PROJECT IDENTIFICATION FORM (PIF) [1]
PROJECT TYPE: Full-sized Project
TYPE OF TRUST FUND:GEF Trust Fund

PART I: PROJECT IDENTIFICATION

Project Title:	SolarChill Development, Testing and Technology Transfer Outreach		
Country(ies):	Colombia, Kenya, Swaziland	GEF Project ID:[2]	4682
GEF Agency(ies):	UNEP (select) (select)	GEF Agency Project ID:	00795
Other Executing Partner(s):	UNICEF, Programs for Appropriate Technologies in Health (PATH), Greenpeace International, Danish Technological Institute (DTI), Gesellschaft für Technische Zusammenarbeit (GIZ)	Submission Date:	2011-09-28
GEF Focal Area (s):	Climate Change	Project Duration(Months)	36
Name of parent program (if applicable): ➢ For SFM/REDD+ ☐	N/A	Agency Fee:	258,300

A. FOCAL AREA STRATEGY FRAMEWORK[3]:

Focal Area Objectives	Expected FA Outcomes	Expected FA Outputs	Indicative Financing from relevant TF (GEF/LDCF/SCCF) ($)	Indicative Cofinancing ($)
CCM-1 (select)	Contribution towards the Poznan Strategic Action Plan	Innovative low-carbon technologies demonstrated and deployed on the ground	2,393,000	5,542,900
(select) (select)				
(select) (select)				
(select) (select)				
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(select) (select)				
(select) (select)				

[1] It is very important to consult the PIF preparation guidelines when completing this template.
[2] Project ID number will be assigned by GEFSEC.
[3] Refer to the reference attached on the Focal Area Results Framework when filling up the table in item A.

(select) (select)				
(select) (select)	Others			
Project management cost[4]			190,000	120,000
Total project costs			2,583,000	5,662,900

[4] GEF will finance management cost that is solely linked to GEF financing of the project.

B. PROJECT FRAMEWORK

Project Objective: To commercialize and transfer the Solar Chill vaccine refrigerator (Solar Chill A) and to begin the process of commercializing and transferring the Solar Chill household and light commercial refrigerator (Solar Chill B).					
Project Component	**Grant Type (TA/INV)**	**Expected Outcomes**	**Expected Outputs**	**Indicative Financing from relevant TF (GEF/LDCF/SCCF) ($)**	**Indicative Cofinancing ($)**
1. Development, and Testing of Solar Chill A & Evaluation	TA	Certification of Palfridge Solar Chill A by WHO	Clear and favorable test results for Palfridge Solar Chill A to support the market availability of a significantly less expensive SolarChill model, designed for high ambient temperature zones	40,000[5]	1,700,000
2. Procure and install 200 SolarChill A units in each of the three countries	Inv	Procure and install 200 SolarChill A units in each of the three countries	Large scale demonstration experience and cross-comparison of currently available Solar Chill A products, under field conditions in representative health centers to ensure that safe vaccine storage conditions are met	1,073,000	615,000
3. Procurement and testing of 15 (total of 45) Solar Chill B units in each of the three countries	Inv	Increased experience of Solar Chill B	Testing results of SolarChill B under field conditions in a variety of small institutional and light commercial	400,000	600,000

[5] The US$40.000 and the corresponding activities were originally included in the Project Management Costs but are now presented as an independent activity under component 1"

			applications		
4. Marketing and Information Dissemination	TA	Info re Solar Chill widely available, increased production and orders for solar chill products	Marketing campaign, business plans, increased awareness and interest in SolarChill	200,000	0
5. Technology Transfer activities	TA	Solar Chill A and B production capacity promoted in Latin America and Africa	In cooperation with and contingent upon MLF and bilateral country program HCFC and HFC phase out activities, facilitation of partnerships and licensing agreements, including assessment of potential partner companies by an unbiased engineer and business specialist. Preparation of a tech transfer packet.	680,000	2,627,900
	(select)				
	(select)				
	(select)				
	(select)				
	(select)				
Project management Cost[6]				190,000	120,000
Total project costs				2,583,000	5,662,000

C. INDICATIVE CO-FINANCING FOR THE PROJECT BY SOURCE AND BY NAME IF AVAILABLE, ($)

Sources of Cofinancing for baseline project	Name of Cofinancier	Type of Cofinancing	Amount ($)

[6] Same as footnote #3.

