



PROJECT IDENTIFICATION FORM (PIF)¹

PROJECT TYPE: Full-sized Project

TYPE OF TRUST FUND: GEF Trust Fund

PART I: PROJECT IDENTIFICATION

Project Title:	Promoting Energy Efficiency for Non-HCFC Refrigeration and Air Conditioning (PENHRA)		
Country(ies):	Indonesia	GEF Project ID: ²	4899
GEF Agency(ies):	UNDP	GEF Agency Project ID:	4945
Other Executing Partner(s):	Ministry of Energy and Mineral Resources (MEMR)	Submission Date:	19 March 2012
		Resubmission Date:	03 July 2012
		Resubmission Date:	16 January 2013
GEF Focal Area (s):	Climate Change	Project Duration (Months)	36
Name of parent program (if applicable):		Agency Fee (\$):	476,978
• For SFM/REDD+ <input type="checkbox"/>			

A. FOCAL AREA STRATEGY FRAMEWORK³:

Focal Area Objectives	Expected FA Outcomes	Expected FA Outputs	Trust Fund	Indicative Grant Amount (\$)	Indicative Co-financing (\$)
CCM-2	Outcome 2.1: Appropriate policy, legal and regulatory frameworks adopted and enforced	Output 2.1: Energy efficiency policy and regulation in place	GEFTF	1,120,822	6,562,500
	Outcome 2.2: Sustainable financing and delivery mechanisms established and operational	Output 2.2: Investment mobilized Output 2.3: Energy savings achieved	GEFTF	3,650,000	18,000,000
Sub-Total				4,770,822	24,562,500
Project Management Cost ⁴			GEFTF	250,000	437,500
Total Project Cost				5,020,822	25,000,000

B. PROJECT FRAMEWORK

Project Objective: Significantly improved energy efficiency of refrigeration and air conditioning (RAC) equipment and appliances manufactured and used in Indonesia						
Project Component	Grant Type	Expected Outcomes	Expected Outputs	Trust Fund	Indicative Grant Amount (\$)	Indicative Co-financing (\$)
1. Policy & Institutional Frameworks for the Refrigeration and AC (RAC) Industry	TA	1. Enforced policies, laws and regulatory support mechanism to ensure manufacturing and sale of certified quality energy efficient (EE) RACs in Indonesia	1.1: Developed policies and regulations on the local manufacturing and import of EE RACs 1.2: Established and effectively enforced mandatory national standards (MEPS) for RACs 1.3: Inspection and certification system established and	GEFTF	500,000	2,062,500

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.

⁴ GEF will finance management cost that is solely linked to GEF financing of the project. PMC should be charged proportionately to focal areas based on focal area project grant amount.

			operational for all imported and locally manufactured RACs sold in Indonesia 1.4: Established RAC industry-wide coordination and cooperation system for EE RAC technology 1.5: Consumer assistance and information dissemination service center established and operational				
2. Public awareness of benefits of energy efficient RACs	TA	2. Increased awareness in users of energy efficiency benefits for RACs in Indonesia	2.1: Completed EE RACs retailer assistance program 2.2: Completed consumer education campaign on the use and benefits of EE RACs 2.3: Completed public relation campaigns for EE RAC manufacturers, and distributors	GEFTF	600,000	4,500,000	
3. Promoting investments for EE enhancements in the RAC Industry	Inv.	3a. Enhanced capacities of RAC manufacturers to produce EE RACs 3b. Increased production and sale of EE RACs in Indonesia	3a.1: Designed and implemented financial assistance program 3b.1: Modified and optimized production lines for EE RAC manufacturing installed and operational	GEFTF	3,000,000	14,625,000	
4. Technical assistance and training for RAC industry	TA	4. Enhanced knowledge and capacity on EE RAC technologies in the RAC industry	4.1: Documented and made available information on technically and economically feasible EE technologies that can be applied by local RAC manufacturers 4.2: Completed capacity development programs for local RAC manufacturers. 4.3: Regularly updated information on EE RAC market.	GEFTF	670,822	3,375,000	
Sub-Total						4,770,822	24,562,500
Project Management Cost ⁵				GEFTF	250,000	437,500	
Total Project Costs						5,020,822	25,000,000

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

Sources of Co-financing	Name of Co-financier	Type of Co-financing	Amount (\$)	Main Project Contribution
National Government	Ministry of Energy & Mineral Resources	In-kind	1,320,000	Component 1 and Project Management
National Government	Ministry of Energy & Mineral Resources	In-cash	2,680,000	Components 2 & 4
National Government	Ministry of Environment	In-cash	8,953,902	All Components
Private Sector	The beneficiary enterprises under HPMP and proposed GEF project*	In-cash	10,577,200	Component 2 and 3
Private Sector	The beneficiary enterprises under HPMP and proposed GEF project*	In-kind	718,898	Components 1 and 4
Government	Government of Australia	Grant	300,000	Component 1
Government	USA Government	Grant	300,000	Component 4

⁵ Same as footnote #3

GEF Agency	UNDP	In-kind and in-cash	150,000	Project Management
Total Co-financing			25,000,000	

*RAC equipment manufacturers will be selected during project development/preparation period (PPG phase).

D. GEF/LDCF/SCCF/NPIF RESOURCES REQUESTED BY AGENCY, FOCAL AREA AND COUNTRY¹ N.A

PART II: PROJECT JUSTIFICATION

A. DESCRIPTION OF THE CONSISTENCY OF THE PROJECT WITH:

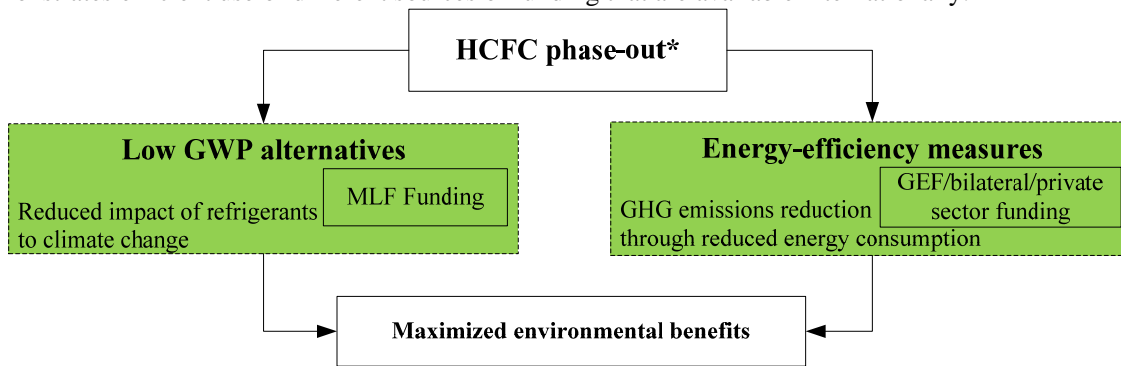
A.1.1 the GEF focal area/LDCF/SCCF strategies NPIF Initiative:

