



REQUEST FOR CEO ENDORSEMENT

PROJECT TYPE: Full-sized Project

TYPE OF TRUST FUND: GEF Trust Fund

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PART I: PROJECT INFORMATION

| | | | |
|------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|------------|
| Project Title: Demonstration of BAT and BEP in open burning activities in response to the Stockholm Convention on POPs | | | |
| Country(ies): | Cambodia, Lao PDR, Mongolia, Philippines and Vietnam | GEF Project ID: ¹ | 5082 |
| GEF Agency(ies): | UNIDO (select) (select) | GEF Agency Project ID: | 120420 |
| Other Executing Partner(s): | Ministry of Environment (Cambodia), Ministry of Natural Resources and Environment (Lao PDR), Ministry of Environment and Green Development (Mongolia), Department of Environment and natural resources (Philippines), Vietnam Environment Administration, Ministry of Natural Resources and Environment (Vietnam), City of Kitakyushu, International Solid Wastes Association | Submission Date: | 11/27/2014 |
| GEF Focal Area (s): | Persistent Organic Pollutants | Project Duration(Months) | 60 months |
| Name of Parent Program (if applicable): | | Project Agency Fee (\$): | 718, 200 |
| | <ul style="list-style-type: none"> ➤ For SFM/REDD+ <input type="checkbox"/> ➤ For SGP <input type="checkbox"/> ➤ For PPP <input type="checkbox"/> | | |

A. FOCAL AREA STRATEGY FRAMEWORK²

| Focal Area Objectives | Expected FA Outcomes | Expected FA Outputs | Trust Fund | Grant Amount (\$) | Cofinancing (\$) |
|----------------------------|------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------|------------|-------------------|-------------------|
| (select) CHEM-1 | Outcome 1.3 POPs releases to the environment reduced | Output 1.3.1 Action plans addressing un-intentionally produced POPs under development and implementation. | GEF TF | 6,700,000 | 28,076, 434 |
| (select) CHEM-1 | Outcome 1.5 Country capacity built to effectively phase out and reduce releases of POPs. | Output 1.5.1 Countries receiving GEF support for the implementation of the Stockholm Convention. | GEF TF | 860,000 | 4,700,000 |
| (select) | | | (select) | | |
| (select) | | | (select) | | |
| (select) | | | (select) | | |
| (select) | | | (select) | | |
| (select) | | | (select) | | |
| Total project costs | | | | 7,560,000 | 32,776,434 |

¹ Project ID number will be assigned by GEFSEC.

² Refer to the [Focal Area Results Framework and LDCF/SCCF Framework](#) when completing Table A.

B. PROJECT FRAMEWORK

| Project Objective: Create resource efficient waste management systems to reduce U-POPs emissions through the introduction BAT/BEP in open burning sources. | | | | | | |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|-------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|--------------------------|-----------------------------------|
| Project Component | Grant Type | Expected Outcomes | Expected Outputs | Trust Fund | Grant Amount (\$) | Confirmed Cofinancing (\$) |
| 1. Legislation improvement | TA | Strengthened legislative capacity for introducing BAT/BEP in waste open burning source category | Output 1.1: Updated legal and regulatory frameworks for open burning to facilitate waste management improvements and BAT/BEP and to enable introduction of financing mechanisms | GEF TF | 500,000 | 4,200,000 |
| 2. Institutional strengthening | TA | Enhanced institutional capacity to carry out BAT/BEP implementation | Output 2.1: Strengthened human resources/ institutions on regional/ national levels on waste management and BAT/BEP implementation in open burning of biomass and wastes. Output 2.2: Enhanced regional/national institutional capacity through the implementation of standardized analytical procedures, data collection, monitoring and reporting procedures and facilities. | GEF TF | 800,000 | 4,000,000 |
| 3. Demonstration activities | Inv | BAT/BEP implemented in open burning sources | Output 3.1: Updated comprehensive assessment of the effects of current practices and impact indicators at the selected demonstration sites. Output 3.2: BAT/BEP plans developed and implemented at the selected demonstration sites in each participating country. | GEF TF | 4,700,000 | 17,576,434 |
| 4. Education and awareness | TA | Improved knowledge and understanding on | Output 4.1: Awareness raising campaigns aimed to emphasize health and | GEF TF | 1,000,000 | 4,300,000 |

| | | | | | | |
|--------------------------------------------|----------|----------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|------------------|-------------------|
| | | BAT/BEP and on risks connected with U-POPS, GHG emissions and other contaminants released through open burning | environment hazards of open burning practices, carried out on targeted relevant stakeholders. Output 4.2: Educational programs aimed at introducing and promoting alternatives to open burning practices, carried out on targeted groups at several levels. | | | |
| 5. Monitoring and evaluation | TA | Established project management structure and the system for monitoring/evaluation of project impacts | 5.2: M&E framework of the project established | GEF TF | 200,000 | 600,000 |
| | (select) | | | (select) | | |
| | (select) | | | (select) | | |
| | (select) | | | (select) | | |
| Subtotal | | | | | 7,200,000 | 30,676,434 |
| Project management Cost (PMC) ³ | | | | GEF TF | 360,000 | 2,100,000 |
| Total project costs | | | | | 7,560,000 | 32,776,434 |

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

Please include letters confirming cofinancing for the project with this form

| Sources of Co-financing | Name of Co-financier (source) | Type of Cofinancing | Cofinancing Amount (\$) |
|----------------------------|----------------------------------------------------------|---------------------|-------------------------|
| Local Government | Phnom Penh Capital | In-kind | 8,000,000 |
| National Government | Ministry of Natural Resources and Environment- Lao PDR | Cash | 300,000 |
| National Government | Ministry of Natural Resources and Environmenta - Lao PDR | In-kind | 1,000,000 |
| Private Sector | SAPLAST Vientiane Co., Ltd | Cash | 500,000 |
| Private Sector | SAPLAST Vientiane Co., Ltd | In-kind | 800,000 |
| Local Government | City of Ulaanbaatar, Mongolia | Cash | 6,328,800 |
| Local Government | Lapu Lapu City, Philippines ¹ | Cash | 7,873,665 |
| Local Government | General Santos City, Philippines ¹ | Cash | 412,510 |
| Local Government | General Santos City Philippines ¹ | In-kind | 696,389 |
| National Government | Ministry of Natural Resources and Environment-Vietnam | Cash | 200,000 |
| National Government | Ministry of Natural Resources and Environment-Vietnam | In-kind | 5,540,000 |
| Bilateral Aid Agency (ies) | GIZ | In-kind | 171,740 |
| Others | City of Kitakyushu | In-kind | 200,000 |
| CSO | COMPED- Cambodia | In-kind | 497,330 |
| GEF Agency | UNIDO | Grant | 106,000 |

³ PMC should be charged proportionately to focal areas based on focal area project grant amount in Table D below.

| | | | |
|---------------------------|-------|---------|------------|
| GEF Agency | UNIDO | In-Kind | 150,000 |
| Total Co-financing | | | 32,776,434 |

¹ Based on November 2014 Exchange Rate *1 USD = 44.95 PhP

D. TRUST FUND RESOURCES REQUESTED BY AGENCY, FOCAL AREA AND COUNTRY¹

| GEF Agency | Type of Trust Fund | Focal Area | Country Name/ Global | (in \$) | | |
|------------------------------|--------------------|-------------------------------|----------------------|------------------|-----------------------------|-------------|
| | | | | Grant Amount (a) | Agency Fee (b) ² | Total c=a+b |
| UNIDO | GEF TF | Persistent Organic Pollutants | Cambodia | 1,512,000 | 143,640 | 1,655,640 |
| UNIDO | GEF TF | Persistent Organic Pollutants | Lao PDR | 1,512,000 | 143,640 | 1,655,640 |
| UNIDO | GEF TF | Persistent Organic Pollutants | Mongolia | 1,512,000 | 143,640 | 1,655,640 |
| UNIDO | GEF TF | Persistent Organic Pollutants | Philippines | 1,512,000 | 143,640 | 1,655,640 |
| UNIDO | GEF TF | Persistent Organic Pollutants | Vietnam | 1,512,000 | 143,640 | 1,655,640 |
| (select) | (select) | (select) | | | | 0 |
| (select) | (select) | (select) | | | | 0 |
| (select) | (select) | (select) | | | | 0 |
| (select) | (select) | (select) | | | | 0 |
| (select) | (select) | (select) | | | | 0 |
| Total Grant Resources | | | | 7,560,000 | 718,200 | 8,278,200 |

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

² Indicate fees related to this project.

F. CONSULTANTS WORKING FOR TECHNICAL ASSISTANCE COMPONENTS:

| Component | Grant Amount (\$) | Cofinancing (\$) | Project Total (\$) |
|----------------------------|-------------------|------------------|--------------------|
| International Consultants | 807,000 | 400,000 | 1,207,000 |
| National/Local Consultants | 945,000 | 1,890,000 | 2,835,000 |

G. DOES THE PROJECT INCLUDE A “NON-GRANT” INSTRUMENT? No

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

PART II: PROJECT JUSTIFICATION

A. DESCRIBE ANY CHANGES IN ALIGNMENT WITH THE PROJECT DESIGN OF THE ORIGINAL PIF⁴

The information presented in this document builds on those reflected in the PIF. The project framework is essentially the same. As part of the PPG discussions, project outputs were reviewed and streamlined to further strengthened the document and achieve the desired impacts. For component 1, the original outputs of financial mechanism is merged with the formulation of regulatory measures. Formulation of BAT/BEP guidelines was made as part of the activities of this component. For component 2, the establishment of a regional platform for information exchange is seen as a natural project output and was made part of the activities. Outputs in components 3 and 4 were streamlined to reflect the direct and measurable products of the envisaged activities.

The PPG activities undertaken have resulted to the achievement of the objectives set in the project preparation phase.

⁴ For questions A.1 –A.7 in Part II, if there are no changes since PIF and if not specifically requested in the review sheet at PIF stage, then no need to respond, please enter “NA” after the respective question.

Studies and assessments of the different elements that makes up the components of the project framework were undertaken. All the data generated are provided in the corresponding annexes. Main achievement during the preparatory phase is the identification and preliminary assessment of the demonstration locations and activities to be undertaken. Initial discussions with the private and public stakeholders led to co-financing commitments. Regional workshops were also held to agree on the workplan, harmonize information to be collected and to validate the project document. Detailed PPG accomplishments are provided in Annex C.