National Government	Project Government	Unknown at this stage	450,000
Other Multilateral Agency (ies)	Montreal Protocol Multilateral Fund	Grant	667,948
Others	Solar Chill Partners	Unknown at this stage	1,700,000
GEF Agency	UNEP	In-kind	230,000
Bilateral Aid Agency (ies)	GIZ	Grant	1,060,000
Bilateral Aid Agency (ies)	GIZ	In-kind	60,000
Private Sector	Palfridge	Grant	1,434,952
Foundation	DTI	Grant	60,000
(select)		(select)	
(select)		(select)	
Total Cofinancing			5,662,900

D. GEF/LDCF/SCCF RESOURCES REQUESTED BY AGENCY, FOCAL AREA AND COUNTRY[1]

GEF Agency	Type of Trust Fund	Focal area	Country name/Global	Project amount (a)	Agency Fee (b)[2]	Total c=a+b
UNEP	GEF TF	Climate Change	Colombia, Kenya, Swaziland	2,583,000	258,300	2,841,300
(select)	(select)	(select)				0
(select)	(select)	(select)				0
(select)	(select)	(select)				0
(select)	(select)	(select)				0
(select)	(select)	(select)				0
(select)	(select)	(select)				0
(select)	(select)	(select)				0
(select)	(select)	(select)				0
(select)	(select)	(select)				0
Total Grant Resources				2,583,000	258,300	2,841,300

[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

[2] Please indicate fees related to this project.

PART II: PROJECT JUSTIFICATION

A. DESCRIPTION OF THE CONSISTENCY OF THE PROJECT WITH:

A.1.1 THE GEF focal area/LDCF/SCCF strategies:

This project is a resubmission. This project idea was approved in GEF IV under the climate change funding window in response to the Poznan Strategic Programme for technology Transfer. At the time the World Bank was the Implementing Agent. The World Bank subsequently withdrew from the project and the SolarChill Partnership invited UNEP to be the new implementing agent for the project. The World Bank had reached agreements with the participants as to how to proceed and have the in-country arrangements agreed upon. But establishing a global project or a multi-regional project in the Bank context has proven to be extremely difficult. UNEP implements regional and global projects and so this is not a challenge and will not hold the project up. Although submitted in a GEF V template funding for this project has been reserved for this project from the Poznan Technology Transfer window. The target of this window is to promote, demonstrate and deploy low carbon technologies in recipient countries. The objective of this project is consistent with this goal.

The SolarChill Partners note that the original submission included co-financing, $1,600,000 in expenditures by the SolarChill Consortium from the inception of the SolarChill project in 2000 till November, 2009. Since November, 2009, the SolarChill Partners spent an additional $305,000 on various SolarChill development tasks, including activities related to the subsequently suspended GEF SolarChill Projects in Colombia and Kenya.

A.1.2. FOR PROJECTS FUNDED FROM LDCF/SCCF: THE LDCF/SCCF ELIGIBILITY CRITERIA AND PRIORITIES:

N/A

A.2. NATIONAL STRATEGIES AND PLANS OR REPORTS AND ASSESSMENTS UNDER RELEVANT CONVENTIONS, IF APPLICABLE, I.E. NAPAS, NAPS, NBSAPS, NATIONAL COMMUNICATIONS, TNAS, NIPS, PRSPS, NPFE, ETC.:

In all three countries, Swaziland, Colombia and Kenya, the Government (both Ministry of Health and Ministry of Environment) are interested in developing their experience with SolarChill A vaccine refrigerators as one SolarChill vaccine cooler can service up to 30,000 people. The recipient countries are also interested in exploring the potential benefits of SolarChill B refrigerators.

According to the Kenya Private Sector Alliance (KEPSA), Kenya's Rural Electrification Programme plans to "…invest Kshs. 180 million ($1.98 million) to provide solar electricity generators to 74 public institutions such as secondary schools, boarding primary schools, health centers and dispensaries." The Kenyan ministry has stated a strong interest in development of alternative energy resources, given the increase in oil prices and infrastructure costs to expand the electricity grid.

Colombia has also undertaken efforts to increase their reliance on renewable energy resources, despite the country's recent dramatic increase in oil production. Over 30 percent of Colombia's energy consumption in 2008 was derived from hydroelectric power, but increasing access to solar energy in off-the-grid rural areas is becoming a priority. Thus, there is great interest in testing the SolarChill technology for use in rural clinics and homes.