The project objective of improved energy efficiency of Refrigeration and Air conditioning (RAC) equipment and appliances manufactured and used in Indonesia will be achieved with the fulfillment of the following focal area outcomes: Outcome 2.1- Appropriate policy, legal and regulatory frameworks adopted and enforced for both manufacturing of Refrigeration and Air Conditioning (RAC) equipment and appliances; Outcome 2.2 - Sustainable financing and delivery mechanisms established and operational for OEM (manufacturers) to adapt to the change in policy and regulatory frameworks. These are in line with the GEF-5 climate change mitigation focal area objectives CCM-2. The goal of the project is reduction of greenhouse gas (GHG) emissions during the use phase of air conditioners (ACs) and refrigeration equipment in Indonesia.

This project is a unique demonstration of the combining and sequencing different sources of funding that target specific goals. The Multilateral Fund (MLF) for implementation of the Montreal Protocol has provided grant funding to Indonesia for compliance with the phase-out schedule for Hydrochlorofluorocarbons (HCFCs), through implementation of a performance-based HCFC Phase-out Management Plan (HPMP). HCFCs are used as refrigerants in the air conditioning and refrigeration industry segments⁶. Under the HPMP, these industry segments in Indonesia will phase-out HCFCs by 2015, by converting to non-HCFC technologies. During this changeover process, the RAC manufacturing sector has a one-time window of opportunity for technology conversions in conjunction with the phasing out of HCFCs, involving potentially intensive capital investments considering the long economic life of such investments. During this changeover phase, enterprises will need to make significant additional investments to enhance product design to produce improved energy efficiency equipment. The required additional costs must be borne by the enterprise and may need additional financial assistance from bank or financial institutions, since these additional costs for energy-efficiency enhancements are not eligible for funding through MLF. Thus, the basic requirements to meet the HCFC phase-out are met through the technical and financial assistance from MLF, while, GEF funding requested in the proposed project would facilitate the realization of energy efficiency benefits while transitioning to non-HCFC technologies. Modifications in the existing production lines will be done to accommodate the enhanced energy efficiency features of specific RAC components that will make use of the new non-HCFC refrigerants. Collectively, this combination and sequencing of funding sources will enable the RAC industry in Indonesia to simultaneously adapt low carbon technologies that enhance system energy efficiency performance and lead to maximize environmental benefits of the changeover. While transitioning from HCFCs to non-ODS alternatives under the HPMP, technical interventions to introduce safe low-GWP alternatives (reduced impact of refrigerants to climate change) and to improve energy efficiency (reduced GHG emissions through reduced energy consumption) can be most suitably and cost-effectively accomplished if implemented simultaneously with HPMP implementation timeframe (refer to Figure 1). Timely interventions to introduce optimum low-GWP, safe and energy-efficient alternative technologies, thus would lead to maximization of environmental benefits through significant direct and indirect CO₂ emission reductions in Indonesia in the context of proposed project, HPMP implementation and Indonesia's voluntary CO₂ emission reduction targets. Thus, the proposed project

⁶ Refrigeration includes commercial (< 12 HP) units such as retail food service and kitchen equipment, walk-in coolers/freezers and small commercial cold rooms. Air conditioning includes those used in residential (up to 3 HP), light commercial (5 - 30 HP) and commercial (35 HP and above) types. The common refrigerant used in all these equipment is HCFC (R-22).

enables Indonesia's RAC industry to transform towards low carbon green growth pathways and also demonstrates efficient use of different sources of funding that are available internationally.



* It is inevitable to design interventions with dual objectives of ozone and climate protection

Figure 1: Pictorial description of anticipated funding flow for HCFC phase-out along with overall objective of maximizing climate benefits

A.1.2. For projects funded from LDCF/SCCF: the LDCF/SCCF eligibility criteria and priorities:
N.A

A.1.3. For projects funded from NPIF, relevant eligibility criteria and priorities of the Fund: 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.:

Energy efficiency is a priority of the Indonesian government as subsidies are being reduced for fossil fuel. There are national policies that focus of energy efficiency including demand side management, Energy Efficiency Standards and Labeling (ES&L) etc. Some of the policies⁷ along with key targets are as mentioned below.

- National Master Plan of Energy Conservation (RIKEN, 2005): to decrease energy intensity at least 1% per year until 2025.
- Presidential Decree No 5/2006 (National Energy Policy): to achieve energy elasticity less than 1 in 2025.
- Law No 30/2007 on Energy: emphasis of (a) government, energy producers and energy consumer are responsible for the implementation of energy conservation (b) energy conservation is required from upstream to downstream activities (c) government will provide incentive and disincentive for the implementation of energy efficiency and conservation.
- Government Regulation on Energy efficiency No. 70/2009: (a) obligation for large energy consumer to conduct energy audit and designate energy manager, and (b) application of energy efficiency labeling for home appliances.
- Presidential Instruction no. 13/2011 on Water and Energy Saving: obligation to all government-owned building, equipment and activities to save 20% energy consumption compared to the average consumption level in February 2011.