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

1. The PCDD/PCDFs inventories of the participating countries revealed that open burning activities is accountable for a total of about 1118 g TEQ/year PCDD/PCDF releases into the environment, one of the leading sources of UP-POPs. According to the UNEP toolkit for the identification and quantification of dioxin and furan releases this sector includes a) various biomass burning activities such as agricultural residue burning, sugarcane burning, forest fires etc., and b) waste burning and accidental fires including dump site fires and backyard trash burning. Release reduction from these, generally diffuse sources, requires coherent legislative and institutional capacity from the government side and significant investments and technical capacity from the private/public sector. The proposed project will play a vital role in supporting the participating countries in fulfilling the objectives reported in the NIPs and specific national plans as detailed in the following sections:

2. Cambodia

In the National Implementation Plan (NIP) of Cambodia developed with the assistance of UNEP, unintentional POPs releases (PCDD/PCDF) from open burning of wastes were estimated to be about 548.031 g TEQ/year, accounting to about 90% of the total UP-POPs releases. However, the given inventory may not really be reflective of the actual UP-POPs releases considering the extensive open burning activity being carried out in the country's dumpsites and the lack of institutional and technical capacity to perform adequate analysis. The lack of public awareness on the health and environmental impacts of this activity aggravates the problem. In the NIP it is highlighted that the demand of materials used will increase in the future and thus an increase of the produced wastes is expected, (particularly synthetic wastes including plastics, PVC tubes), but this will not be reflected in a parallel increase of the investment on waste management systems.

The country, therefore, emphasized in its national action plans the need to address capacity building issues relevant to the implementation of the SC. In Chapter 2 of the NIP (Implementation Strategy and Action Plan), Section 3 details the actions to be undertaken for waste open burning, specifically as Objective 3, they cited improved waste management system with the formulation of specific guidelines, the set up of waste separation practices and improved landfill management to achieve a reduction of the total amount of waste and elimination of open burning as main actions to be undertaken to address the issue of open burning. To date, the updated NIP is still being formulated and information on the revised dioxin releases and action plans on open burning are not yet available.

3. Lao PDR

In the original NIP formulated with the assistance of UNIDO, the total PCDD/PCDF releases was estimated as 102.199 g TEQ/year (based on 2002 production data) out of which uncontrolled combustion processes represented 90% (90.742 g TEQ/year). Tons of domestic waste is generated annually and only parts of them are properly collected and dumped at the landfill sites. The uncontrolled burning of domestic and other waste is widely used throughout the country. Most people use burning as the most convenient disposal method and therefore most of the waste is burnt either at home or at the dump sites.

Poor waste management practices, along with the lack of awareness of potential dioxin generation from open burning, are recognized among the priority problems in Lao PDR. This is reflected in the priority Action plans described in the NIP. Chapter 3 Section C of the NIP details the national priority projects relative to UP-POPs which include Research on Health Risk Management of Unintentionally POPs (Project C2), Public Awareness Raising (Project C4), the introduction of sound waste management practices (Project C5), Sound Management of Landfills (Project C6), the introduction and promotion of BAT and BEP in existing medical waste incineration plants (Project C6) and the improvement of the management of medical wastes (Project C8).

4. Mongolia

In the original NIP, the total PCDD/PCDF releases was estimated as 750.713 g TEQ/year. During the inventory, the calculation of emissions of PCDD/PCDF released during this processes were calculated as “Uncontrolled combustion processes”, and accounted for 52.408 g (6.98%). More specifically, the share of waste incineration itself represented 0.124 g (0.02 %). The category waste/landfill accounted for the main part of releases, as 651.610g TEQ/year or 87% of the total. This high figures was mainly due to disposal of sludge generated from households and industrial sewage treatment . In the 2013 inventory for the NIP Update process assisted by UNIDO, the total amount of PCDD/PCDF releases were reported as 42.45 g TEQ/year. Open burning processes still accounts to 18.1 g TEQ/year. Within this category, fires at wastes dumps represent almost 100% of the total releases.

The NIP reflects the need to improve waste management schemes in the country's priority action plans and projects. . Among others, the main actions concerning the reduction of open burning include the development of procedures for collecting, storing, transporting, eliminating and decontaminating POPs-containing wastes, the revision of legal acts related to disposal of medical wastes and the establishment of specific requirements for the set up of new landfills for POPs containing industrial wastes and for the monitoring of POP releases. The aim is to improve waste management, reducing volume of wastes with recycling plans and introducing BAT/BEP in waste elimination process, building central facilities for waste incineration, specially for medical and hazardous wastes, in Ulaanbaatar and other large cities. At the same time the NIP foresee to prohibit intentional burning of wastes in dump areas and or public areas, and to stop burning hazardous wastes such as plastics, rubbers, plastic packages and tires improving and increasing public awareness activities

5. Philippines

In the recently updated NIP (2013) developed with UNIDO's assistance, the consolidated Dioxins and Furans inventory showed an increase in the total release at 779.529 gTEQ/a from all the Annex C sources. Open burning accounted for 59% (438.54 gTEQ/a) followed by disposal/landfill at 33% (255.06 g/TEQ/a). The biggest release is in air with a total of 431.996 gTEQ/a; 87% from open burning 4% from ferrous and non-ferrous metal production and 3% from power generation and heating. A significant finding is that the major source of PCDD/PCDF is the uncontrolled combustion of agricultural wastes. The need to address the problems caused by the open burning practices is reflected in the NIP action plan in paragraph 3.3.3 “ Measures to reduce releases from unintentional production”, in all the relevant objectives and reflected in different activities concerning BAT/BEP application, use of non burning g technologies, inventory updates, etc.

6. Vietnam

The PCDD/PCDF inventory prepared by the Vietnam Environmental Protection Agency concluded that 6% (22.6 g TEQ/year) of the total annual PCDD/PCDFs releases is from open burning activities. It is mainly due to agricultural biomass burning including, rice husk and particularly straw burning. One of the major means to pursue this objective is the application of advance measures and technologies to minimize the formation and unintentional emissions of POPs. The implementation of BAT/BEP in waste management sector is addressed by the National Priority Programs n.4 (Management of Healthcare wastes) and n.8 (Assessment, study, promotion, assistance and management on application of BAT/BEP to reduce and finally eliminate the unintentional production of POPs from production and living activities). Vietnam is currently updating its NIP with the assistance of UNDP.

7. Except for Mongolia, all parties are also signatories to the Agreement on Transboundary Haze Pollution. The Agreement recognises that transboundary haze pollution which result from land and/or forest fires should be mitigated through concerted national efforts and international cooperation. The agreement came about as a reaction to the environmental crisis that hit Southeast Asia in the late 1990s. The crisis was mainly caused by land clearing via open burning. Four of the six participating countries are party to this agreement which aims to reduce agriculture and municipal wastes related open burning activities and to facilitate the environmentally sound utilization of agricultural residues.

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

8. The proposed project is consistent with the objectives set by GEF-5 to promote the sound management of chemicals throughout their life cycle in ways that lead to the minimization of significant adverse effects on human health and the global environment. It addresses Chemicals FA objective **CHEM-1** "Phase out POPs and reduce POPs

releases"; **Outcome 1.3** "POPs releases to the environment reduced and **Output 1.5** "Country capacity to effectively phase out and reduce releases of POPs". The project focuses on the demonstration of BAT/BEP to reduce releases of unintentionally-produced POPs in pilot locations prioritized by the governments of the participating countries. It also puts importance to regulatory and institutional strengthening and awareness raising of relevant stakeholders to effectively manage waste management initiatives in the country.

A.3 The GEF Agency's comparative advantage:

9. The project falls within the comparative advantage of UNIDO as it focuses on the creation of resource efficient waste management systems to abate open burning practices. The organization has successfully implemented BAT/BEP projects focusing on the introduction of BAT/BEP in priority industrial source categories. In UNIDO's current portfolio of POPs project, 28% focuses on the delivery of Article 5 obligations to the Stockholm Convention. UNIDO focuses on the Convention provisions that are directly related to the industrial sector, including wastes management streams, and provides technical assistance based on an environmentally sustainable industrial development approach. Such approach includes POPs pollution reduction and/or elimination, industrial process changes, substitute or modified materials and products, cleaner production methods, BAT and BEP, and the environmentally sound management for minimization and disposal of POPs chemicals and wastes. UNIDO capitalized on its existing institutional network such as NCPCs, ITPOs, Field Offices, BAT/BEP Global Forums and local UNIDO Desks to ensure delivery of its programmes. For this project, UNIDO will be assisted by its Regional Offices in China and Thailand, its country offices in the Philippines and Vietnam.
10. UNIDO is currently assisting 62 countries in reviewing and updating their National Implementation Plans including those of Lao PDR, Mongolia and the Philippines. This provides an opportunity for the organization to have an indepth assessment of the current POPs management challenges in the countries, including those in the open burning source categories.
11. The approach of the GEF in addressing POPs issues has been guided by severity of pollution at national or global level while adopting a programmatic approach using the NIP priority actions of the countries. UNIDO as an implementing agency for the GEF has established a regional Forum of BAT and BEP for East and South East Asia (ESEA) to support the countries implement the requirements of the Stockholm Convention. The ESEA BAT/BEP Forum is the first forum that has been established by UNIDO for developing and formulating a regional action plan on BAT/BEP and for supporting a programmatic approach in reducing UP-POPs. Formally launched on October 5, 2007 during an Inaugural Ministerial Meeting in Bangkok, Thailand, the main objective of the Forum is to create an enabling, non-legally binding framework for regional cooperation to facilitate the development, diffusion and deployment and transfer of BAT/BEP through concrete and substantial initiatives. The participating countries in this projects are members of the ESEA Forum.