Palfridge is the sole refrigeration equipment manufacturer in Swaziland. It is locally owned and employs about 640 people. The company, with the support of the government and funding from GIZ, has already converted its production facilities to working with hydrocarbon refrigerants. Palfridge has also designed and developed its own prototype of SolarChill vaccine coolers and food refrigerators. The market uptake of hydrocarbon refrigeration equipment in general, and that of SolarChill in specific, is paramount to Palfridge's business strategy.

PROJECTOVERVIEW:

B.1. DESCRIBE THE BASELINE PROJECT AND THE PROBLEM THAT IT SEEKS TO ADDRESS:

SolarChill is a breakthrough technology providing solar powered refrigeration and by-passing the need for lead storage batteries. The technology uses hydrocarbons instead fluorocarbons in the insulation and the refrigerant cycle. It is therefore both ozone and climate friendly and is in line with the aims of the Montreal Protocol, and the United Nations Framework Convention on Climate Change (UNFCCC).

The objectives of the current submission are:

1. To determine technical performance, user compliance, and potential market demand for SolarChill technology through large scale field tests of the SolarChill vaccine refrigerators (SolarChill A) and pilot introduction of the SolarChill household and light commercial refrigerators (SolarChill B) in three developing countries.
2. To support the modification and optimization of the SolarChill technology developed in Swaziland.
3. To interest potential manufacturers globally, and more specifically in Africa and Latin America, in the SolarChill technology through: (a) a market analysis of the commercial potential of the technology; (b) preparation of a technology transfer package; (c) conduct of technology transfer workshops and outreach initiatives aimed at manufacturers and potential buyers.
4. Support governments in countries with refrigeration production capacity to develop and implement their HCFC Phase-out Management Plan (HPMP) (Swaziland & Colombia), by promoting the capacity to uptake SolarChill production as an additional benefit of converting from fluorocarbons to hydrocarbons.

Using sample off-grid regions in Colombia, Kenya, and Swaziland, the project seeks to enhance the cold chain for the preservation of vaccines and food with environmentally friendly, solar, and lead-free battery storage vaccine coolers and food refrigerators.

Until recently, the market for vaccine refrigerators for remote areas without reliable electricity has been dominated by kerosene or propane operated units. These refrigerators present a number of problems related to operating costs, effectiveness in maintaining appropriate temperatures, and environmental impact. In remote areas, obtaining kerosene or propane on a timely and consistent basis has proven to be quite challenging, as well as expensive.

From an environmental perspective, current vaccine refrigerators primarily use hydrofluorocarbons (HFCs) based refrigerants, and hydrochlorofluorocarbons (HCFCs) based blowing agents for foam insulation. Both HFCs and HCFCs are powerful greenhouse gases (GHGs), and HCFCs also contribute to ozone depletion.

In addition, kerosene and propane vaccine refrigerators result in greenhouse gas emissions through normal operation and emit toxic fumes that are dangerous to humans when in enclosed spaces. These refrigerators are also more susceptible to catching fire compared to electric and solar refrigerators. Finally, solar vaccine refrigerators currently on the market rely on lead-acid batteries to store energy. The batteries are typically the weakest link in solar direct drive systems in developing countries, as they break down frequently, especially in hot climates. Batteries are also vulnerable to theft and pose an environmental hazard upon disposal.

SolarChill is a technology- and product-centered initiative with the mission to create a refrigerator design that mitigates these problems. The SolarChill technology uses solar power to run a direct current (DC) hydrocarbon-based refrigerator compressor. Hydrocarbons, used as refrigerants, are safe for the ozone layer and for the climate. The compressor drive refrigerant cycle freezes an ice bank in the ice storage compartment of the SolarChill unit. The ice bank, in turn, maintains the required temperatures in the vaccine or food storage compartment. The thick insulation enables the unit to maintain the required temperatures for four to five days, even without any sunlight, so batteries are not needed in the design.

SolarChill offers efficient use of limited solar energy and is free of emissions that may threaten human health or the environment. Finally, the SolarChill consortium has adapted a conventional, mass produced

freezer cabinet in order to reduce the cost of units in comparison to other solar vaccine refrigerators currently on the market, which are typically custom made. Following the creation of the 50 liter chest model, 'SolarChill A', a 100 liter upright refrigerator model intended for food storage, 'SolarChill B', was developed using the same technology. SolarChill B is intended for food preservation in areas with unreliable electricity. This upright model will not need to undergo the same level of rigorous testing and certification standards required for WHO PQS vaccine refrigerators, and will target the potentially large household and light commercial market segments. Thus, the introduction and advancement of both SolarChill models represents a strong value proposition for manufacturers and investors to consider for multiple market segments.