The Directorate General of New-Renewable Energy and Energy Conservation (Indonesia) (DGNREEC) was established in August 2010. From March 2011, it began enforcing provisions under Government Regulation 70/2009, which requires that all entities with energy consumption more than 6,000 tonnes of oil equivalent per year shall establish an energy efficiency program, appoint an energy manager within the organization, conduct regular energy audits, and implement and report the audit recommendations. DGNREEC

⁷ Information was sourced from <http://eneken.ieej.or.jp/en/data/pdf/491.pdf> (accessed in December 2011).

established the Energy Efficiency and Conservation Clearing House Indonesia (EECCHI), a facility to promote and share best practices knowledge in energy efficiency and conservation.

Furthermore, the recently issued Presidential Regulation No. 61/2011 on National Action Plan to Reduce Green House Gases (RAN-GRK) has set target to reduce GHG emissions of 5.85 million tonnes of CO₂e by 2014 from the implementation of energy-efficient technologies for home appliances. This emissions reduction will contribute to the voluntary national target to reduce 26% of GHG emissions by 2020. This timeline for voluntary emissions reductions will fall during the peak implementation timeframe for compliance with the HPMP Stage-I and Stage-II targets (freeze in HCFC consumption at baseline levels by 2013, 10% reduction from baseline levels from 2015 and 35% reductions from baselines levels from 2020). The technical interventions needed to improve energy efficiency, while converting to safe low-GWP alternatives, could significantly enhance contributions to these voluntary emission reduction targets, if implemented congruently with actions under HPMP.

The proposed project is in line with the above mentioned energy efficiency national policies and specifically helps the government to meet the targets set under National Master Plan of Energy Conservation, Presidential Decree No 5/2006 and National Action Plan in Reducing GHG emissions. Also the proposed project leverages the benefit of co-financing available under HPMP and may influence other donors who may join the project at a later stage. In the context, it is important to understand the background of HPMP.

Background of HPMP: HCFCs are classified as controlled substances under Annex-C Group-I of the Montreal Protocol and are subjected to the adjusted control schedule for Article 5(1) (mostly developing countries) countries i.e. to freeze the consumption at baseline levels from 2013 and reduction of 10% from baseline levels by 2015. To this effect, parties may receive financial assistance from the MLF for the implementation of HCFC Phase-out Management Plans (HPMPs). The adjusted control steps under Montreal Protocol for these parties are: (a) “freeze” of HCFC production and consumption by 2013 (the baseline being the average of 2009 and 2010); (b) reduction of 10% by 1st January 2015; (c) 35% reduction by 2020; (d) 67.5% reduction in 2025; (e) 97.5% reduction by 2030; and (f) 100% phase-out by 2040. HPMP (Stage-I) for Indonesia will result in limiting HCFC consumption levels to the baseline level (average of 2009 and 2010) by 2013 and further reducing 10% to meet the 2015 target. This target is expected to be achieved by Indonesia as it has a good track record with phase-out of Ozone Depleting Substances (ODS). Indonesia has established a comprehensive regulatory framework for controlling ODS and achieved its obligations and controlled use (such as prohibited imports of CFCs, Halons and CTC) since 2008 which was two years earlier than required by the Montreal Protocol. Certainly, implementing the proposed energy efficiency project in parallel with Indonesia’s HPMP will maximize the environmental benefits through reduction of GHG emissions apart from achieving objectives (mainly phase-out of HCFCs) under HPMP.

B. PROJECT OVERVIEW:

B.1. Describe the baseline project and the problem that it seeks to address:

The proposed project baseline consists of the activities, projects and programs on energy efficiency improvements and changeover to non-HCFC refrigerants in the RAC industry that are ongoing and planned in Indonesia. In order to provide incentive for RAC industries in the country to manufacture or to assemble energy-efficient products, the Ministry of Energy and Mineral Resources (MEMR) with Ministry of Finance has implemented import tax reduction for companies that import high-efficiency equipment to the country.

The Directorate General for New and Renewable Energy and Energy Conservation (DG-NREEC) of the MEMR is also a responsible agency for developing and establishing national energy performance standards and labeling. So far minimum energy performance standards (MEPS) are not imposed on any electrical products in Indonesia. Under the proposed project, MEPS will be made mandatory for RAC equipment where locally manufactured and imported units shall qualify the set performance standards. The DG-NREEC has been developing ministerial regulations on national energy standard and labeling for six home appliances, including ACs. Currently, this is being done through the Barrier Removal to the Cost-Effective

Development and Implementation of Energy Efficiency Standards and Labeling (BRESL) Project, which is an ongoing UNDP-GEF regional project implemented in six countries in Asia. Indonesia is one of the participating countries of the BRESL Project. In Indonesia, the implementing partner for the national BRESL activities is the DG-NREEC. In brief, BRESL project focuses on removing barriers for energy efficiency standardization and labeling (ES&L) of home appliances through (1) policy making, (2) capacity building, (3) manufacture support, (4) regional cooperation, and (5) pilot projects. Although it can't be considered as a baseline activity for the proposed project as far as co-financing is considered, the results, experiences and lessons learnt from BRESL can certainly be used as basis for potential incremental activities that may be necessary in PENHRA such as issuance of ES&L regulation for AC⁸, capacity building for ES&L stakeholders in coordination and development of energy standard, technical assistance provided to support AC manufacturers to meet the requirements under ES&L, financing facility to support the manufacturers to implement the ES&L activities and awareness program that will be implemented for consumers, retailers and manufacturers. It should be noted that so far, without the BRESL project in Indonesia, progress on ES&L would have been very slow. As part of BRESL project, the government has already established a database of energy efficient products and has implemented a consumer education scheme. Through the influence of the BRESL project, the government has come up with a procurement scheme to go for energy efficient products. BRESL project also offers training to selected personnel from appliance manufacturing companies regarding ES&L as well as MEPS and enables them to apply the concepts learned in workshops. Such trainings are expected to reduce the barrier related to the inadequate technical know-how in implementing energy efficiency measures when going for ES&L. Separate from BRESL project, the MEMR has allocated budget for a program that involves the implementation of energy efficiency activities such as energy audits, fiscal policies, and regulations focusing ES&L. Specific activities of this program will be subsumed into PENHRA as baseline activities. Such baseline activities will support the achievement of the expected outputs under Component 1, 2 and 4 of PENHRA.