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

A.4.1 Baseline Situation

11. The participating countries have different baseline situations, mainly depending on their financial, economic and socio-economic status. Generally, the implementation of resource-efficient and integrated waste management practices is still in its preliminary stages in each of them. The disposal of municipal wastes and other types of wastes are usually carried out in open dumpsites, in some isolated cases in dedicated landfills. Usually wastes can be intentionally burnt to reduce the volume and can undergo unintentional burning due to spontaneous ignition of the methane produced during the anaerobic digestion of the organic fraction, depending on the specific climatic conditions and type of disposed waste. In open burning processes the poorly mixed materials and the presence of chlorinated precursors (as PVC plastics) and catalytic metals (copper, iron, cadmium etc.) are the main sources of the formation and releases of U-POPs, particularly when the combustion conditions are poor and the waste is not homogeneous. Since new waste types are emerging in the municipal waste such as electrical and electronic waste, the U-POPs releases might even increase. Medical waste is also usually mixed with municipal waste and landfilled, and, in worse cases, open burned releasing U-POPs, PAHs, mercury and other environmental pollutants. Moreover, U-POP rich waste streams such as bottom and fly ashes from burning processes are often dispersed in open

dumpsites. The above contaminants can be released in the environment in ambient air as gaseous compounds or associated with particulate matter, in water streams due to leachate dispersion, and in soil due to the accumulation of ashes. Moreover, at all dumpsites some amounts of biogas (mainly methane as flammable gas) are generated as a result of anaerobic decomposition of organic matter inside the waste dumpsite. Methane is a powerful green-house gas and current practices do not include any measures to reduce/mitigate its emissions, and they do not foresee any adaptation activities either.

12. Current research indicates that the practice of open burning is a more serious threat to public health and the environment than previously thought. There is enough evidence that high levels of exposure over the long term, such as those experienced by waste management workers and scavengers, may contribute to increasing birth defects, fertility problems, greater susceptibility to disease, reduced intelligence and some types of cancers. Recent studies indicate that many U-POPs may act as endocrine disruptor and acute exposure can even cause death PCDD/PCDF emissions in the participating countries and inventory of dumpsites
11. Information on the revised inventory of U-POPs releases were collected during the PPG phase. Specific questionnaires were also prepared and distributed to collect information on the number and type of dumpsite/landfills in the participating countries. A summary of the U-POPs releases is provided in the table below:

| Country | Dioxin inventories |
|---------------------------------------------------------|---------------------------------|
| | Open burning sector, g TEQ/year |
| Cambodia ¹ | 548.031 |
| Lao PdR ¹ | 90.742 |
| Mongolia ² | 18.10 |
| Philippines ² | 438.54 |
| Vietnam (average last 6 years) | 22.60 |
| TOTAL | 1118.013 |
| ¹ Values from the original NIPs | |
| ² Values from the updated inventories (2013) | |

Cambodia

12. In Cambodia, 90% of the PCDD/PCDFs releases are due to open burning activities, accounting for 548.031 gTEQ/year. The most important source is landfill fires. Waste generation is highest in the capital Phnom Penh (PP). PP is a small city with a total area of approximately 374 km² and an urban population of about 1.4 million in 2010. For the last 14 years, average annual municipal solid waste (MSW) generated in MPP has increased rapidly from 0.136 million tons in 1995 to 0.361 million tons in 2008. The gross generation rate of MSW per capita was 0.74 kg/d. However, the per capita household waste generation was 0.487 kg/d. At 63.3%, food waste is the predominant portion of generated waste, followed by plastics (15.5%), grass and wood (6.8%), and paper and cardboard (6.4%). The remaining waste, including metals, glass, rubber/leather, textiles, and ceramic/ stone, accounted for less than 3%. Waste recycling through informal sectors is very active; recycled waste accounted for about 9.3% of all waste generated in 2003. Currently, the overall technical arrangement, including storage and discharge, collection and transport, and disposal, is still in poor condition, which leads to environmental and health risks.

Lao PDR

13. In Lao PDR, solid waste management is a relatively new concept for residents. Traditional practices, e.g. burning and burying in their backyards, dumping outside their property and throwing in nearby swamp or river, are still being carried out. The current waste generation in the major cities in the country are given in the table below:

| Provinces | Population (persons) | Generation rate (kg/capita/day) | Total amount of waste (tonnes/day) |
|-------------------|----------------------|---------------------------------|------------------------------------|
| Vientiane Capital | 330,798 | 0.64 | 212 |
| Luangprabang | 70,481 | 0.60 | 42 |
| Savannakhet | 65,724 | 0.64 | 42 |
| Champasak | 72,955 | 0.7 | 51 |

Currently, the collection and disposal of municipal solid waste in four major cities (Vientiane Capital, Luangprabang, Savannakhet and Champasak) are much better than other cities. So far, there is no service or mechanism for waste separation at the household level except by the homeowners own initiative. Waste collection service in urban areas of Lao PDR is under the responsibility of the Urban Development and Administration Authority (UDAA). Some cities, such as Luangprabang, transfer waste collection service to designated private waste collection companies. Each city has a number of trucks that generally collect waste from each household once or twice a week. The fee for collection service is about USD 1.25 – 2.25 per month per household. However, only around 30-40% of residents pay the waste collection fee. Based on UDAA records, approximately 40-70% of waste generated (on average) is being collected and transported to landfill (Table 3.8). The collection rate in Savannakhet is higher than other cities (70%). The coverage of waste collection service is highly dependent on the numbers of waste collection trucks and received waste collection fees by residents. Local governments could not increase the coverage of their services due to various constraints, including lack of supporting funds from the central government, insufficient numbers of trucks for waste collections, residents that could not or are not willing to pay for waste collection, difficulty of access to some communities, low awareness of residents on sanitary issues, lack of local regulations, etc. Detailed description of the current waste management practices in Lao PDR is provided in **Annex G**.

Mongolia

14. The highest waste generation in Mongolia is in the capital city of Ulaanbaatar (UB). Waste has not been considered a serious issue in the city of 1,359 km² divided into 9 districts, until its population has boomed into a total of one million (one third of the total population). Due to the economic development and continuing transference of market economy, Ulaanbaatar currently suffers from severe pollution of both soil and air generated from the wastes which were improperly disposed. Most of the solid wastes are usually delivered to the disposal areas without segregation. A research carried out by the Municipal Governor's office concludes that 700-750 tons daily and 260-280 thousand solid wastes are produced annually in Ulaanbaatar by households, enterprises and industries. and the waste generation per capita is 0.354- 0.535 kg waste a day. 75% of the total wastes generated is collected by city waste maintenance organizations and 15% is transported by the organizations with their own trucks and 5-10% of waste is left without being transported. Generally, the Municipal Governor's Office is in charge of waste treatment along with its executive agencies including environmental protection authority and district maintenance companies.

An updated inventory of disposal sites was taken during the PPG phase, for UB and for the provinces (details in **Annex H**). It is estimated that 2.9 million tons of waste/year are sent to disposal sites in Mongolia and 90,528 tons of wastes are illegally dumped. UB has 2 sanitary landfills and 4 controlled disposal sites. At least two open burning events occur in some illegal dumpsites, especially during the dry seasons as strong winds and dust storms favor the ignition of wastes. It is estimated that some 18% of total generated wastes are burned openly in UB.

There are 3 sanitary landfill sites, 65 controlled landfill sites and 129 open dumping sites in 21 provinces in Mongolia. Controlled and open dumping sites undergo open burning at least twice per year because provinces do not have the necessary equipment and capacity to manage landfill sites. Also for villages, governments allow waste burning at least once per year to reduce amount of disposed waste. The provinces have a total of 272 illegal dump sites, with 72,908 tons of wastes. The estimated amount of burned waste is 33% of total generated wastes. A resuming table of the inventory results for the 21 provinces is presented hereafter, while a more detailed tabulation by province is provided in the annexes.

| Total population of 21 provinces | Number of legal waste disposal site | Total surface of legal disposal | Number of illegal dump sites(spots) | Illegal dump site area (hectare) | Estimated amount of delivered and dumped waste tons/year | |
|----------------------------------|-------------------------------------|---------------------------------|-------------------------------------|----------------------------------|----------------------------------------------------------|---------|
| | | | | | Disposal | Illegal |

| | | | | | | |
|---------|-----|--------------------|-----|--------|----------------------|------------------------|
| | | sites (hectare) | | | site and landfill | dump site and spots |
| 1486274 | 357 | 2245.5 | 272 | 1992.2 | 1832703.6 | 72908 |

Philippines

15. In the Philippines, solid waste management is governed by the Republic Act (RA) 9003 otherwise known as the Philippine Ecological Solid Waste Management Act of 2000. This law provides for the necessary institutional support mechanisms and instructs all local government units (LGUs) to establish an ecological solid waste management program within their jurisdiction. Based on studies made by the National Solid Waste Management Commission Secretariat, it is estimated that the per capita waste production in Metro Manila daily is 0.5 kg. With an estimated population of 10.5 million, total waste generated in Metro Manila alone could run up to 5,250 metric tons per day or 1.95 million metric tons per year. However, only about 73% of the 5,250 metric tons of waste generated daily are collected by dump trucks hired by local government units and the remaining 27% are either open burned or are ubiquitously dumped. According to the information obtained by the National Solid Waste Management Commission (NSWMC) and available at the website <http://www.emb.gov.ph/portal/nswmc/NSWMC.aspx>, in 2013 and early 2014, there were 581 open dumpsites, 331 Controlled Disposal Facilities, and 81 sanitary landfills (with additional 53 under construction) in the Philippines. In 2014, some 8565 Material recovery facilities (MRF) are registered, serving 9351 Barangays. The complete details of the inventory and other programs related to open burning in the Philippines are provided in **Annex I**.

Despite being prohibited by national laws and other penal provisions that impose administrative sanctions, open burning remains a serious problem and continue to endanger public health and threatening to the environment in the country. In the updated (2013) inventory, open burning remains to be the major source category for dioxin emissions with 438.51 g TEQ/year out of the total of 780 g TEQ/year.

Vietnam

16. In Vietnam, the biomass burning, burning from open landfill dumping sites and forest fire, informal combustion and burning activities in rural areas and craft villages are common open burning practices. Agricultural biomass burning, including backyard, rice husk and particularly straw, has recently become very common in Vietnam. The open burning often causes serious pollution problems. The updated national inventory of dioxin and furan releases calculated with the new emission factors of UNEP toolkit reports an average value of 22.6 g TEQ/year during 6 year period (2007 - 2012) for open burning activities. A total dioxin emission from various industrial sectors in Vietnam was estimated at 564.4 g TEQ/year. These figures were derived from major open burning activities such as forest fire and agricultural residues burning (biomass burning) and domestic wastes burning, accidental fire, and brick making (waste burning). Dioxin releases from informal thermal processes and burning activities in craft villages are not yet accounted for the above dioxin emission values and could be an object of study under the framework of this project. A comprehensive report on the emissions from craft villages are provided in **Annex J**.