The current project aims to accomplish: (a) large scale demonstration of the SolarChill vaccine cooler technology in Colombia, Swaziland and Kenya; (b) collection and interpretation of relevant technical data; (c) completion of the development and field testing of the SolarChill food refrigerator; (d) wide scale dissemination of information about the technology on a country and regional level to industry leaders and policy makers; (e) web based information sharing, including technical webinars; (f) and support to individual manufacturers in preparing business plans and technical blue prints for SolarChill production; (g) and through UNEP support to the governments of Colombia and Swaziland with the development and implementation of their HPMP.

One of the project goals is to provide meaningful field test experience to position and advance this SolarChill technology in developing country markets. Performance and user information obtained through the field tests will be incorporated into a broad marketing, advocacy and communication plan for SolarChill. In addition, a business plan will be drafted which documents the research, development and commercialization activities and costs undertaken by Palfridge to convert their manufacturing processes to be HFC/HCFC free and bring a SolarChill A vaccine refrigerator to market. The publishing and sharing plan will include: (a) a thorough revision and technical update of the SolarChill website; (b) the development and sharing of a thorough business plan inclusive of a technology transfer package, including all the technical issues that a manufacturer would face for manufacturing and servicing the units; (c) holding of country and regionally based technology sharing information workshops; (d) direct information outreach to country and regional manufacturers, and direct engagement with interested parties; (e) exhibition of the technology at opportune international events; (f) market research to document the potential market for the SolarChill technology in various applications.

In Kenya, there are no manufacturers, so there is a need to attract manufacturers from the region. In Colombia, there are several refrigeration manufacturers. Currently they are all using fluorocarbons. However Vestfrost & DTI are testing SolarChill B in Colombia are in discussion with Manufacturers over their interest in production. The Danish Government interested in funding more of this work together with this project and early discussions on that have begun. In Swaziland, Palfridge have converted their production line to hydrocarbon refrigerants at a cost of 1.5 million dollars over two to three years. (It can be as high as USD 5 million depending on the size of the plant.) An additional $667,000 will be spent to convert the insulation foam blowing process to hydrocarbons, as co-financing from the MLF, under this project. The SolarChill technology transfer, as demonstrated by the Palfridge example, can be a feasible component of an overall conversion of a production facility.

B. 2. INCREMENTAL /ADDITIONAL COST REASONING: DESCRIBE THE INCREMENTAL (GEF TRUST FUND) OR ADDITIONAL (LDCF/SCCF) ACTIVITIES REQUESTED FOR GEF/LDCF/SCCF FINANCING AND THE ASSOCIATED GLOBAL ENVIRONMENTAL BENEFITS (GEF TRUST FUND) OR ASSOCIATED ADAPTATION BENEFITS (LDCF/SCCF) TO BE DELIVERED BY THE PROJECT:

GEF support is needed to accelerate awareness and final uptake of this technology that has been progressing slowly over the past decade, so that it moves rapidly into developing country markets. Support from GEF will not only provide sufficient support and demonstration of the technology to be able to optimize SolarChill products for developing countries, but it will also foster product adoption and potentially stimulate additional country, donor and manufacturer interest in the technology through local procurement and/or manufacturing. Without the GEF support, this technology would proceed at a very slow pace toward expanded adoption and commercialization. GEF funding will help to ensure optimal

product performance is achieved and the quality and environmental benefits receive global exposure to stimulate product adoption and ultimately help to eliviate environmental hazards associated with refrigeration.

B.3. 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) OR ADAPTATION BENEFITS (LDCF/SCCF). AS A BACKGROUND INFORMATION, READ MAINSTREAMING GENDER AT THE GEF."::

Health and social benefits of SolarChill: Improved vaccine storage and reduced food spoilage offers obvious and substantial economic and health benefits to a community. SolarChill technology also presents new commercial opportunities such as, refrigeration in small commercial enterprises, agricultural vaccination, dairy farming and fisheries. Vaccines are a major focus of many donor programmes to support development and improvements in the health of rural communities. SolarChill technology will be able to store vaccines while relieving the need to worry about fuel supply. This will be a considerable benefit in the promotion of rural community health.