Moreover, to support the implementation of ES&L for ACs, the Japan Government/Japan Partnership Fund has allocated budget to conduct demand-side management study on RACs and to support improvement of a RAC testing facility in Indonesia. Also, the Australian government/AUSAID has been facilitating MEMR to participate in various international knowledge exchange events that aim to strengthen understanding in ES&L policy & institutional development as well as to provide further needed support in the implementation of an ES&L program in Indonesia. The activities from the programs of the Australian and Japanese governments will be considered as baseline activities under PENHRA to support the delivery of expected outputs in Components 1 and 4, respectively. Furthermore, the private sector comprising of beneficiary enterprises of the HPMP and this proposed project will co-finance specific activities of PENHRA to support the achievement of outputs under Components 1, 2 and 4. Among these are the multi-stakeholder discussions on policy and institutional framework, investment needs in companies to improve energy efficiency in RAC system and contribute to market development activities, such as consumer awareness campaign.

Through the coordination work of the Ministry of Environment (MoE) and in close collaboration with the Ministry of Industry (MoI), Indonesia is currently implementing its HCFC Phase-out Management Program (HPMP). The HPMP focuses on extraordinary efforts to curb the momentum of inevitable growth in HCFC consumption in the RAC sector⁹. HPMP activities aim to phase out HCFC use in the manufacturing of refrigeration and air conditioning products and equipment by 2015. Such activities include investment/financial assistance in RAC sectors, policy and regulation, supervision, coordination & monitoring and awareness and capacity building for targeted sectors. About 90% of the HCFC used in Indonesia is in air conditioning and the rest in refrigeration. The use of HCFC for refrigeration is quite low. The manufacturing activities in Indonesia's RAC industry are concentrated in a relatively small number of well-organized enterprises (less than 50). About 65% of the R-22 consumption in manufacturing is concentrated in about 15 large and very well-organized enterprises. HCFC phase-out will be addressed in the

⁸ The type of appliance/equipment covered under the BRESL project in Indonesia are (a) refrigerators (around 187 liters), (b) room air conditioners (12,000 BTU/h capacity; about 1.8 to 3.5 kW power capacity), (c) electric motors (around 4.2 kW capacity), (d) ballasts for FTLs, (e) electric fans (around 70 W capacity), and (f) Compact Fluorescent Lamps (CFL) of 13 W capacity. The room air conditioners typically use HCFC (R-22) as refrigerant.

⁹ The HCFC that is predominantly used in Indonesia is HCFC-22, mainly in the refrigeration and air conditioning sector, apart from other sectors such as foams, firefighting and solvents.

HPMP through technology conversions in about 48 enterprises that belong to various RAC sub-sectors in Indonesia, **and this will include technology conversion, modification of production lines from HCFC to non-HCFC technology that would be carried out at these enterprises.** A total funding of US\$ 8,953,902 has been approved by Multilateral Fund for covering eligible incremental capital and operating costs¹⁰ for phase-out of HCFCs. This is expected to directly support the Component 3 of PENHRA, particularly the Output 3b.1., i.e., Modified and optimized production lines for EE RAC manufacturing installed and operational. In line with this, financing institutions have also allocated loan programmes for clean energy projects in Indonesia, which can support achievement of Component 3 of PENHRA.

B. 2. 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/NPIF) or associated adaptation benefits (LDCF/SCCF) to be delivered by the project:

The proposed project aims to improve the energy efficiency of new RAC equipment in Indonesia from 2015 onwards. This will be achieved by addressing the existing barriers that hinder the widespread application of EE technologies and techniques in the manufacturing of energy efficient refrigeration and air conditioning (RAC) equipment and appliances in the country. By removing such barriers, it is expected that there will be a wider availability of EE RAC equipment and appliances in the country that can be used by consumers, as well as adequate local technical capacity in the country to manufacture such equipment.

The proposed project focuses on EE enhancements in RAC manufacturing and import in coordination with Indonesia's HPMP project. The phase-out of HCFCs will be combined with introduction of alternative technologies that will involve product redesign, technology conversion including modification of production lines and processes, technical assistance, trials and testing, training and certification. **The implementation of energy efficiency measures in the design and manufacturing of new RAC equipment and appliances during this changeover phase would enable the country's RAC industry realize greater global environmental benefits due to the early adoption of energy efficiency technologies and techniques in the design and manufacturing of energy efficient RAC equipment and appliances** while carrying out HCFC phase-out for compliance with the Montreal Protocol.

The main barrier to contend with is the price difference between the existing RAC equipment (e.g., room air conditioners) that is available in the market, and that of the energy efficient variety. Currently the end users or consumers are concerned only about the price of RAC. The energy efficient RACs' low market penetration is mainly due to lack of awareness by the end users about the energy saving benefits in using such products. This is true for other energy efficient products that are available in the local equipment/appliance market in the country. The barriers to improving the energy efficiency of RACs manufactured and used in Indonesia, and to the widespread use of EE RACs are as follows:

(i) Policy and institutional barriers

Regulations on the application of energy efficiency standards and labels for energy consuming equipment and appliances are still limited in Indonesia. Voluntary labeling regulation for energy efficient appliance is only available for Compact Fluorescent Lamp (CFL), as per Ministerial Regulation No. 06/2011. BRESL has been facilitating the Ministry of Energy and Mineral Resources (MEMR) in developing national energy efficiency standards and labeling for AC. The draft of ministerial regulation for the energy performance standards and labeling of ACs was finalized, submitted in early 2012 and is expected to be enacted within year. But the ES&L regulation for refrigeration¹¹ is addressed neither by BRESL nor by other initiatives. Currently, none of the nationally-regulated energy efficient RACs are available in the local market. Presently, most of the energy efficient units are imported although there is no enforced policy that requires the local manufacturing or production of energy efficient appliances and equipment in

¹⁰ In accordance with the Decision 60/44 of the Executive Committee of the Multilateral Fund.

¹¹ As mentioned earlier, in this project, refrigeration covers commercial (< 12 HP) units such as retail food service and kitchen equipment, walk-in coolers/freezers and small commercial cold rooms.

