uganda can have substantial direct and indirect GHG benefits by off-setting fossil electricity generation by renewable energy.

Source document:

Uganda - Formulating geothermal energy policy, legal and regulatory framework (20 October 2014).

7. Viet Nam: Bio-waste minimization and valorization for low-carbon production.

Proponent is the National Vietnam Cleaner Production Centre (VNCPC). The request is under preparation by the National Designated Entity, the Department of Meteorology, Hydrology and Climate Change of the Ministry of Natural Resources and Environment of Vietnam in dialogue with the CTCN team. The request aims to assist Viet Nam to adopt appropriate technology options for: (i) paddy rice drying, (ii) rice husk briquette production, (iii) efficient combustion of rice husk biomass waste; as well as for: (iv) identifying strategies and business cases for developing the use of rice husk biomass waste in other industries and unlock investment.

Context:

A large part of Vietnamese companies depend on coal as the source of thermal energy. Domestic coal reserves are concentrated in the north and, due to the geographical peculiarities of the country, supply from the north to the south is expensive. Since domestic supplies are insufficient to cover demand, Vietnam will have to increase its coal imports considerably, making Vietnam more dependent on the international markets and exposing Vietnamese companies to price volatility.

Moreover, there is a pressure on Viet Nam to invest, adapt and to step into a broader competition with other Asian countries. This calls for continuous modernization and investment and controlling and increasing product quality. The combination of coal price development and a more open economy creates

growing pressure on companies to increase efficiency and profitability, thereby making a strong case for improving resource efficiency. This applies in particular for companies with energy- intensive processes. In this context, domestic resources such as abundant rice husk have gained interest as a renewable energy source[41].

Meanwhile, the Ministry of Agriculture and Rural Development has developed a new strategy for the Vietnamese rice sector, which assigns a leading role for the rice mills. These will assume direct responsibility for the rice production process by providing technical support (fertilizer, logistics, know-how) to the farmers and buying the paddy rice directly from the farmers. The Government has further set a target to progressively reach a level of 50% of on-site paddy drying by 2020. To meet this goal, substantial investment in new rice-husk based dryers is needed during the next years.

These measures have a direct impact on the current supply chain model of the milling factories that export Vietnamese rice abroad. The envisaged benefits are: (i) better sourcing of the paddy rice to attain the product quality needed to compete on the international market; (ii) stronger integration of the supply chain by improved cooperation between millers and farmers; and (iii) increased control of the rice mills over the production cycle, which facilitates technological innovation and cost optimization. In the context of this request, the rice mills will be able in a position to increase the use of rice husk for internal processes and to valorize the high volume of rice husk residue as an energy source for other companies (for example by producing briquettes or pellets as an alternative fuel for mineral coal).

Requested assistance by NDE:

The request seeks assistance from CTCN: (i) to unfold the potential of rice husk utilization in the paddy rice sector; and (ii) to transfer appropriate technologies (such as briquetting and pelleting) to enable the use of rice husk surpluses as a renewable, low-emission source for thermal energy by other economic sectors; and (iii) to develop viable strategies and business cases and the use of rice husk and other biomass waste by Vietnamese companies.

Direct results:

- Demonstration of on-site rice husk-based drying technology, thereby increasing resource efficiency and abating GHG emissions by the paddy rice sector;
- Transfer of appropriate briquetting and pelleting technologies for rice husk residue; and
- Identification of viable strategies and business cases for rice husk biomass waste by Vietnamese companies as a substitute for mineral coal.

Prospects for GEF-6 CCM Project:

The scope of the present Request is certainly broad and can be extended to the validation and detailing of a country-wide strategy to valorize biomass residues for energy purposes. Conversion technologies, sourcing strategies, nutrient balances, economy, business models, and a policy framework would need to be developed and put into place. This certainly justifies preparing a full-size GEF-6 proposal.