Environmental benefits: in addition to GHG emissions reduction, treated in greater depth below, SolarChill technology eliminates the need for lead batteries, which are an environmental and human hazard in both the industrialized and developing world.

The global environmental benefits of this technology are significant: (a) SolarChill eliminates the use of ozone-depleting substances such as HCFCs in the insulation & foam blowing; (b) SolarChill eliminates the use of potent high GWP, greenhouse gas refrigerants, such as HFCs; (c) SolarChill eliminates the emissions of greenhouse gases from burning kerosene and propane now used to operate off -grid vaccine coolers and refrigerators; (d) and substitution of SolarChill units for equipment that run on fuel reduce emissions associated with delivery of kerosene and propane to remote areas. (e) SolarChill technology. Emissions reduction from this project will include only points c to give an extremely conservative estimate.

1. SolarChill A

a. Project Direct Impacts

Total number of off-grid vaccine cooler	100,000
Production of SolarChill by project partners	
Vestfrost	800
Palfridge	200

This project aims to support Palfridge in making its SolarChill A WHO compliant enabling governments and donors to start using these products in their programmes. The Gates foundation, UNICEF and other donors and government agencies would be able to procure these fridges for their programmes. Since UNICEF procured 200 vaccine fridges for one programme in Haiti, we assume that this will at least have the ability to double demand for Palfridge SolarChill. We assume in years 2 and 3 Palfridge will sell at least 400 SolarChill A units per year.

Annual savings from not using Kerosene through sale of 400 SolarChill A units, when each unit saves 0.940tCO2 per and is estimated to have a life of 15 years:

Project direct emission reductions

= 0.940tCO2 savings x 400 units x 15 years = 5,640tCO2

b. Project Indirect Impact

If the project makes design WHO compliant and brings down first costs the project assumes all off-grid vaccine fridges will eventually be replaced by SolarChill. This does not take into account the increase in total numbers of off grid vaccine fridges that could result from the convenience of these systems over

kerosene or propane. If the project assumes a conservative 10% causality factor then the project could claim the following indirect emission reductions

Project Indirect emission reductions

= 0.940tCO savings x 98,600 units x 15 years x 10% causality = 139,026tCO2

2. SolarChill B

c. Project Indirect Impact

This project aims to support manufacturers in their business & technical planning for conversion to SolarChill, where there is interest and where they have support from the MLF for HCFC and HFC phase out. This is expected to have an impact on the production of SolarChill B. DTI estimates there are approximately 2,000,000 off-grid fridges for food storage in developing countries. As above this project assumes: (a) the convenience and price of SolarChill B will be sufficient to replace all these fridges over time; (b) but makes no assumptions about the expansion of this market despite the factors of convenience and . Assuming again a 15 year lifespan for the units and a 1% causality factor from this project give the following indirect emission reductions

Project Indirect emission reductions

= 0.94tCO2 savings x 2 million units x 15 years x 1% causality = 282,000tCO2

The total emission reductions estimated from this project are:

Direct	5,654tCO2
Indirect	421,026tCO2
Total	**426,680tCO2**

These are rough estimates, and will be refined during the PPG phase, and therefore emissions reductions from this project maybe adjusted up or down in the CEO endorsement template.

B.4. INDICATE RISKS, INCLUDING CLIMATE CHANGE RISKS THAT MIGHT PREVENT THE PROJECT OBJECTIVES FROM BEING ACHIEVED, AND IF POSSIBLE, PROPOSE MEASURES THAT ADDRESS THESE RISKS TO BE FURTHER DEVELOPED DURING THE PROJECT DESIGN:

A major risk and opportunity exist simultaneously in the current global economic environment. Whilst this technology represents an opportunity in the form of mid to long term energy and cost savings for users (as well as governments who would see an overall long term reduction in energy demands, purchase of foreign oil, and lowering of foreign exchange reserves), a major risk could be that the market and potential technology adopters will not have the capital to hand with which to support switch over from conventional technology and initial investment in the new technology, resulting in slow uptake of adoption and manufacture of product. A significant challenge to the uptake of the SolarChill technology is the requirement to have existing factories that currently use HCFCs and HFCs in their cooling products convert to using hydrocarbons. Hydrocarbons are flammable and require specific safety procedures and equipment. Though their flammability is not an impediment (there are nearly 500 million hydrocarbon domestic refrigerators in the world today and it is estimated that by 2020 75% of global refrigerator production will be using hydrocarbons), the conversion process does require capital investment. However, the timing of this project is good, and significant risk can be averted because the accelerated HCFC phase-out of the Montreal Protocol, currently in force in developing countries, will stimulate the conversion of existing facilities from fluorocarbons to hydrocarbons, and it will also stimulate the use of hydrocarbons in new factories. In the course of the project, the National Ozone Units in the countries involved with manufacturing sectors i.e. Colombia, and Swaziland (home of Palfridge Refrigeration) can be contacted to see if leveraging of the Montreal Protocol Multilateral Fund (MLF) can be further spurred with specific HCFC Phase out projects through the HCFC Phase out Management Planning (HPMP) process, currently being accelerated in developing countries.