Indonesia. The absence of policy is due to the limited national drive to emphasize the importance of energy efficiency (in comparison to national progress in promoting renewable energy) and lack of clarity regarding which institutions are responsible for the formulation and enforcement of energy efficiency regulations for equipment/appliance like RACs. There are only few (and limited to Japanese brands) manufacturing companies that operate accredited test facilities in Indonesia to test the products against applicable international EE standards due to unavailable national regulation on ES&L of the appliances. Also there is lack of clarity on role, coordination and cooperation between responsible institutions in the implementation of ES&L, such as MEMR, Ministry of Industry and Ministry of Trade.

(ii) Awareness and Market barriers

The users of RACs are not aware of the availability and benefits of the energy efficient variety of such product. This is because their main concern is the initial price of the product. The RAC manufacturing industry is reluctant to implement the design and development of energy efficient RACs because of heavy market competition. Most manufacturers tend to lower the price of their products to increase sales volume and profitability, at the expense of quality. Currently, a large variety of low-priced RAC products are available in the market. Due to this, the demand for EE RACs remains low as their price is higher compared to the existing RACs sold in the market. Although EE RACs cost higher, the higher energy efficiency performance of EE RACs results in lower energy consumption and monetary benefits for the user. But these benefits are not known to many consumers. The lack of promotion of the benefits of using EE RACs is the main factor for low market penetration of such products.

(iii) Financial barriers

Despite of several trainings conducted for the financial institutions by UNDP, IFC and USAID on evaluating EE projects, the financial institutions still consider energy efficiency projects as high risk ventures and the Bank of Indonesia regulations do not consider energy saving from energy efficiency projects as collateral fund that can be used by the companies to apply for loan/financing for their energy efficiency projects. In developing the EE RAC market, there will be necessary changes required in existing RAC production lines. This will certainly require additional investment and leads to higher production cost. Also, due to the price competition, there is a risk associated with the payback of these investments. This has an influence on the investors' interest due to low returns, long lead time, and high risk of operational failures until the end users or consumers are aware of energy efficiency benefits during the use phase of the equipment or appliance. **The eligible funds and assistance available through MLF covers only phase-out of HCFCs and is not intended for energy efficiency enhancements. At the same time, this is one-time window of opportunity for the manufacturers to implement the required changes to their production lines, while implementing the HPMP.**

(iv) Technical barriers

Technology transfer for improving energy efficiency of RACs from multinational players is governed by intellectual property and other related issues. It is extremely difficult and expensive to acquire related intellectual property rights. There is inadequate existing local capacity for developing and commercializing alternative EE technologies in the production and application of EE RACs. Apart from this, the absence of enforceable technical standards, lack of standardized technical testing, inspection and certification infrastructure are some of the existing technical barriers.

The proposed project will comprise of four main components, addressing the above mentioned barriers to the manufacture and use of energy efficient RACs. The barrier removal activities in each of the project component comprise the incremental activities of the proposed project that will either be fully or partly funded by GEF resources. The four main components are as follows:

Component 1: Policy and Institutional Frameworks for the RAC Industry

Component 2: Public awareness of benefits of energy efficient RACs

Component 3: Promoting investments for EE enhancements in the RAC Industry

Component 4: Technical Assistance and training for RAC Industry

Component 1: Policy & Institutional Frameworks for the RAC Industry - This project component is expected to address the policy and institutional barrier. The expected outcome is enforced policies, laws and regulatory support mechanism to ensure manufacturing and sale of certified quality energy efficient (EE) RACs in Indonesia. The outputs include (a) developed policies and regulations on the local manufacturing and import of EE RACs (b) established and effectively enforced mandatory national standards (MEPS) for RACs (c) inspection and certification system established and operational for all imported and locally manufactured RACs sold in Indonesia (d) established RAC industry-wide coordination and cooperation system for EE RAC technology, and (e) consumer assistance and information dissemination service center established and operational.

The major activities that are proposed would include (1) design and formulate policies and regulations for local RAC equipment manufacturing and imports; and facilitation for approval and enforcement of such policies; (2) enhance the developed national ES&L program under BRESL project for RACs to establish minimum energy performance standards (MEPS) and facilitate its enactment; (3) develop standards for the selection and accreditation of certification and inspection agencies; (4) facilitate the establishment of accreditation and certification program for testing laboratories and national certification bodies; (5) establishment and operationalization of a consumer information centre that facilitate cooperation between various stakeholders, and (6) definition and agreement on the clarified roles and responsibilities of various institutions in implementing regulations and R&D of EE RAC and functioning of service centre as one-stop-centre. To ensure effective project implementation, the proposed project will work closely with National Ozone Unit under Ministry of Environment as it is the implementing partner of HPMP Indonesia.

Component 2: Public awareness of benefits of energy efficient RACs - This project component is expected to address the barriers related to low market penetration of EE RACs. The increased awareness in users of energy efficiency benefits for RACs in Indonesia is the expected outcome from the outputs that will be delivered under this project component. The expected outputs under this project component include: (a) completed EE RACs retailer assistance program; (b) completed consumer education campaign on the use and benefits of EE RACs; and, (c) completed public relation campaigns for EE RAC manufacturers, and distributors.

The major activities that are proposed would include (1) conduct of training (on ES&L and MEPS) for RAC retailers; (2) design and implementation of a RAC retailer assistance program; (3) conduct of consumer educational campaign program¹² that will also present the experiences and lessons learnt from the BRESL project and close coordination with HPMP project, which will also conduct public awareness program on energy efficient RACs and ozone-friendly products. Moreover, assistance will be provided to RAC manufacturers in case they need support in developing their own public relation campaigns.

Component 3: Promoting investments for EE enhancements in the RAC Industry - This component will address the removal of financial barriers to enable EE RAC manufacturers to access financial resources in order to achieve the expected outcomes, increased production and sales of EE RACs in Indonesia as well as enhanced capacities of RAC manufacturers to produce EE RACs. The expected outputs under this component include: (a) designed and implemented financial assistance program; and, (b) Modified and optimized production lines for EE RAC manufacturing installed and operational.