A.4.2 Legislative framework and institutional settings

17. The detailed overview of the legislative framework and institutional settings in each participating country is described in **Annex K**. The main legislations relevant to the open burning issues are presented in the **Table 1** below. An initial assessment of the legislative framework for each country shows that, aside from the Philippines, all participating countries do not have specific legislations prohibiting open burning of wastes but issues related to open burning are managed under general environmental management or hazardous wastes legislations.

Table 1: Related Legislation on Open Burning Issue

| Country | Related regulations on Open burning issue | Description |
|----------|-------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Cambodia | Law on Environmental Protection and Natural Resources Management, | Fundamental framework for the development of environmental regulation such as sub-decrees, ministerial declarations, circulations, codes and standards for |

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| | 1996 (Sub-decree No.36 Or-Nor-Kror.Bor-Kor on solid waste management, issued on 27 April 1999) | environmental quality protection and natural resources management. |
| Lao PDR | Solid Waste Management strategy drafted by the Ministry of Public Work and Transportation (MPWT) and improved by the Ministry of Natural Resources and Environment(MONRE) | <p>It contains the following points:</p> <ul style="list-style-type: none"> • Reducing wastes and maximizing environmentally sound waste reuse and recycling as the first steps in waste management (a signatory to UN Agenda 21); • Enforcing waste management guidelines in urban centers by 2015 (MPWT SDP 2011-20); • Revise and fine-tune the functions and responsibilities of institutions to increase the performance efficiency; • Striving for cost recovery in services; • Attracting the private sector in the services combined with public campaign on 3R and environmental protection; • Upgrading the existing and the future landfills to sanitary sites, SDP of Urban Development Sector 2011-2020 |
| Mongolia | Law on Waste, 2010 | Currently being converted into practical regulations by the MEGD and MUB's City Maintenance and Public Utilities Division, and expected shortly to be considered by the City assembly. Under this law only authorized contractors are able to collect and transport SW. The new Regulations will also make new provisions for the collection of charges and it is possible that all charges i.e. from both formal and ger areas, will be consolidated in either a single City or multiple District SWM Funds. |
| Philippines | Ecological Solid Waste Management Act of 2000 (RA 9003) RA 9003 | Its main purpose is to serve as a roadmap to attain a cleaner and a healthier environment by providing concrete steps in achieving the goal of the Ecological Solid Waste Management Act. The NSWMS was developed in consideration of the three main elements of solid waste management which are a) extent of waste management activities; b) key actors and partners in the implementation and c) means for the implementation. Series of consultations were made to come up with a good assessment of the solid waste management situation of the country as well as the level of compliance of the LGUs and other stakeholders. The options that are being utilized in addressing Solid Waste Management were also analyzed which include environmentally sound technique of minimizing waste, public participation and information campaigns for waste avoidance and performance measurements and consists of eight components with key initiatives which were further elaborated through objectives, indicative actions, justifications, responsible entities, time frame, target groups and resource requirements. |
| Vietnam | Vietnam currently does not have specific regulations for management of open burning practices. Instead, several | <ul style="list-style-type: none"> • The objectives of the strategy include: • Raise the effectiveness of integrated management of solid waste in order to improve environmental quality, |

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| | <p>issues related to open burning sector is managed under general environmental management and hazardous waste legal framework</p> <p>National Strategy for Integrated Management of Solid Waste, Vision 2025</p> | <p>assure community health and contribute to sustainable national development.</p> <ul style="list-style-type: none"> • Build a system of integrated management of solid waste under which solid waste will be sorted at source, collected, reused, recycled and thoroughly treated with advanced and appropriate technologies to minimize the burial of waste, save land resources and mitigate environmental pollution. • Manage and treat hazardous solid waste with appropriate methods. • Raise community awareness about integrated management of solid waste and develop an environmentally friendly lifestyle. • Provide necessary infrastructure, financial and human resource conditions for integrated management of solid waste. • Among the specific targets the following ones can be mentioned: <ul style="list-style-type: none"> • Collect and treat up to environmental standards 85%, 90% and 100% (by 2015, 2020 and 2025, respectively) of daily life solid waste in urban centers, 60%, 85% and 90% (by 2015, 2020 and 2025, respectively) of which will be recycled, reused, recovered energy or used for organic fertilizer production. • To collect and treat 50%, 80%, 90% (by 2015, 2020 and 2025, respectively) of construction solid waste in urban areas. 30, 50% and 60% (by 2015, 2020 and 2025, respectively) of which will be recovered for reuse or recycling. • To collect and treat up to environmental standards 30% and 10% (by 2015), 50% and 30% (by 2020) and 100% and 50% (by 2025) of antiseptic tank mud in urban centers of grade II or higher grade and in remaining urban centers, respectively. • Reduce by 40%, 65% and 85% ((by 2015, 2020 and 2025, respectively) the quantity of plastic bags used in supermarkets and trade centers from that of 2010. • Collect and treat up to environmental standards 80% and 90% (by 2015 and 2020, respectively) of non-hazardous industrial solid waste, 70%, 75% of which will be recovered for reuse and recycling (by 2015 and 2020, respectively). By 2025 100% of non-hazardous and hazardous industrial solid waste shall be collected and treated up to environmental standards • Treat up to environmental standards 60 and 70% of hazardous solid waste from industrial parks (by 2015 and 2020, respectively) |
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| | | <ul style="list-style-type: none"> • Collect and treat up to environmental standards 85% and 70% of non-hazardous and hazardous hospital solid waste by 2015 and 2020, respectively and 100% of both of them by 2020 • Collect and treat up to environmental standards 40%, 70% and 90% of solid waste in rural residential areas and 50%, 80% and 100% of solid waste in craft villages by 2015, 2020 and 2025, respectively. • Set up solid waste recycling works which sort waste at households in 50%, 80% and 100% of urban centers by 2015, 2020 and 2025, respectively. |
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A.4.3 Baseline projects

It was evident that the participating countries have various levels and nature of baseline projects addressing the project components. Some waste management initiatives have been started in all of the countries involved, some programs are supported by national or external funding and some are supported by evolving legislations. Assessment of the baseline situation and baseline projects have also indicated varying levels and nature of barriers identified. Description of the baseline projects in each country relevant to the components of the project framework and comprehensive barrier analysis are presented below:

Cambodia

18. Cambodia is currently considering formulation of a regulations that would cover management of persistent organic pollutants. Until now, non governmental institutions have been more involved on carrying out actions on the sound management of POPs. There are four main ministries involved in the POPs issues in the country: the Ministry of Environment (MoE), the Ministry of Agriculture, Forestry and Fisheries (MAFF), the Ministry of Health (MoH), and the Ministry of Industry, Mines and Energy (MIME). A amendments to the Law on Environmental Protection and Natural Resources Management, 1996 (Sub-decree No.36 Or-Nor-Kror.Bor-Kor on solid waste management, issued on 27 April 1999) has recently been incorporated to include provision on solid wastes management responsibilities and the payment for this environmental service. However, a specific regulation on open burning of wastes is still missing.
19. For management of solid wastes, recycling/reuse practices are rarely implemented in Cambodia which give rise to the common practice of burning. Only the municipality of Phnom Penh has recently started to institute waste segregation practices (wet and dry waste), especially for market wastes. Cambodia is part of the UNESCAP initiative on “Integrated Resource Recovery Centers – IRRC”. The United Nations Economic and Social Commission for Asia and the Pacific (ESCAP) has been promoting decentralized and Integrated Resource Recovery Centers (IRRCs) in secondary cities and small towns in Asia-Pacific with an objective to recover value from waste and provide livelihood opportunities to the urban poor. The IRRC model uses simple technology, is low cost and aims at financial viability by converting organic waste into compost and valorizing recyclable waste, made possible through the separation of waste at source. Through this project, it is aimed that the IRRC elements will be replicated in all provinces/towns in collaboration with local governments and civil society organizations.
20. Currently, two local enterprises have invested in two major municipalities in the conversion of waste into composting fertilizer by collecting degradable wastes from vegetable markets. These investments will probably continue in the future. However, local companies are generally lacking the concept of BAT/BEP and this is envisaged to be addressed by the project. The NGO Cambodian Education and Waste Management Organisation (COMPED) has initiated a project funded by the EU for making compost to reduce the amount of wastes at Phnom Penh dumpsite. UNIDO also has a GEF-funded project on "Climate Change related technology transfer for Cambodia: Using Agricultural residue biomass for sustainable energy solutions". The utilization of agriculture residues such as rice husk in energy generation through gasifiers has also become popular in Cambodia recently. In 2009 UNIDO supported a national project on open burning, mainly focused on trainings for technical staff and scavengers and on sampling campaign in some dumpsites. However, composting/recycling efforts still need to be further disseminated as wastes (including organic fractions) are still continuously being dumped and burned openly

in dumpsites. COMPED will continue to provide support to the project to encourage composting of the organic fractions of the wastes.

21. The project will assess the open wastes dumpsites in Phnom Penh or near Kampot town for the demonstration activities. During the PPG, an assessment of the Kampot dumpsite was undertaken. The detailed report is found in **Annex L**. The waste generation rate in Kampot Town is about 0.5kg per person per day according to the recent study conducted by SCARO (2011). The estimated amount of waste delivered to the dumpsite is about 10 tons/day (3600 tons/year). The current dumpsite is 10 years old and covers the areal of about 10 hectares. It is located in an agricultural area, but no agricultural waste is being collected as agricultural wastes are usually left over at paddy fields and seldom burnt after harvesting. An Integrated Resource Recovery Center (IRRC) for composting process is already partially established in Kampot, and managed by the company SCARO with the support of UNESCAP. This IRRC is a pilot activity, and it works with some selected communities to collect separate wastes from households. The province is well known for an internationally recognized excellent quality of pepper. The production of pepper is an important source of income in the region, and significant efforts have been invested in increasing it. Therefore, it is crucial for this industry to receive positive feedbacks from customers on the quality of soil and environment. For the Phnom Penh site, statistics have yet to be provided and will be carried out during the project implementation. The co-financing provided by the municipality of Phnom Penh was estimated based on the current resources available in the candidate dumpsite, including land and recycling infrastructures. A detailed assessment of both dumpsites, Kampot and Phnom Penh, would be undertaken to determine the most suitable demonstration site and the possible interventions that need to be implemented.