Readiness for liaison with financiers:

The Request does not describe a specific investment project, but indicates the interest of two state-owned rice mills in the South of Vietnam, which have expressed keen interest to engage in an early stage. The technical assistance delivered by CTCN can be tailored to their situation and develop bankable rice husk

[41]With an estimated production of 44 mio. tons of paddy rice in 2013, approximately 7 million ton rice husk is available as potentially usable biomass (taking into account that a maximum of 15-20% of this amount is valorized in the rice mills, mainly for the drying process).

conversion projects. The financial community can be involved during the implementation of the response plan to facilitate investment in rick husk conversion technology.

Associated GHG benefits:

Direct greenhouse gas emission reductions can result from this request through investment in rice husk conversion technology at one or two interested companies. By liaison with financiers, indirect emission reductions can be achieved through upscaling and replication. However, a prospective GEF-6 project targeting rice husk conversion in Viet Nam can have large direct and indirect GHG benefits by off-setting fossil coal for thermal and electrical energy production.

Source document:

Viet Nam - Bio-waste minimization and valorization for low carbon production in rice sector (12 November 2014).

Noteworthy is that UNIDO is carrying out similar, complementary activities in Vietnam and other countries of the region (e.g. Cambodia, Lao) through GEF projects or otherwise. There is significant scope to pursue to workstream making use of the experience gathered thus far to strengthen such approaches to further deploy field-proven, yet innovative technologies.

ANNEX H: INCREMENTAL ACTION OF GEF INTERVENTION AND GHG BENEFITS

Incremental Action of GEF Intervention

The present GEF/CTCN project is a conceived as a pilot to explore and test the modalities through which GEF funding can facilitate and enhance the operation of the CTCN. According to the GEF Addendum on Cooperation with the CTCN for the COP 20[42]:

> "The Project is expected to serve as a pilot to highlight possible option for future CTCN-related output to be developed as GEF-6 projects. In order to identify appropriate CTCN requests, the United Nations Industrial Development Organization (UNIDO) will work with National Designated Entities (NDEs), and liaise with financial institutions on investment opportunities. (...) GEF ability to fund projects that combine technical assistance, policy support, capacity building and investment was identified as an opportunity for the CTCN since it could enable the CTCN (i) to respond to the most challenging requests from countries, and (ii) to develop responses that can go beyond pure technical assistance to have a real impact on the ground."

At the same place, GEF reiterates the ruling principle of funding on an incremental cost basis:

> " The GEF shall operate (…) for the purpose of providing new and additional grant and concessional funding to meet the agreed incremental costs of measures to achieve agreed global environmental benefits (Instrument for the Establishment of the Restructured Global Environment Facility, October 2011, paragraph 2)."

Within the context of this pilot, the incremental principle of GEF support – hence eligibility of country requests for GEF funding - has been interpreted as follows:

1. GEF financial support can assist the CTCN to achieve real impact on the ground. Real impact is understood as the attainment of direct and indirect GHG emission reductions due to investment for the deployment of climate technologies. The role of GEF funding is to complement CTCN and local funds to facilitate project development and to reduce real and perceived risks for financiers, thereby lowering the cost of capital. GEF support to the CTCN under this Project is considered a valuable factor to attract interest from the financial community. And:
2. GEF funding can be used to expand country requests to identify and detail prospective GEF-6 project initiatives in the target countries[43]. GEF funding in this case is considered incremental compared to the baseline CTCN response plan.

Being this initiative a pilot for GEF-CTCN collaboration, progressive insight and experiences from this Project are expected to feed into the discussion about CTCN's working modalities and fine-tune the definition of GEF support in line with its guiding principles.

In order to be eligible for the present GEF/CTCN Project, country requests must meet at least one of these criteria. The following table shows eligibility of the selected seven country requests for GEF funding under this pilot Project, based on the principles outlined here above.