Activities proposed include: (1) financial support will be provided to the manufacturers in the form of grant based on a set of eligibility criteria which will be formulated and agreed during the PPG stage. The amount of financial assistance that will be provided to manufacturers under PENHRA shall be the

¹² As part of market promotion of energy efficient RACs, promotional materials will be developed to suite each target group presenting energy and energy cost savings in the utilization of energy efficient RACs which shall be used for public relation campaigns. Moreover, the proposed project will assist the manufacturers in case if they need support in developing such public relation campaigns. Thus, a number of manufacturers and service enterprises are actively involved in the promotion of energy efficient RACs.

incremental cost that will be incurred in upgrading product design and the production line for the production of energy efficient RAC appliance and equipment are MEPS compliant. This financial assistance is required to meet the additional costs for the EE RAC product design and upgrading of the production line to accommodate the manufacturing of the EE RAC product; (2) product design and conduct of capacity building for RAC manufactures on the production of EE RACs. It is expected that this component will facilitate immediate and required financing for manufacturers. It is important to ensure the replication of designs and sustainability of the changes and up gradation of the production line in the RAC manufacturing businesses, and mobilize investments that ultimately lead to the reduction of up graded technology cost.

Component 4: Technical assistance and training for RAC industry - This project component will focus of improving the technical capacities of the RAC manufacturing enterprises to develop and implement energy efficient RAC manufacturing technologies. This will address the technical barriers that hinder the implementation of energy efficiency measures in the RAC industry and increase the local capacity to develop indigenous alternative EE technologies and measures applicable to the RAC industry. The expected outcome from the various deliverables under this component is enhanced knowledge and capacity on EE RAC technologies in the RAC industry¹³. The outputs of this component are: (a) documented and made available information on technically and economically feasible EE technologies that can be applied by local RAC manufacturers; (b) completed capacity development programs for local RAC manufacturers; and (c) regularly updated information on EE RAC market.

These outputs will be achieved through implementation of activities such as: (1) evaluation and documentation of energy efficient technologies that are feasible, both technically and economically, which can be applied by local RAC manufacturers; (2) development and implementation of a technical assistance program that will include transfer of knowledge in the areas of system design, installation, operation and maintenance, thereby greatly improving the ‘learning by doing’ process for EE RACs production (3) design and implementation of a capacity development program that include in-country and international training courses and workshops in order to enable the local RACs manufacturing to meet the international standards; (4) evaluation of the usefulness of the assistance program; and (5) monitoring of the manufacturer’s data of energy efficient RACs produced, sold and other related technical information.

Some of the possible energy efficiency improvement interventions in the EE RAC design and manufacturing may include, but not limited to: (1) increase versatility of the system design to accept a wider range of prospective low-GWP refrigerants (2) improvement and optimization of heat exchanger design including not-in-kind and additional heat transfer components to improve energy utilization efficiency (i.e., energy efficiency ratio (EER)) such as increased frontal coil area and tube rows; increased fin density; and, improved fin and tube design; (3) improvement of condenser fan motors and its aerodynamics; (4) improvement of RAC compressor efficiency, such as compressor motor efficiency improvements; application of variable speed systems; and application of noise & vibration reduction systems; (5) upgrading controls and instrumentation for improved part-load performance; and (6) improvement of air conditioner housing/casing. **The technical interventions mentioned above will be carried out through investments in system redesign, plant and process modifications, technical assistance and training. Moreover, the technical assistance will be provided particularly to the targeted companies under HPMP for air conditioning and refrigeration sector.**

Incremental reasoning: The project is facilitating (through barrier removal activities) the realization of the GHG emission reduction potentials associated with the changeover to non-HCFC refrigerant in the RAC sector in Indonesia, and the potential GHG emission reductions from the above mentioned technical interventions in the manufacturing of EE RACs. The requested GEF resources will be used for the abovementioned barrier removal activities. The removal of such barriers will enable the realization of the potential GHG emission reductions in the RAC sector of the country’s RAC industry and contributes to the achievement of the national energy efficiency objective and meet obligations to the UNFCCC. Moreover, the project will achieve the successful phase-out of the ozone depleting substances that are used

¹³ Imported RAC equipment shall comply with enforced mandatory national energy performance standards for EE RACs.

in the RAC industry and meet the country's obligations to the Montreal Protocol.

The anticipated **global environmental benefit** through the implementation of this project is avoided GHG emissions from the utilization of locally manufactured EE RACs, but not from the avoidance of the current high GWP refrigerants. In addition, there are also the monetary benefits from energy savings that are realized from the use of EE RACs. It is envisioned that the planned interventions will all lead to the increased production and sales of EE RACs; increased market share of EE RACs; and, improved technical capacities of RAC manufacturers in developing and applying energy efficient RAC technologies. Considering the outputs of the activities carried out under the PENHRA project that are directly related to the application of EE RACs, the expected cumulative amount of GHG emission reduction is about 396 ktons CO₂ during the project duration. The direct post project CO₂ emission reduction is about 3,965 ktons CO₂¹⁴ considering 10 years economic lifetime including project duration of 3 years. These global environmental benefits expressed in terms of emission reductions is considered as the sole contribution from the activities of PENHRA on the use of energy efficient RACs, but not from the changeover to low GWP refrigerants. Although HPMP is considered as baseline project, its environmental benefits are not accounted in this analysis under PENHRA to avoid any double counting. Considering the GEF contribution of US\$ 5 million for PENHRA, the unit abatement cost is about US\$ 1.26/t CO₂.

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/NPIF) or adaptation benefits (LDCF/SCCF). As a background information, read [Mainstreaming Gender at the GEF.](#)":

The proposed project is expected to bring about the following socio-economic benefits to Indonesia at the national and local levels.

National Benefits:

1. Clear policy, regulation and institutional framework promoting commercialization of energy efficient RACs.
2. Increased technical capacity of local RAC manufacturers in developing and applying EE RAC technologies.
3. Established national accreditation and certification agencies for EE RAC equipment and appliances.
4. Increased capacity of national financing institutions in funding green business.
5. Contribution in meeting the voluntary national target of reducing 26% of GHG emission by 2020.