Lao PDR

22. The Ministry of Natural Resources and Environment (MONRE) in collaboration with Public Works and Transport Agency is implementing the recently introduced Guidelines on Solid Waste Management (VUDAA 2010) in Vientiane in support of sound municipal waste management including 3R projects (reduce, reuse, recycle). This project is financed by the Japanese Government (JICA) with a budget of 5.6 million US\$ and includes the establishment of a municipal landfill. The main limitation of this initiative is that BAT/BEP concepts are not fully incorporated in the design of the programs and infrastructure. The project will assist in integrating BAT/BEP concepts in the guidelines.
23. The total waste delivered to the Vientiane landfill is 200 ton/day, and it has a composition of plastic (13%), metals (3%), paper (3%), food and vegetable (30%), textile (2%), wood /grass/leaf (19%) and others. Every day workers search for recyclable wastes (plastic, paper, metal, glass). Currently, limited waste separation is carried out manually by workers, but due to an ineffective separation, the plastic and other wastes are still left over in high quantities, together with other residues, and oftentimes undergo open burning. Currently, a private company, SAPLAST Vientiane, buys HDPE and PE plastics from the waste sorters in the landfill for reprocessing as input material to their plastic products. The company is based upon the cooperation of Lao and Vietnam investors and runs the first plastic recycling factory in Laos. The main equipment used are 5 injections, 3 extrusions (for pipe producing) 1 extrusion (for grain producing) 2 shredders and a 1.5t overhead crane. The raw materials are composed of 60% of virginal (new) and 40% recycled (old) plastic, and the company produces all kinds of plastic housewares (e.g. chairs, baskets, bins, etc.). Factory buys recyclable plastic from waste shop with price of 7,000LK to 9,000LK (1USD=8,000LK) per kilo, the quantity of around 10-30 tonnes per month. The company currently suffers competition for the recyclable plastics from Chinese businesses and seeks the assistance of the project in developing a modality where fair competition is instituted. SAPLAST has provided cofinancing of USD 1,300,000 in the project to support the implementation of a sound infrastructure for recycling.
24. Other waste separation and recycling initiatives are also carried out in recycling banks under the supervision of the Lao Chareon Recycling Center. Currently, there are 30 recycling banks operating in Vientiane, 20 in communities and 10 in schools. These activities have been supported by the Royal Dutch Embassy and German Technical Cooperation. Moreover, the NGO, Lao Women's Union, is conducting educational and training programs for scavengers in recycling activities and safe handling of hazardous waste. While some efforts have been implemented previously, structured dissemination activities and training programs still need the assistance from the project to ensure that more stakeholders are reached and educated on the health and environmental impacts of open burning.

Mongolia

25. In terms of national strategies, the "Solid Waste Master Plan of Ulaanbaatar" was developed in 2004 with a 2020 target. The 2010 Law on Waste is currently being converted into practical regulations by the Ministry of Environment and Green Development (MEGD) and Municipality of Ulaanbaatar's City Maintenance and Public Utilities Division, and these are expected shortly to be considered by the City assembly. Following approval there they will then require the sanction of the Government Cabinet before they can be implemented. Under this law only authorized contractors are able to collect and transport SW. The new Regulations will also make new provisions for the collection of charges and it is possible that all charges i.e. from both formal and ger areas, will be consolidated in either a single City or multiple District SWM Funds. According to the Polluter-pay principle, the State Great Khural approved the law "Prohibition of use and importing of some plastic bags" and decided to restrict the import and use of plastic bags thinner than 0.025mm for household and packing purposes from January 2010. Among the foreseen activities, the aim was to promote the purchase of green products and services options that do not produce waste, introduce green product and eco-labeling system, increase awareness of the public on reducing waste amount. The law also foreseen the reduction of the production of ashes by the implementation of new technologies and the promotion of ash minimization activities. However, there is, currently, no regulation in place specifically for controlling open burning and the costs and benefits of these initiatives could not be considered and consequently translated into informed decision making in the future.
26. As described in the PIF, there is a national baseline project on improving local dumping sites in all provinces. Detailed inventory of the existing dumpsites in the country is provided in **Annex H**. Within the international cooperation framework Ulaanbaatar has implemented several projects: (i) JICA development Study for "Solid Waste Management Plan for Ulaanbaatar City in Mongolia" (2004-2007); (ii) World Bank loan project "Public Services improvement of Ulaanbaatar city" grant project of Australian Government; (iii) "Waste Composition study of Ulaanbaatar" in cooperation with the WHO and American "Cal Recovery" company; (iv) "Environmental Strategic Plan of the Capital city area of Mongolia" financed by Netherlands Government and World Bank; (v) "Green Productivity Training" in cooperation with Asian Productivity Organization, South Korea: with KOICA - 3R project 2010.
- These projects made basic studies on the current situation and produced feasibility studies by making public surveys, field exploration and training of local staffs. However, most of their final reports assessed that citizens' understanding of managing waste is insufficient and human resources capacity is still very low. Likewise, the city's poor infrastructure, harsh climate and governmental organization's slow response and reaction have always affected the results of projects.
27. As a result of the project "Improvement of Ulaanbaatar City Waste Management System" approximately 4 ha of area in Ulaanchuluut disposal point was cleaned, land filled and restored with soil and planting. The new disposal site was also created in an environmentally friendly way. At the next stage, this project will focus more on implementing 3R waste management principles at individual, households and business entity levels, and on promoting reduction of excess consumption by supporting products reuse practices based on economic incentives. It is aimed that the efforts implemented in Ulaanchuluut maybe duplicated in other areas through the assistance of the project.
28. MEGD is responsible for financing of National SWM. In 2014 MEGD is planning to spend a total of 82,5 million tug (50,000 USD) to establish Statistical database of SWM and to promote an educational campaign. Moreover, in 21 provinces the total of 280 million (160,000 USD) have been allocated in the budget for cleaning illegal dump sites and for landfill sites operation and improvement. The Capital city Ulaanbaatar is planning to spend 9 billion tug (5 million USD) for waste transportation, 2. 7 billion tug (1. 5 million USD) for waste handling bags, 200 million tugs (110,000 USD) for cleaning illegal dump sites, 1 billion tugs (560,000 USD) for landfill operation, and 7 billion tugs (3,9 million USD) for street sweeping. In addition to that, the Asian Development bank allocated 2 million USD for improving the medical waste treatment plan in UB city and the USA Asian foundation funded with 500,000 USD the SWM module khoroo\ village\ project. It is clear that the the Government of Mongolia prioritizes the issue of solid wastes management in the country by allocating sufficient resources. However, the issue of open burning of wastes still remain critical as infrastructures still needs to be built and old dumpsites rehabilitated to prevent the occurrence of this activity.

Philippines

29. The Philippines has been successful in implementing the Solid Waste Management Act (RA 9003) to control open burning of municipal and domestic wastes. However, the uncontrolled combustion of agricultural residues and open burning in dumpsites are still to be addressed. As part of the baseline project, the country is now implementing programs for waste reduction and minimization, including development of policies for banning some specific types of plastics and a parallel policy encouraging the use of indigenous materials for packaging, such as bayong made of abaca fiber, bamboo, and others. At the same time, policies on waste segregation at source and on a more efficient collection of segregated resources have been drafted. These initiatives are envisaged to lead to the closure of many dumpsites and the construction of new sanitary landfills.
30. The campaign of the national government for the LGUs to close open dumpsites and to establish waste management facilities is one among the efforts that have been in the center of attention since the issuance of RA 9003. The compliance level of the various local government units vary from one area to another, depending on different factors such as the capacity of the LGU, extent of solid waste problem, available technologies, local political situation, and commitments of the LGUs. Some LGUs opted just to start a simple Material Recovery Facility (MRF) and focus on effective waste collection, while the others tried to (if not to cluster) establish and operate a sanitary landfill (SLF), and still some opted to build Eco-Centers which may include MRF with composting, SLF, etc. The following activities are envisaged within the baseline project: (i) the set up and sustained operation of Materials Recovery Facilities (MRF); (ii) the accreditation of solid waste management experts; (iii) the establishment of Ecological Solid Waste Management System in selected Subdivisions in Metro Manila, and; (iv)- Ecological Solid Waste Management Summits in Metro Manila Barangays.
31. Recently, the National Solid Waste Management Commission Secretariat has introduced the concept of Ecological Solid Waste Management Park, defined as the site where combined processes for biodegradable, non-biodegradable, recyclable and residual wastes are being conducted. Local governments are encouraged to develop their waste disposal sites into Eco SWM-Parks employing local or indigenous low cost and low tech materials, as an option for managing the municipal waste . Other two national programs concerning waste management are:
- (i) The National Government-Local Government Cost Sharing Scheme for Solid Waste Management Services, which provides national government grants to all cities and municipalities for investments in solid waste management, and;
 - (ii) The National Framework Plan for the Informal Sector in Solid Waste Management, aimed at integrating the informal sector (scavengers) in the waste management system, especially in recycling activities system, by providing them employment and social services.
32. In 2012, the Department of Environment and Natural Resources (DENR) with support from the German Technical Cooperation (GIZ) developed and published the Philippine National Solid Waste Management Strategy (NSWMS). Its main purpose is to serve as a roadmap to attain a cleaner and a healthier environment by providing concrete steps in achieving the goal of the Ecological Solid Waste Management Act or RA 9003. It includes a comprehensive Solid waste management Training Program, in order to address the requirements of the DAO 01-34, IRR for RA 9003, Rule V, Section 1, where it is stated that “The Ecology Centers shall provide technical expertise, information, training and networking services for the implementation of RA 9003”. The Training Program consist of 17 toolkits, aligned and concerning with the Principles of SWM, SWM Planning, Collection and Segregation, Material Recovery, Composting, Informal sector integration + PPP, Mechanical-biological treatment, Dumpsite and SLF Rehabilitation and Closure, KM, IEC and public information, SWM financing, Site characterization, Sanitary landfills (SLF) Design, EIA, Sanitary landfills Construction and Operation, Sanitary landfills Monitoring, SWM and Climate Change, and E-Waste. The program has been further developed and adapted, now being offered as a training course at one of the universities in the Province of Ilo-Ilo. The modules developed by the Philippine Government, through the assistance of GIZ, will be shared amongst the participating countries and adopted to their national conditions.
33. A detailed dumpsite/landfill inventory in the Philippines is provided in **Annex I**. Based on the preliminary assessment conducted and the commitment of the local government units (LGUs) to participate in the project, the Philippines has selected two (LGUs), the General Santos City (Mindanao) and Lapu-Lapu City (Visayas), to participate in the project and commit substantial budget for the rehabilitation of open dumpsites in the area, including improvement/installation of an effective municipal recycling facility (MRF).