B.5. IDENTIFY KEY STAKEHOLDERS INVOLVED IN THE PROJECT INCLUDING THE PRIVATE SECTOR, CIVIL SOCIETY ORGANIZATIONS, LOCAL AND INDIGENOUS COMMUNITIES, AND THEIR RESPECTIVE ROLES, AS APPLICABLE:

SolarChill Project Partnership: The SolarChill initiative was formed in 2000 by a consortium of organizations, including Greenpeace International, Partners for Appropriate Technology in Health (PATH), UNICEF, UNEP, WHO, GIZ Proklima, and the Danish Technological Institute (DTI). The first generation of SolarChill was demonstrated at the World Summit on Sustainable Development in Johannesburg in 2002. Since then, second generation prototypes were built and tested in Cuba, India, Indonesia and Senegal. Sufficient lessons were learned regarding the technology to allow a third and fourth generation of SolarChill vaccine refrigerators for large scale testing. Since these products were designed to meet the latest WHO Performance, Quality and Safety (PQS) standards for vaccine refrigerators, it is anticipated that they will present a unique opportunity for health ministries and clinics in the developing world to take advantage of the latest in solar energy and refrigeration technology.

Currently there are three factories producing SolarChill vaccine coolers: Vestfrost (Denmark), Palfridge (Swaziland) and Haier (China). Palfridge also produces SolarChill food refrigerators, and have begun production since development of this project began. Palfridge has benefitted from GIZ funding and together with their own investment converted the refrigerant cycle of their entire production line of cooling equipment (fridges and freezers) to hydrocarbons. Palfridge has also modified the original vaccine cooler SolarChill technology, and developed a SolarChill food refrigerator model. The Palfridge SolarChill A model has not yet received WHO certification and requires further optimization.

Palfridge has made progress in modifying the European technology to work at higher ambient temperature found in tropical climates, and in reducing costs of production.

This resubmission seeks, in part, to capitalize on these developments, and help Palfridge complete conversion of their production line. Part of this conversion will include Montreal Protocol Multilateral Fund co-funding to convert from HCFC to hydrocarbons as the insulation foam blowing agent in the Palfridge refrigeration production line.

Technology Transfer Activities: for the most part, SolarChill is an open sourced technology. The current PIF is premised on the fact that refrigeration equipment manufacturers will first have to convert their fluorocarbon based production facilities to work with hydrocarbons, that is to (a) substitute HCFC or HFC refrigerants with hydrocarbons; and (b) to substitute HCFCs with hydrocarbons in the insulation foam blowing. The project assumes that it only makes sense for a manufacture to produce SolarChill after this initial conversion to hydrocarbons.

Recognizing the large upfront costs associated with this conversion, the SolarChill consortium aims to work with the MLF, governments & manufacturers undergoing HCFC and HFC conversion to stimulate production of SolarChill units. This will start with developing a strategic business case for governments and manufacturers to embrace the SolarChill technology. The GEF SolarChill Project will build the case for companies to invest in SolarChill, sensitize country policy-makers of SolarChill opportunities, and support companies with their business and technical plans to produce SolarChill

B.6. OUTLINE THE COORDINATION WITH OTHER RELATED INITIATIVES:

This project is placed within the context of the aims of the Montreal Protocol, which has moved from phasing out CFCs to phasing out HCFCs, and in the process discourages the use and uptake of high GWP HFCs. The widespread adoption of hydrocarbons is one viable approach to decreasing HCFCs and HFCs. As a refrigerant, hydrocarbons pose few risks to the environment. They are non-ozone depleting and have very low global warming potential. This project is also aligned with the World Health Organization's (WHO) adoption of new standards for vaccine refrigeration systems, which will help drive adoption of this technology.