Local Benefits:

1. Local government officials acquired coordination capacity in working with the private sector.
2. Increased awareness and knowledge of local government, manufacturers and consumers about benefits of energy efficient products.
3. Households gain access to financing facility to purchase EE RACs.
4. Decreased household cost for electricity from utilization of energy efficient RACs.

Due to the steady economic development in the country, the local air conditioning equipment market has grown significantly in the past few years and is expected to continue for the next 10-20 years. The products targeted under the PENHRA project are consumer goods that are widely used particularly in households. The project design and implementation will take into account gender equality indicators, particularly in ensuring

¹⁴ Three types of air conditioners are considered, i.e. residential, light commercial, commercial types with their 2009 baseline energy efficiency ratio (EER) of 2.4. Due to the project intervention, it is expected that the EER would be reaching to a maximum of 3.2. The total number of sold units in 2009, as sourced from the HPMP document, was 1,211,649; 69,218; and 167, respectively. It is expected that the annual increase in sales of these systems is 5%. Since the refrigeration equipment (Commercial (< 12 HP) units such as retail food service and kitchen equipment, walk-in coolers/freezers and small commercial cold rooms) number is not available currently, the GEBs with the project influence are not considered in the analysis, but this would be analyzed during PPG phase.

women participation in decision making process and access of women to knowledge, and benefits associated with the use of energy efficient air conditioners. The project will be designed to contribute towards empowering women through specific activities that promote awareness on energy efficient home appliances, calculation method on cost saving from utilization of energy efficient RACs, and involvement of women in monitoring implementation of energy efficient home appliances programme in the market. The socio-economic benefits of using the energy efficient variety of such consumer goods have been adequately presented in the PIF. The way to monitor the realization of such benefits and how information (including gender disaggregated data) will be collected, processed, evaluated and reported during the project implementation will be designed in detail during the PPG exercise.

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:

Risk	Mitigation Measure	Risk Rating
<p>Insufficient support from government and coordination among line Ministries Shifting of government energy program priorities leading to reduced technical and budgetary support to ES&L program; poor coordination among line ministries may lead to slow policy execution and poor implementation of the program.</p>	<ul style="list-style-type: none"> • Government commitment to the project will be clearly established and confirmed. • Regular coordination meetings among relevant line ministries. 	Low
<p>Lack of support and participation from local air conditioning manufacturers Private sector not participating adequately in the project, due to lack of interest, disruption to operation and business priorities. Financing of investments for manufacturers to modify their production facilities may not be available.</p>	<ul style="list-style-type: none"> • Industry associations, professional organizations, and private individuals will be consulted and involved in the annual project work planning. • Working relationships with industry and commercial sector associations will be further enhanced to ensure cooperation. • Encourage participation of the private sector. • Close collaboration with HPMP 	Moderate
<p>EE Technology Risk</p> <ul style="list-style-type: none"> • Failure of EE products (equipment and appliances) to perform as claimed by manufacturers resulting to customer dissatisfaction. • Proliferation of illegally traded and unreliable RACs. 	<ul style="list-style-type: none"> • Serious implementation of EE standards, labeling and warranty • Consumer education activities focus on use and application of EE RAC as well as consumer protection programs of the government. 	Low
<p>EE Market & Financing Risk Unwillingness of consumers to buy EE RAC due to bad experiences in the past and high initial cost may lead to failure of the project to induce increased sales and widespread use of EE RAC.</p>	<ul style="list-style-type: none"> • Assisting and empowering consumers to make real time, informed decision making when buying EE products. • Promotion of suitable financing, incentives will be developed and the implementation facilitated under the project. 	Moderate
<p>Government procedures and processes delay the implementation of MEPS</p>	Based on experience from the BRESL project implementation, there should be a supporting formulation of ministerial regulation on EE labeling to get the MEPS	Moderate

	approved. Due to the influence of ongoing initiatives in the country, there will be a voluntary EE labeling and transition regime for MEPS. In case, if there is a delay in the enactment and mandatory implementation of MEPS, EE labeling will be used to guide the manufacturers to meet the requirement of labeling.	
Overall Risk Rating	Low to Moderate	

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:

Stakeholder	Role
Directorate General for New and Renewable Energy and Energy Conservation (DG-NREEC)/Ministry of Energy and Mineral Resources (MEMR)	Lead agency for implementing PENHRA in close coordination with the Ministry of Environment (MoE) and Ministry of Industry. MEMR is responsible in enactment of energy efficiency policy and regulation for RACs and providing technical assistance in relation to improving energy efficiency measures of RACs.
Ministry of Industry (MoI)	Supporting agency to MoE in implementation of HPMP project that will conduct parallel activities to PENHRA. MoI will be the focal point for coordinating with RAC industries in Indonesia.
Ministry of Environment (MoE)	Lead agency in implementation of HPMP and will be the focal point for coordinating HPMP activities and HPMP beneficiaries with PENHRA activities.
National Standards Bureau (BSN)	Issue national standards on energy performance of RACs and non-HCFC refrigerant.
Agency for Assessment and Application of Technology (BPPT)	BPPT will provide technical expertise as required in development of energy efficiency testing procedures
Industry organizations (ASHRAE Indonesia Chapter, GABEL)	ASHRAE Indonesia Chapter and GABEL will be the partner associations for sector-wide activities in PENHRA implementation. The company members (manufacturers of RACs) will be the direct beneficiaries of PENHRA.
Indonesia Consumer Association (YLKI)	Association that protect consumers' right as well as providing products information for consumers. The association will be involved in market development activities in which consumer education program will be implemented.
Local Government	Local government will be partner of PENHRA in implementing energy efficiency related regulations for RACs at local level.
Bilateral Donors (Government of Australia, USA Government)	Bilateral donors will partially finance adoption of low-GWP alternatives and energy-efficiency enhancements in RAC supplementary to the HPMP.

B.6. Outline the coordination with other related initiatives:

PENHRA activities will be closely coordinated with the implementation of HPMP activities. The following timetable details the milestones along with expected date of completion.