The city of General Santos has already implemented several initiatives with regard to SWM. There are already policies to support the national law on waste segregation and banning of open burning, although its implementation still has to be enhanced. There are also employees and deputized barangay officials for the enforcement of laws. Waste Recyclable Fairs were held in partnership with private sector such as junk-shops and industries. Several studies have been conducted in the city focused on waste management, one of which is the "Site Specific Assessment of Waste Management Practices and Sources of Dioxin and Furan Emissions" through the World Bank-CIDA in 2010. The project foresees the preparation for the safe closure and rehabilitation of one of their biggest dumpsite in General Santos (Tambler Dumpsite). The dumpsite has received support from the ongoing IPOP's project for some selected activities. However, the city has committed funding in the amount of PhP 50,000,000 that will contribute to the full realization of the city's SCRCP (safe closure and rehabilitation plan). A new landfill under construction will be ready by mid-2015 and a full rehabilitation is expected for the open dumpsite. Based on the recent 2012 data, the Tambler dumpsite receives 160 tons of mixed waste per day and proper waste segregation is still an issue. The project can complement the funding of the municipality to totally rehabilitate the dumpsite and set-up an effective MRF in the new landfill.

Lapu-Lapu City also has its own share in terms of government efforts to combat the problems in solid waste. The SWM Program of the city has functional elements, being equity and logistics, engineering, enforcement, education and organizational structure. SWM Complex was built with structures for material segregation, special waste, residual waste and composting. A comprehensive environmental and sanitation code ordinance covers most aspects of waste management, thus ensuring environmental protection in the city. Furthermore, the city has already created the Solid Waste Management Board who administers and directs the environmental efforts being done in the city. The Board is supported by the Solid Waste Management Office who helps to monitor and implement activities such as conduct of education campaigns and SWM seminars. Storage areas for waste were also made available in each barangay (district) as well as within the city. The city has also established the City Material Recovery Facility that caters government offices and serves as a model for the barangays.

The Lapu-Lapu dumpsite has an area of 2 hectares and half of it has already been closed. It receives around 120 tons/day of waste. It is foreseen to fully close the dumpsite upon full operation of the SWM Complex. It is anticipated that the complete closure and rehabilitation of the dumpsite will be done with the implementation of BAT/BEP measures for which additional funding support from GEF- UNIDO was requested. Lapu-Lapu municipality confirmed the commitment to co-finance the project and indicated that the allocated budget of 690,240,792 Pesos (15,775,000 US\$) for 2014-2018, with the expenditures until 2018 accounting for 690,240,793 Pesos (15,402,506 US\$) and the planned projects for years 2015-2019 accounting for 72,000,000 Pesos (1,650,000 US\$). The latter budget includes the purchase of additional garbage trucks, the establishment of a waste to energy facility, trainings on MSW management and relevant legislation, consultation with local authorities for MRF construction and purchase of other equipment

Vietnam

33. Amongst the participating countries, Vietnam has the most advanced infrastructure and capable human resources to analyze U-POPs through the government-owned Dioxin Laboratory, Center for Environmental Monitoring. Administration. The laboratory undertakes environment monitoring tasks with focus on persistent and toxic substances. They have participated in many efforts to overcome the consequences of AO/Dioxin in Vietnam and carries out research and assessment on health effects caused by dioxin and other toxic compounds. They are participant to UNEP's interlab calibration programme and has been analyzing dioxins from different media since 2009. This expertise on dioxin analysis would be very beneficial to other countries in the region and Vietnam is expected to take the lead in addressing the training needs of other countries in standardized analytical procedures, data collection and analysis as part of their co-financing commitment to the project.
34. For this project, Vietnam plans to target one priority source category of open burning activity in the country - the CRAFT VILLAGES. A comprehensive report of this sector is provided in **Annex J**. The country's National Target Program for environmental remediation and improvement in the period of 2012 – 2015 is particularly relevant on this issue and foresees the following objectives:
 - Environmental remediation and improvement of 47 craft villages with serious pollution, including from burning of metal scraps.

- Improvement and remediation of 100 areas which are seriously polluted by residue pesticides.
- 100% collection and treatment of wastewater from type II urban and higher discharged to three river basins (Nhue-Day river, Cau river and Dong Nai river).

It must be mentioned that there is a quite significant number of craft villages in sub-urban and rural areas. Inventory data in 2011 indicates that there are about 3355 craft villages throughout the country, out of which 1318 are recognized and 2037 not yet officially recognized by the Government. In particular, in craft villages there is a wide variety of informal, family small scale industries such as food and agriculture product processing, recycling of metals, plastics and papers, arts and handicrafts, textile, production of steel and non-ferrous metals, seafood productions, trade, etc. Among these, industries that involve informal low temperature combustion systems such as recycling of plastic products, metals, and food productions are common. In the case of aluminum recovery, usually unsorted scrap is melted in small furnace housed in a building or a roofed space, most often inadequately ventilated. These devices can be fired with charcoal, oil, waste oil or coal, depending on economic factors and the local fuel supply situation. In larger furnaces, the melt may be treated with fluxes and degasifying chemicals to improve the quality of the molten metal. The situations are of concern as potential sources of PCDD/PCDFs as well as other contaminants including new POPs such as brominated flame retardants. Hung Yen and Bac Ninh province are among the most densely areas in craft villages. Studies on Bui Dau village for electronic waste (e-waste) recycling demonstrated elevated levels of PBDEs in human milk of female recyclers, in comparable or higher rank as compared to industrialized countries. In addition, the quantities of chlorinated dioxins/furans (PCDD/Fs) and brominated dioxin/furans (PBDD/Fs) in house dust in this village were about 3 - 5 times higher than the ones in indoor dust in Japan. Recent surveys in small scale boiler for sweet candy production indicated relatively high level of dioxins in stack gas, exceeding regular standard levels of 100 - 1000 pg TEQ/m³.

Using the most updated toolkit from UNEP in January 2013, it was possible to estimate the emissions and releases of dioxins from some important locations that can be potentially recommended pilot sites for this project. As an example, a craft village recycling of aluminum in Nam Dinh Province with about 17,166 tons of aluminum products/year (which is among the largest metal recycling craft villages in Vietnam) was estimated to release 5.15 g TEQ/year.

With the financial and technical assistance projects funded by Swiss Government in 2008 to minimize hazardous waste, some households of the Binh Yen village where aluminum recovery is carried out were supported to reduce pollution, specifically to minimize waste water from the polishing process; reducing smoke and dust; installing chimneys in households used for the polishing process and in those used for the melting process, and providing barrels for containing residues, organic wastes. To date, some of equipment has been used, some damaged. In the period of 2010 - 2015, Binh Yen village has planned to build a market with total area of 8,000 m², a sewage system around the village to collect waste water into biology reservoir, a biology reservoir to keep waste water.

35. The Ministry of Natural Resources and Environment of Vietnam has prioritized the environmental issues stemming from the manufacturing processes being conducted in the craft villages and has allocated substantial government resources to address these. The general planned activities for the craft villages include the investigation and assessment to determine scope and pollution level in highly polluted cases, the establishment of measurements for environmental remediation and improvement, to submit to authorities for funding the following options for approval:
- Construction of centralized systems for waste collection and treatment especially in those traditional craft villages which have to continue their production, partly supporting waste treatment generated from households and firms.
 - Movement of the production steps into common production area and support for changing to less pollution production; this implies environmental treatment and improvement of serious polluted areas in craft villages after moving production steps.
 - Implementation of approved projects; monitoring environmental quality during and after treatment and improvement to ensure environmental standards.
 - Establishment and promulgation of regulation for sustainable management and operation of environmental protection facilities in villages after finishing investment phase.

- Supervision of implementation of projects and social-economic-environmental effectiveness of projects; propose plans, solutions for multiplying.

UNIDO's partnership with ISWA and the City of Kitakyushu

36. UNIDO has inked a Memorandum of Understanding (MOU) with the International Solid Waste Association (ISWA) and the City of Kitakyushu, the provisions of which are highly relevant to the envisaged outcomes of the project. UNIDO and ISWA works primarily on overarching themes within the field of waste management, in particular (i) Capacity building and; (ii) Promotion of environmentally-sound practices and technologies to provide support for the development of sustainable recycling industries and to provide support to industry in minimizing wastes as well as in the safe and correct handling of wastes. Together with UNEP, UNIDO and ISWA are lead partners of the Global Partnership on Waste Management (GPWM). The GPWM is an open-ended partnership for international organizations, Governments, businesses, academia, local authorities and NGOs. It was launched in November 2010 to enhance international cooperation among stakeholders, identify and fill information gaps, share information and strengthen awareness, political will, and capacity to promote resource conservation and resource efficiency. ISWA is committed to undertake the training component of the project and to provide their expertise on the implementation of the BAT/BEP interventions in the demonstration sites.

UNIDO has also worked very closely with the City of Kitakyushu on the promotion of the eco-town concept in developing countries. The eco-town concept is based on a zero-emissions approach and seeks to utilize – to the greatest extent possible - the waste generated by domestic and industrial activities as the raw material for other industries. Since 2010, UNIDO and the city of Kitakyushu have been working together to share clean technology and recycling know-how with developing countries by organizing annual seminars for the decision-makers and technical managers responsible for environmental industry management of industrial zones and industrial estates in developing countries in Asia and Africa. Kitakyushu will be instrumental in the set up of possible investments in recycling that maybe applicable to the participating countries.