[42] Addendum to the Report of the Global Environment Facility to the Twentieth Session of the Conference of the Parties to the UNFCCC on "Global Environment Facility consultation with the Climate Technology Center and Network", November 25, 2014 (par 10).

[43] In coordination with the national Government, the GEF Operational Focal Point in the target countries, and other relevant stakeholders.

EXPECTED ELIGIBILITY OF SELECTED COUNTRY REQUESTS FOR GEF SUPPORT UNDER THE PROJECT.			
Country	Technology	Principle #1	Principle #2
		Avoided Greenhouse Gas Emissions through CTCN/GEF project	Follow-up GEF project with GHG reduction potential
1. Chile	Replacement F-refrigerants	yes	likely [44]
2. Colombia	MBT municipal waste	yes	not likely
3. Dominican Republic	Energy-efficient lighting	yes	not likely
4.Mali	Agricultural productive use	yes	not likely
5. Senegal	Energy efficiency industry	yes (not quantified)	likely
6. Uganda	Geothermal energy	no	likely
7. Viet Nam	Rice husk utilization	yes	likely

As can be concluded from the table, 6 requests (86%) will expectedly lead to tangible GHG benefits on the ground, while 4 requests (57%) have good prospects to be expanded into GEF project proposals (presumably under GEF-6).

Associated GHG benefits

The global environmental benefits of the Project are associated with:

(3) The implementation of low-emission climate technology projects with technical assistance from the CTCN in response to country requests; and

(4) Replication of such projects through up-scaling and clustering, as a result of increased mobilization of investment capital through the match-making mechanism.

Additional GHG benefits can be expected as a result of the Project's contribution to market transformation in the recipient countries, resulting in an accelerated penetration of climate technologies. These effects are expected to be small in the markets targeted by CTCN's full responses supporting investment projects (since barriers are relatively low in these more advanced markets). For simplicity, it is assumed that these market effects are part of the baseline shift.

In the less developed markets, CTCN's responses will likely be more policy-oriented than investment-related, without pretending a full barrier removal effort. This type of responses has the potential to evolve into a prospective GEF-6 project proposal. The associated GHG benefits in these cases are not claimed by the present Pilot to avoid any double-counting under future GEF projects.

The following table[45] summarizes the methodology used:

Type of GHG emission reduction	**Direct (A)**	**Indirect (B, C)**	
Component of GEF intervention that can	Direct implementation of climate	The Project establishes a match-making mechanism	GHG benefits as a result of activities contributing to

[44] A follow-up GEF project could be implemented to create synergies with the country's ongoing efforts to reduce HCFC consumption under the Montreal Protocol by means of supporting activities non-eligible for funding under the Multilateral Fund for the Implementation of the Montreal Protocol.

[45] Based on the GEF Manual (GEF/C.33/Inf.18, April 16, 2008), p.3.

cause this type of GHG emission reduction	technologies through committed co-funding.	enabling replication of investment through up-scaling and clustering, during or in the first three (3) years after Project termination.	market transformation are considered as part of the baseline.
Logframe (SRF) level	Outputs 1.1-1.2	Outputs 2.1	All Outputs
Quantification method	Direct evaluation of GHG benefits over lifetime for each technology covered.	A replication factor of 3 is applied, based on the following assumptions: (i) indicative 6-fold potential for upscaling/clustering; (ii) project proponents manage to develop this potential (project pipeline) and secure financing through the match-making mechanism in 50% of the cases.	n/a
Quality of Assessment	Based on expected technical performance of climate technology systems. Error range is estimated at -50% to + 75%.	The replication factor is a weighted average across countries and technologies. A replication factor in the range 2..4 is considered realistic. Per technology selected, this factor can vary. Based on these considerations, the error margin is estimated at +/-33% (3.0 +/-1.0).[46]	n/a

In order to produce an indication of the climate change mitigation potential of prospective GEF-6 proposals, representative project values are taken in line with earlier projects in the GEF CC portfolio. For simplicity one figure is given combining both direct (investment-related) and indirect (market-transformation) benefits. A hypothetical GEF-causality factor of 40% (Level 2, "modest and substantial") is used for all cases.