Milestones	Expected Dates
Submission date of PIF	Sep-12
Included in Work Program (for FSP)	Nov-12

First control on the freeze of consumption of HCFCs at the baseline level (average of 2009 and 2010 consumption levels)	Jan-13
PENHRA project CEO Endorsement/Approval	Nov-13
PENHRA project GEF Agency Approval	Dec-13
PENHRA project implementation start	Jan-14
MEPS will be implemented under a voluntary regime	Apr-14
Technology conversions expected to be completed under HPMP	Jun-14
Completed modifications to production lines accommodating production of energy efficient RACs	Nov-14
MEPS are enacted and made mandatory	Jan-15
Reduction of HCFC consumption by 10% from the baseline levels	Jan-15
Mid-term review of PENHRA	Jun-15
PENHRA project implementation completion	Dec-16

The project development team will consult and involve the implementers of all ongoing energy efficiency projects/programs in the country in the design and development of the project, including government and private sector in order to explore and possibly make use of potential synergies, and ensure complementarity and building on best practices and lessons learned.

Particularly, the proposed project will work closely with Barrier Removal for Cost-effective Development and Implementation of Energy-Efficiency Standards and Labeling project (BRESL, ongoing since 2008) covering six countries in Asia-Pacific, of which Indonesia is one of the participating countries. The grant allocated for Indonesia in this regional amounts to US\$ 1.8 million. This project targets energy efficiency in six appliances. Refrigerators and room air conditioners are among them. UNDP is the GEF agency responsible for that project.

Apart from the above, the proposed project will coordinate with ongoing cooperation in energy efficiency and conservation such as with Japan government/Japan Partnership Fund on demand-side management study and improvement of testing laboratory facility and with Australian government on capacity development. Coordination will involve, but not limited to, joint planning to synergize the activities in facilitating policy making, in providing training on energy efficiency in RACs sector, and on testing laboratory assessment. With Indonesia-Denmark project on Energy Efficiency in Industrial, Commercial, and Public Sector (EINCOPS) the discussions will be conducted to assess possibility of involving energy efficient and non-HCFC refrigeration and ACs to be part of criteria in green building code in Indonesia. Engagement of MEMR representative will be ensured to participate in coordination meeting of ASEAN project on Promotion of Energy Efficiency and Conservation. Finally, coordination with UNIDO project on Promoting Energy Efficiency in the Industries through System Optimization and Energy Management Standard¹⁵ will include exchange relevant notes about strategy in promoting energy efficiency in industrial sectors.

It is highly likely that the proposed project could leverage additional funding as co-financing. Discussions are in final stages with bilateral counter parts as they are interested in providing additional investments needed for implementing energy efficiency enhancements in refrigeration and air conditioning equipment manufacturing.

¹⁵ Information was synthesized from <http://www.ieej.or.jp/aperc/CEEP/Indonesia.pdf>

C. DESCRIBE THE GEF AGENCY'S COMPARATIVE ADVANTAGE TO IMPLEMENT THIS PROJECT:

According to the Comparative Advantages of GEF Agencies (GEF Council Paper C.31.5.rev.1), it is acknowledged that UNDP has a comparative advantage in implementing energy projects, particularly in providing integrated policy development, human resources development, institutional strengthening and non-governmental and community participation, which are key features of the barrier removal activities of this proposed project. The Government of Indonesia has designated UNDP as the lead implementing agency for overall HPMP in Indonesia and also as the implementing agency for the Refrigeration, Air Conditioning and Firefighting sectors.

C.1. Indicate the co-financing amount the GEF agency is bringing to the project:

As the implementing agency for this proposed project, UNDP will allocate US\$ 150,000 for the project preparation phase (US\$ 50,000) and for full size project implementation (US\$ 100,000).

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:

This project is supported by UNDP because it contributes to the achievement of Outcome: Enhanced capacity of Government of Indonesia (GoI) to manage natural resources and energy as stated in the UNDP-Indonesia Country Program Document 2011 – 2015. It also contributes to the achievement of the Country Programme Output: Developed policy framework to promote energy efficiency and renewable energy strengthened and renewable energy and energy efficiency roadmap. It also contributes to the achievement of the Primary Outcome 5: Strengthened climate change mitigation and adaptation and environmental sustainability measures in targeted vulnerable provinces, sectors and communities on Climate Change and Environment, as mentioned in the UNPDF 2011-2015.


UNDP-Indonesia, with its presence in the country is well-positioned to implement this proposed project. It has a proven track record of successful implementation of energy efficiency and renewable energy projects in the country. It has sufficient staff to supervise the implementation of this project. It is the leading UN-agency in Indonesia supporting the GoI in addressing climate change issues in the country with a staff complement possessing substantial experience in the successful implementation of GEF-funded projects in the country. The current staffing of the Energy and Environment Unit of the UNDP Indonesia Country Office (CO) can adequately support the implementation of projects related to the different GEF focal areas, including biodiversity, climate change, land degradation and chemical management. A dedicated program officer of the unit will solely be responsible for project implementation oversight, quality assurance and reporting requirements. Apart from this, the implementation of the HPMP is specifically being supervised also by another program officer of the unit. Its overall substantial experience and expertise, working in partnership at the decentralized level with local communities, private sector, policy makers and civil society, justify its capacity and qualification to implement this proposed project. Furthermore, UNDP-Indonesia CO will be backstopped by technical expertise available in the UNDP Asia-Pacific Regional Centre (APRC) based in Bangkok, Thailand.

**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):

NAME	POSITION	MINISTRY	DATE (MM/dd/yyyy)
Mr. Dana Kartakusuma	GEF Operational Focal Point and Senior Advisor to the Minister of Environment	Ministry of Environment, Government of Indonesia	03/16/2012

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 project identification and preparation.					
Agency Coordinator, Agency name	Signature	DATE (MM/dd/yyyy)	Project Contact Person	Telephone	Email Address
Adriana Dinu UNDP/ GEF Officer-in-Charge		01/16/2013	Butchaiah Gadde, UNDP APRC, Bangkok	(+66) 2 304 9100 Ext. 5048	butchaiah.gadde@u ndp.org