A.4.4 Barrier Analysis

During the preparatory work and the consultation meetings, some common and specific barriers in the participating countries that may impede the implementation of BAT/BEP on dumpsites/landfills and of environmentally sound waste management plans were identified as follows:

Outcome 1: Strengthened legislative capacity for introducing BAT/BEP in waste open burning source category

a) Lack of comprehensive national policies promoting BAT/BEP in open burning

The implementation of the BAT/BEP guidelines promoted by the Stockholm Convention is reported in the NIPs, but as far as open burning activities are concerned, only few countries have adopted or are starting to adopt the same regulations on safe management of landfills. On the other hand, some of the participating countries have some regulation concerning prevention of fires, which indirectly act as prevention for U-POPs emissions, but there are only a few examples of regulation addressing alternative uses of agricultural residues. Generally, small countries still lack a comprehensive legislation on waste management, and they do not have the financial resources to implement the guidelines foreseen by the existing laws. Alternative financing mechanisms, incentive systems, and PPP models are generally not supported by the existing legislations. In some cases, there is an insufficient coordination and communication between the ministries, agencies and institutions on U-POPs issues, which are not included in National and Sectoral Plans. Only general rules on the registration of sites have been documented, but legal measures concerning appropriate and environmentally sound landfill management are lacking in almost all the countries, with the exception of Philippines.

b) Lack of national standards regulating unintentional POPs releases from open burning source category

While some of the participating countries have already set up standards for releases of PCDD/PCDF from waste incinerators or other stationary sources, no national standards currently exists regulating U-POP emissions in ambient air or other environmental media coming from open burning activities, including emissions from landfills

and from agricultural residues disposal measures. Moreover, the enforcement of the pollution control measures at the national level is generally weak.

c) Inadequate financial mechanism supporting BAT/BEP in waste management and waste reuse/reduction measures

Due to scarcity of state budget, the investments are usually made by private companies which are not obliged to meet specific targets in terms of U-POPs releases control due to the absence of related laws. This is particularly of concern in the waste management sector (i.e. use of small incinerators to treat medical waste not fitted to U-POPs control). At the same time, local authorities usually do not invest budget for the control of open burning at open waste dumpsites, and incentive systems, PPP models or alternative financing mechanisms generally do not exist.

d) The recovery of valuable materials for industry and for the recycling market is still weak.

This is due to insufficient implementation of the existing laws and plans caused by an inadequate funding and insufficient administrative and legal support/maintenance, but also because BAT/BEP investments in the recycling chain are currently rarely supported by the governments and investment promotion loans package for BAT/BEP are rarely applied with the exception of Philippines. Banking sector should be more involved and informed on the financial opportunities in investing in BAT/BEP in the waste sector, to boost the recycling market. The possibilities to introduce incentive systems by public sector to mobilize private capital participation should be investigated. They may take forms of PPP or some other form, depending on the participating country. Using alternative financing mechanisms (possibly involving foreign capital) should also be investigated within the project, taking in consideration specific legal/regulatory circumstances in participating countries.

Outcome 2: Enhanced institutional capacity to carry out BAT/BEP implementation

a) Inadequate technical knowledge and experience by stakeholders in waste management issues and landfill operations.

After the approval of the NIP, some countries have developed specific plans to address waste management problems. Trainings and full scale activities have been undertaken in the framework of other GEF projects (i.e. Cambodia National project funded by UNIDO on open burning, Philippines IPOPs project, Mongolia project on the improvement of Ulaanbaatar City Waste Management System), which created the basic technical and human resources within the government and key stakeholders to implement POPs related activities concerned with the Stockholm Convention. Notwithstanding, so far the enforcement capacity within the relevant Ministries concerning the disposal of wastes and discouraging open burning is limited. Especially in small countries, there are limited appropriate human resources and expertise at the national level for identifying and adopting the most appropriate technology options for BAT/BEP and Cleaner production measures, which usually hinders public and private sector to implement waste management plans, both at municipal and provincial level. This is especially true in case of recycling programs and for landfill management. In other cases, universities and research centres are available, but the U-POPs issues are rarely included in research activities. Only Vietnam has developed targeted studies and programs in order to address the problem of the Agent Orange. Technical guidelines that facilitate the selection and purchase of appropriate equipment are also lacking, hence impeding the dissemination and transfer of the new, environmentally sound technology in the region.

b) Lack of a regional information sharing system

A mechanism that would guide national governments to set release reduction targets based on a regional approach is missing. Some relevant activities have been promoted during the implementation of other ESEA-UNIDO projects.

c) Need for common methodology for PCDD/PCDF and dumpsite inventory

In some countries, the UP-POPs release inventories have been updated, but data from the open burning activities are sometimes incomplete. Several sources have not been diversified due to the lack of appropriate sources of scientific or statistical data. Moreover, the inventory of emissions should be strictly connected with the inventory of waste disposal sites. During the PPG phase, the survey on landfills and dumpsites were only partially completed by some countries, thus the figures may be underestimated. Since the waste burning sector is the major UP-POPs releasing sector, a very detailed inventory of all disposal sites is needed and should be carried out during the project. Finally,

the need for common methodology for the collection of updated information on type of dumpsites/landfills and for PCDD/PCDF inventories of open burning activities was identified during the PPG phase.

d) *Lack of laboratory facilities, technical knowledge, experience, or standard methodology for unintentional POPs monitoring*

With the exception of Vietnam and partially of the Philippines, the participating countries lack the technical capacity, the regulations and the financial support to monitor the releases of U-POPs or other harmful contaminants from open burning processes and industrial source in general. Usually, the existing laboratories are not equipped with equipment that maybe used to analyzed POPs, and only few institutes in the region are capable of producing relevant data. Moreover, the staff of the existing laboratories has not been trained to carry out the analysis of U-POPs and those from open burning activities in particular. Lack of monitoring capacity hinders the effective enforcement of POPs regulations in the sector and limit the POP reporting requirements under the Stockholm Convention. Hence, a dedicated training will be necessary in line with the provision of the instrumentation. Finally, appropriate standard methodologies are still missing not only to monitor but also to evaluate the results of U-POPs or other contaminants.

Outcome 3: BAT/BEP implemented in the open burning sources

a) *Lack of research and implementation activities related to BAT/BEP*

There is a general lack of demonstration activities concerning the feasibility of BAT/BEP implementation or waste management programs. There is a lack of scientifically proved studies on what benefits could be achieved through BAT/BEP in the open burning sector and current UP-POPs release reduction measures in the open burning sector are not quantified, thus this information is not available for decision making.

Enterprises generally lack the capacity to participate in investment promotion projects.

Some projects financed by international donors/partners have been delayed or are not focussed on U-POPs reduction.

b) *Need to focus on the closure/conversion of small open dumpsites*

The closure of the existing dumpsites is financed by national/public funds in almost all of the participating countries. Therefore, there is the need to run the currently used dumpsites as long as possible, converting them to controlled dumpsites or, alternatively, setting up plans for their closure. Currently only Philippines shows many public projects supported by public/private partners with this target.

Outcome 4: Improved knowledge and understanding on BAT/BEP and on risks connected with U-POPS, GHG emissions and other contaminants released through open burning

a) *Lack of awareness on POPs issues*

Government agencies that are supposed to be involved in regulation of U-POPs and other stakeholders are generally lacking awareness regarding POPs issues. The same situation is in the professional training institutes involved in sectors of waste management and environmental protection, with very few exceptions. Appropriate public awareness tools and programs are missing to convey UP-POPs and BAT/BEP related information to public. Without targeted awareness raising campaigns, the contemporary and the next generation of professionals will continue to be unaware of the necessity, the requirements and methodologies for the reduction of POPs, and environmentally sound management of POPs related wastes.

Moreover, the public has little or no awareness of the risks posed by UP-POPs to human health and the environment, which often results in increased risks and exposure. This lack of awareness is specially true with people who scavenge in disposal sites. Though some activities are listed in the national NIPs, there is currently a lack of public awareness on the need of environmentally sound practices to dispose waste or other types of residues and consequently on the reduction of unintentionally produced POPs from common practices such as open burning of municipal waste in dumpsites or of agricultural residues.

In most countries, graduate and post-graduate education curricula and regional R&D network have yet to be established.

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

The project has the primary objective to implement significant and sustainable measures in the participating countries in order to achieve a progressive reduction of U-POPs and other related contaminants emitted from open burning practices. Five substantive Outcomes are proposed to achieve the project objectives and the incremental activities requested for GEF financing are fully elaborated below:

Outcome 1: Strengthened legislative capacity for introducing BAT/BEP in waste open burning sector

37. With the GEF support, the participating countries will be able to enhance the institutional capacity and technical capability of public and private officers, by reviewing and updating the current regulations and policies on waste management, taking in account U-POPs issues and BAT/BEP implementation and taking as reference the best examples of the region and the opportunities given by the existing regional and international Conventions and/or Agreements. This support will be based on training programs both for institutional and technical stakeholders, involving dedicated workshops to present and promote the proposed regulatory changes.

Moreover, as the management and regulation of waste and biomass disposal are usually addressed by different ministries or public/private organizations entrusted with environment and agriculture, the project aims to support the participating countries in addressing open burning issues through a coherent and integrated approach, which would avoid duplication of efforts, inefficient use of financial, technical and human resources. Based on this revision, the country action plans/strategies in addressing disposal of municipal and hazardous waste and of agricultural residues will be reviewed and updated as well.

38. The project aims to set up appropriate financial mechanisms with the participation of relevant stakeholders (public authorities, international development agencies and MDBs, commercial banks and private sector) to fully support the implementation activities, both at the institutional side and at the demonstration side. Generally, the existing infrastructure cannot support the projected economic growth and demographic changes in the participating countries and governments have difficulties to find financing for necessary enhancements and improvements in services. The potential of public-private partnerships (PPP) to help governments meet the financing gap by stimulating private sector investment and financing for infrastructure was recognized years ago. Given the trends of rapid urbanization, population and economic growth, and increasing climate change concerns, more attention to this topic has been given since 2010 and global guidance was made available by UN agencies and several MDBs. The ADB included engagement of private sector for development in its Strategy 2020 and developed The PPP Operational Plan 2012-2020 . With the international support, the governments have conducted assessments of possibilities and modalities for PPPs in all infrastructural sectors. However, due to various general and country specific reasons (i.e. infrastructural needs for supporting the projected economic growth, differences in attractiveness of infrastructural sectors for private investments, global climate change mitigation/adaptation priorities, etc.), the waste management sector was not ranked highly among the priority areas for PPPs in any of the participating countries. With the exception of Philippines where the rapid urban sector development sets priorities for waste management, the specifics and possible economic advantages of PPPs in waste management sector have not been evaluated in more detail in the participating countries (a general assessment of constraints and opportunities for PPPs were made for Vietnam and Cambodia).