The SolarChill Consortium has already establish contact with GIZ and UNDP/MLF to discuss collaboration between this project and their work with Palfridge support production line conversion. This project depends on this work being complete as a contribution towards the objectives of this project. As

such they will be fully consulted during project development to sure optimal fit of this project with their work, to avoid duplication, and the project development team will agree institutional arrangements to ensure full coordination between these project during project implementation.

C. DESCRIBE THE GEF AGENCY'S COMPARATIVE ADVANTAGE TO IMPLEMENT THIS PROJECT: UNEP (DTIE) has been working with the SolarChill initiative since its inception and thus has a full understanding of the technology as well as it potential social, health and environmental benefits. UNEP is working with the Governments of Swaziland and Colombia to develop and implement their HCFC Phase out Management Plans, which means companies have to phase out the use of HCFC's in all their production processes and is an important foundation for SolarChill production. UNEP has ten years of experience in cooperatively working with the SolarChill Partners, who will be key to the execution of the GEF SolarChill project. UNEP is knowledgeable of the environmental and energy issues of the collaborating countries, which will serve as recipients of the refrigerators and contributors to the projects overall objectives. UNEP is best placed to implement regional projects, has the wherewithal (through its OzonAction group of regional offices and networks) to work with NOUs to leverage the Multilateral Fund to the Montreal Protocol to help with HCFC phase out and conversion of manufacturing plants, and the experience required in the dissemination of technical information, to be instrumental in the technology dissemination phase of the GEF SolarChill Projects.

C.1 INDICATE THE CO-FINANCING AMOUNT THE GEF AGENCY IS BRINGING TO THE PROJECT: UNEP is implementing projects in Colombia and Swaziland to support the Governments in drafting and enforcing legislation to phase out the use of HCFC's. This is an important foundation and prerequisite for SolarChill production. Activities that contribute to this project in achieving its objective include making ODS regulations made available in both countries; training customs, law enforcement and technician to enforce and comply with these ODS regulations. The cost of these activities is USD 230,000.

C.2 HOW DOES THE PROJECT FIT INTO THE GEF AGENCY'S PROGRAM (REFLECTED IN DOCUMENTS SUCH AS UNDAF, CAS, ETC.) AND STAFF CAPACITY IN THE COUNTRY TO FOLLOW UP PROJECT IMPLEMENTATION:

UNEP has a Ozone Action Branch. One of the functions of the Branch is to help countries phase out the use of HCFC's as agreed under the Montreal Protocol. HCFC's are widely used as refrigerants and for blowing insulation foam for refigeration systems. This Branch has officers present in all regional Offices of UNEP including Panama and Nairobi, from where they service projects in their respective regions including Swaziland, Kenya and Colombia. The expertise of these officers includes a technical understanding of production systems for refigeration equipment, refrigeration equipment and options for HCFC phase out. This expertise is important to for this project since it makes more business sense for companies to produce SolarChill if they are planning to phasing out HCFC's. The work of the Ozone Action Branch fits under UNEP's 2012-2013 Programme of Work, expected accomplishment "Increased capacities of States and other stakeholders to assess, manage and reduce risks to human health and the environment posed by chemicals and hazardous waste" .

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 template. For SGP, use this OFP endorsement letter).

NAME	POSITION	MINISTRY	DATE *(MM/dd/yyyy)*
Dr. Ayub Macharia	Director General National Environment Management Authority	**MINISTRY OF ENVIRONMENT AND MINERAL RESOURCES KENYA**	**07/27/2011**
Mr. J.D. Vilakati	Executive Director/GEF Focal Point	**SWAZILAND ENVIRONMENT AUTHORITY**	**09/09/2011**
Mr Carlos Castano Uribe	Vice Minister of Envrionment	**MINISTRY OF ENVRIONMENT, HOUSING & TERRITORIAL DEVELOPMENT**	**09/20/2011**

B. GEF AGENCY(IES) CERTIFICATION

This request has been prepared in accordance with GEF/LDCF/SCCF policies and procedures and meets the GEF/LDCF/SCCF criteria for project identification and preparation.					
Agency Coordinator, Agency name	**Signature**	**DATE** *(MM/dd/yyyy)*	**Project Contact Person**	**Telephone**	**Email Address**
Maryam Niamir- Fuller, Director, GEF Coordination Office, UNEP		09/28/2011	Geordie Colville	+254207624795	geordie.colville@unep.org