Estimation of GHG benefits per selected request

1. Chile: To support the replacement of F-refrigerants used in refrigeration system in food processing production and exports (fruits and vegetables).

Associated GHG benefits:

Direct and indirect greenhouse gas emission reductions can result from this request by avoiding the introduction and eventual release of hydro fluorocarbon (HFC) refrigerants for cold storage. The replacement of HCFC-22 and HFC-404A based systems to low-GWP refrigerants would result in a total reduction of 85,000 tCO2e.

[46] The attained level of replication can be used as an indicator to assess the effectiveness of the match-making mechanism as one of the lesson to be learned from this GEF/CTCN pilot project

2. Colombia: Implementation of a pilot waste treatment (MBT) plant.

Associated GHG benefits:

Direct and indirect greenhouse gas emission reductions can result from this request through the construction and operation of the envisaged MBT pilot plant in Santiago de Cali. In the absence of detailed data for this pilot, the GHG benefits are based on a case study in Phitsanulok, Thailand[47]. This case study describes one of the largest pilot plants in Asia, with a capacity of 100 ton municipal waste per day. For Cali, this would represent 6-7% of the total waste flow (1,600 ton per day), which seems a reasonable size.

2. COLOMBIA – MECHANICAL-BIOLOGICAL WASTE TREATMENT (MBT)		
Plant size	100	ton waste/day
Baseline GHG emissions	925	kg CO2eq/ton waste
GHG emissions MBT technology	161	kg CO2eq/ton waste
Net GHG emission reduction MBT technology	764	kg CO2eq/ton waste
Total GHG emission reduction MBT plant	76	ton CO2eq/day
	27,886	ton CO2eq/yr
GHG emission reductions 10-year period	278,860	ton CO2eq

Based on these figures, the direct GHG emission reductions through the response plan are estimated at about 280,000 ton CO2eq. Indirect benefits are assumed to be 3-fold and take place through the financial match-making mechanism, yielding an additional 840,000 ton CO2eq.

3. Dominican Republic: Roadmap towards efficient lighting

Associated GHG benefits:

Direct and indirect greenhouse gas emission reductions can result from this request through the establishment of a financing mechanism for energy-efficient lighting in dialogue with CNE and the financial community. In this case, it is assumed that the request response will result in a pilot, in which a total of 100,000 incandescent lamps will be replaced by more efficient CFL devices, according to the following table.

3. DOMINICAN REPUBLIC–ENERGY-EFFICIENT LIGHTING		
Baseline incandescent lamp capacity	60	W
Daily utilization	4	h/day
Efficient light (CFL) capacity	15	W
Daily utilization	25%	increase
Daily energy saving	165	Wh/day

[47]Source: S.N.M.Menikpura, Janya Sang-Arun, and Magnus Bengtsson, Mechanical-Biological Treatment as a Solution for Mitigating Greenhouse Gas Emissions from Landfills in Thailand, Sustainable Consumption and Production (SCP) Group Institute for Global Environmental Strategies (IGES), Japan. Presentation ISWA World Congress, 17-19 September 2012, Florence, Italy (p.13).

Utilization rate	250	days/yr
Annual electrical energy saving	41	kWh/yr per lamp
Pilot size	100,000	units
Total annual electrical energy saving	4,125	MWh/yr
CO2-intensity electricity sector[48]	0.6626	ton CO2eq/MWh
Annual average GHG emissions	2,733	ton CO2eq/yr
Average GHG emissions over 10-year period	27,332	ton CO2eq
GEF causality factor	40%	
GHG benefits attributable to GEF project	10,933	ton CO2eq

Based on these figures, the direct GHG emission reductions through the response plan are estimated at about 11,000 ton CO2eq. Indirect benefits are assumed to be 3-fold and take place through the financial match-making mechanism, yielding an additional 33,000 ton CO2eq.

4. Mali: Agricultural Productive Use (crop drying and processing)

Direct greenhouse gas emission reductions can result from this request through investment in solar PV technology to offset baseline diesel consumption. By liaison with financiers, indirect emission reductions can be achieved through upscaling and replication. According to the proponent, the project will replace an annual volume of 95,340 l diesel, thereby avoiding greenhouse gas emissions totaling 274,579 kg CO2eq per year. Over a 10-year period, the GHG benefits would be approx. 2,750 ton CO2eq. Indirect benefits are assumed to be 3-fold and take place through the financial match-making mechanism, yielding an additional 8,250 ton CO2eq.

5. Senegal: Development of energy efficiency projects in industries and services.

Additional information about specific investment projects, as well as the baseline situation, is needed to quantify the associated GHG benefits under this request.

6. Uganda: Formulating geothermal energy policy, legal and regulatory framework.

It is assumed that no direct or indirect greenhouse gas emission reductions will result from this request.

A prospective GEF-6 project targeting geothermal energy in Uganda can have substantial direct and indirect GHG benefits by off-setting fossil electricity generation by renewable energy. These benefits are, indicatively, estimated below, assuming that 100 MW geothermal power generating capacity will become operational as a result of GEF intervention to remove the barriers presently hampering market development.

6. UGANDA – GEOTHERMAL ENERGY FOR ELECTRICITY GENERATION		
Installed capacity	100	MW

[48]Source: IGES database.

Availability	70%	
Effective operating hours	6,132	h/yr
Annual el production	613,200	MWh/yr
CO2-intensity electricity sector[49]	0.6404	ton CO2eq/MWh
Annual average GHG emissions	392,693	ton CO2eq/yr
Average GHG emissions over 10-year period	3,926,933	ton CO2eq
GEF causality factor	40%	
GHG benefits attributable to GEF project	1,570,773	ton CO2eq

Indicatively, the expected GHG benefits could be of the order of 1.5 million ton CO2eq through the replacement of fossil-based thermal power plants.

7. Viet Nam: Bio-waste minimization and valorization for low-carbon production.

Associated GHG benefits:

Direct greenhouse gas emission reductions can result from this request through investment in rice husk conversion technology at one or two interested companies. By liaison with financiers, indirect emission reductions can be achieved through upscaling and replication. The direct emission reductions in one factory are 18,000 ton CO2eq per year through the replacement of 10,000 ton mineral coal for heat generation. Over a 10-year period, the GHG benefits would be 180,000 ton CO2eq. Indirect benefits are assumed to be 3-fold and take place through the financial match-making mechanism, yielding an additional 540,000 ton CO2eq.

A prospective GEF-6 project targeting rice husk conversion in Viet Nam can have large direct and indirect GHG benefits by off-setting fossil coal for thermal and electrical energy production. Based on a current total rice husk production of 7 million ton per year, the market transformation effects are assumed as in the following table.

7. VIET NAM – RICE HUSK CONVERSION FOR HEAT PRODUCTION		
Total rice husk potential	7,000,000	ton/yr
Utilization rate for new energy purposes (heat)	5%	
Available rice husk	350,000	ton/yr
CO2-benefits (compared to mineral coal)	1.8	ton CO2eq/ton rice husk
Assumed transport and efficiency losses	30%	
Effective CO2-benefits	1.3	ton CO2eq/ton rice husk
Annual average GHG emissions	630,000	ton CO2eq/yr
Average GHG emissions over 10-year period	6,300,000	ton CO2eq
GEF causality factor	40%	
GHG benefits attributable to GEF project	2,520,000	ton CO2eq

[49]Source: IGES database.

Indicatively, the expected GHG benefits could be of the order of 2.5 million ton CO2eq through the replacement of mineral coal for heat production.

Summary of results

The following table summarizes the direct and indirect GHG benefits expected for the project, as well as the indicative GHG reduction potential of prospective GEF-6 initiative that can be developed as a result of the Project.

SUMMARY OF GHG BENEFIT OF SELECTED COUNTRY REQUESTS UNDER THE PROJECT (IN TON CO2EQ).				
Country	Technology	Avoided Greenhouse Gas Emissions through GEF/CTCN project		GHG reduction potential follow-up GEF project[50]
		Direct investment	Indirect[51]	
1. Chile	Replacement F-refrigerants	n/d[52]	n/d	-
2. Colombia	MBT municipal waste	280,000	840,000	-
3. Dominican Republic	Energy-efficient lighting	11,000	33,000	-
4. Mali	Agricultural productive use	2,750	8,250	-
5. Senegal	Energy efficiency industry	n/d	n/d	
6. Uganda	Geothermal energy	-	-	1,500,000
7. Viet Nam	Rice husk utilization	180,000	540,000	2,500,000
TOTAL		473,750	1,421,250	4,000,000

[50] Indicative combined direct and indirect benefits, based on a hypothetical GEF causality factor of 40%.
[51] Post-project investment and upscaling through "match-making mechanism" with financiers.
[52] Not determined due to lacking project details and baseline information.

ANNEX I: DOCUMENTS CONSULTED

Mechanical-Biological Treatment as a Solution for Mitigating Greenhouse Gas Emissions from Landfills in Thailand, S.N.M. Menikpura, Janya Sang-Arun, and Magnus Bengtsson, Sustainable Consumption and Production (SCP) Group Institute for Global Environmental Strategies (IGES), Japan. Presentation ISWA World Congress, 17-19 September 2012, Florence, Italy (p.13).

Solid Waste NAMA in Colombia, Transforming the Solid Waste sector while reducing GHG emissions, NAMA Proposal Executive Summary, Centre for Clean Air Policy, May 2013

Evaluación y Ajuste del Plan de Gestión Integral de Residuos Sólidos (PGIRS) 2004 – 2019, Municipio de Santiago de Cali, ISBN: 978-958-98809-8-2 (2009).

Evaluación de NAMA en el Sector de Residuos en Colombia, Larochelle, L., Turner, M., LaGiglia, M. (ed.), Center for Clean Air Policy, (October 2012).

Draft CTCN Request Uganda - Formulating geothermal energy policy, legal and regulatory framework (20 October 2014).

Draft CTCN Request Mongolia - Revision/Updating of existing Renewable Energy Law of Mongolia and developing framework of activities for enactment of Draft Law of Mongolia on Energy Conservation (January 2014).

Draft CTCN Request Dominican Republic - Roadmap towards efficient lighting (26 November 2014).

Draft CTCN Request Viet Nam - Bio-waste minimization and valorization for low carbon production in rice sector (12 November 2014).

CTCN Request Colombia – Development of a Mechanical-Biological Treatment (MBT) pilot project of the Waste NAMA (signed by NDE on 19 March 2014).

Draft CTCN Request Ecuador - Phase-out of fluorinated refrigerants in the refrigeration and air-conditioning systems used in the Galápagos Islands services sector (16 December 2014).

GEF-5 Programming Document, Sixth Meeting for the Fifth Replenishment of the GEF Trust Fund, Paris, France, GEF/R.5/31/CRP.1, May 12, 2010

Addendum to the Report of the Global Environment Facility to the Twentieth Session of the Conference of the Parties to the UNFCCC on "Global Environment Facility consultation with the Climate Technology Center and Network", November 25, 2014.

Powering Ahead: The Reform of the Electricity Sector in Uganda, Mawejje J., Munyambonera E. & Bategeka, L., Energy and Environment Research; Vol. 3, No. 2; 2013, ISSN 1927-0569, Online Published: November 4, 2013 (URL: http://dx.doi.org/10.5539/eer.v3n2p126)