39. With the support of GEF, the Project will investigate this topic deeper in all participating countries, having in mind global and regional experiences and guiding documents, giving special attention to open burning, and considering country specific circumstances and development priorities. Engagement of recently developed additional financing sources and financial models (i.e. under carbon/climate mitigation/adaptation finance, crowd funding, specific development financing instruments, etc.), creation of socio-economic benefits through PPPs in the sector (Jobs, Welfare, Economic Growth) and replicating potential will be considered and emphasized. The expected outcomes will include assessments of institutional requirements and the potential for using additional financial sources to mobilize private sector participation, as well as the delivery of proposals for financial mechanisms that include additional financing sources and PPP models in participating countries. **Annex M** provides an overview of financial mechanisms that maybe considered for the project to ensure replicability and sustainability.

40. By identifying the traditional and specific open burning practices in the region, the Stockholm Convention BAT/BEP guidelines and guidance will be reviewed and adapted to national situations and made available in local languages. Specific trainings will be organized for the technical and managerial staff to create an adequate technical capability in implementing BAT/BEP and waste management practices. The project will assist in the development of toolkits for waste management incorporating the concepts of BAT and BEP. These toolkits will be discussed and disseminated through targeted trainings.

The specific activities for Outcome 1 are described in the next table:

| Outputs/Activities |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Output 1.1: Updated legal and regulatory frameworks for open burning to facilitate waste management improvements and BAT/BEP implementation, and to enable introduction of financing mechanisms. |
| Activity 1.1.1: Asses the impacts of common and traditional open burning practices in the region in terms of releases of U-POPs, GHG emissions, and other contaminants, and the effects/benefits of BAT/BEP application. |
| Activity 1.1.2: Formulate and propose legislative changes and updated regulations on waste and landfill management targeting common open burning practices. Specifically address U-POPs and other contaminants, consider enabling establishment of financing mechanisms. |
| Activity 1.1.3: Develop and introduce financing mechanisms and incentive systems based on the updated legislation in support of BAT/BEP implementation. |
| Activity 1.1.4: Hold workshops and trainings to raise awareness of the impacts and opportunities of the proposed revised legal framework; discuss and disseminate to all relevant stakeholders (in English and local languages). |
| Activity 1.1.5: Develop toolkits for waste management, including recommendations for BAT/BEP guidelines update (in English and local languages). |
| Activity 1.1.6: Develop manuals for using financing mechanisms and incentive systems in waste management (in English and local languages). |

Outcome 2: Enhanced institutional capacity to carry out BAT/BEP implementation

41. The GEF support for this outcome will be used mainly to strengthen the capacities of national and regional institutions to carry out the implementation of BAT/BEP in open burning issue. It is envisaged that a regional cooperation platform will be formed to deal specifically with the issue of open burning. The regional cooperation platform will allow the promotion and creation of an enabling environment for the development, diffusion, deployment and transfer of environmentally-sound BAT/BEP, through concrete regional cooperative action. It will also facilitate the exchange of information and sharing of experiences in a regional level to address common issues. Through the project, participating countries will undertake open burning related programs within a coordinated regional approach. Collaboration platform will facilitate knowledge sharing, and the lessons learned from the local interventions will be available for other countries in the region and abroad for replication. Such approach will ensure that the positive impacts for the environment and human health will be maximized. The sustainability of the cooperation platform on the issue of open burning will be ensured through the ESEA BAT/BEP Forum established by UNIDO.
42. The main activities under this outcome include targeted training activities that will involve public officers, local authorities, technical staff of disposal facilities, as well as community stakeholders on the issue of BAT/BEP implementation to open burning activities. Identification and partnership with institutions in the region specialized in waste management and environmentally sound disposal operation will be carried out. A roster of international/national experts will be established to fully address the widespread dissemination of information,

review international guidelines relevant to open burning practices, and provide specific training programs. National experts will be involved in the collection of updated information on the current municipal and hazardous waste management practices, including the agricultural residues collection, and in the development of standard methodologies to carry out inventories of number and types of waste disposal facilities, dumpsites and landfills in the participating countries.

Moreover, since almost all participating countries lack the technical capability, the regulations and the financial support to monitor the releases of U-POPs or other harmful contaminants from open burning processes, some of the project activities will focus on strengthening selected national/regional laboratories or scientific institutes. This will be carried out by targeted training programs for laboratory technicians on the internationally used methods for U-POP sampling and analysis, and by providing the relevant support, in order to progressively enhance the internal skills. All these activities will be carried out in cooperation with similar ongoing international projects in order to maximize the results and avoid overlapping. A continuous revision and update of the current U-POPs and inventories of the open burning practices will be carried out, taking as reference the recently modified emission factors in the Dioxins UNEP Toolkit. Estimation of GHG emissions will also be undertaken to understand the co-benefits achieved through the implementation of BAT and BEP in open burning activities.

The specific activities are described in the following table:

| Outputs/Activities |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Output 2.1: Strengthened human resources/institutions on regional/national levels on waste management and BAT/BEP implementation in open burning of biomass and wastes, considering gender and social inclusiveness. |
| Activity 2.1.1: Establish a web-based regional cooperation platform to specifically address open burning issues. |
| Activity 2.1.2: Carry out targeted trainings for public officers and local authorities involved in waste management, as well as for community stakeholders, aimed to introduce BAT/BEP concepts. Special consideration on gender by encouraging participation of women. |
| Activity 2.1.3: Carry out targeted trainings for regional/national/local technical staff on disposal facilities (landfill, open dumpsites) on issues connected with open burning sector and BAT/BEP. |
| Activity 2.1.4.: Carry out education and training on application of financing mechanisms and incentive systems in support of BAT/BEP implementation. Special consideration on gender by encouraging participation of women. |
| Activity 2.1.5: Introduce standardized methodologies for carrying out inventories of number and types of waste disposal facilities, dumpsites and landfills in the participating countries, and update them continuously. |
| Output 2.2: Enhanced regional/national institutional capacity through the implementation of standardized analytical procedures, data collection, monitoring and reporting procedures and facilities. |
| Activity 2.2.1: Strengthen the capability of regional/national laboratories for sampling and analyzing UP-POPs, GHG emissions and other contaminants relevant for common landfill management and open burning practices. |
| Activity 2.2.2: Train management personnel in monitoring, evaluating and reporting on U-POPs, GHG emissions and other contaminants released by open burning. |
| Activity 2.2.3: Introduce/implement standardized methodologies to continuously update inventories of U-POPs releases from open burning practice |

Outcome 3: BAT/BEP implemented in the open burning sources

43. During the PPG phase, participating countries highlighted some possible interventions that could be carried out during the project implementation. The scope of this component of the project is to address several issues concerned with open burning on demonstration sites, such as the promotion of waste recycling/reuse programs in selected municipalities in order to minimize the potential sources of U-POPs formation (and of other harmful and global contaminants), the conversion of some open dumpsites to controlled sites, the assistance in closure of old dumpsites while opening new landfills, the alternative options to the burning of agricultural residues, and the reduction of open burning activities (fugitive emissions and wastewater contamination) during the informal recovery of metals and e-wastes.
44. Since setting up new landfills usually require time and huge funding from national budgets and/or private investments or international assistance, the project aims to demonstrate that it is possible to better manage the old dumpsites with relatively lower investments, affordable technologies (as reported by international guidelines such as the UNEP BAT/BEP guidelines, the UNEP training module for the closure or conversion of dumpsites, the ISWA guidelines) and appropriate financial schemes, reducing drastically the main environmental problems while new advanced sites are built. This could allow the Governments of the participating countries to better plan their future interventions (as currently happening in the Philippines).
45. As presented during the Regional Workshop held in April 2014, the demonstration dumpsites in Cambodia, Lao, Philippines and Mongolia have been selected by the countries and assessed based on the following criteria:
- Sites where mixed municipal waste (containing halogenated plastic materials, glass, metals or wet fractions) are dumped without any proper technical disposal method but just spread on the ground.
 - Sites where mixed waste and/or agricultural residues are burnt without means of dedicated facilities.
 - Sites where the uncontrolled open burning is intentionally carried out by waste pickers (scavengers) to recover recyclables or to reduce waste amount.
 - Sites where unintentional fires due to landfill gas releases and hot temperatures are common in hot seasons.
 - Sites for waste disposal where conventional pollution control measures (liners, leachate recovery) are absent and where the above described characteristics are valid.
 - Sites without any sanitary control by local administrations and where animal grazing is common.
 - Sites close to agricultural fields or residential areas.
 - Sites where possibly other ancillary activities are carried out by local administrations, such as waste sorting and recycling programs. These activities are indeed a prerequisite for the decrease of the risk connected with waste open burning, acting directly on the potential source of formation of the harmful contaminants.
 - Sites where effective conversion of open dumps to controlled ones are feasible and sustainable, with the possibility to plan their closure them in the near future.

Before implementing BAT/BEP measures, more accurate technical and socio-economic information on the identified demonstration sites will be collected and preliminary baseline monitoring campaigns for U-POPs and related contaminants will be carried out where feasible, in order to evaluate the environmental and socioeconomic impact indicators of the proposed programs. Specific guidelines and guidance documents for waste management will be prepared and specific training for the interested local stakeholders will be carried out. In particular training for staff working at the material recovery facilities and in the metal recovery facilities will be envisaged. Ancillary trainings will be set up to spread the knowledge on the basic waste separation and segregation practices.

46. The detailed description of the activities under Outcome 3 concerning implementation of BAT/BEP on demonstration sites is provided in **Annex N**. A brief summary of the activities to be carried out in the demonstration sites in each country is provided below:
- i) In Cambodia, the Kampot or Phnom Penh open dumpsites will be converted to a controlled site, with basic measures to drastically reduce open burning events, and to avoid dumping of hazardous waste and waste fractions that could be separately collected. The existing IRRC will be strengthened and equipped with more

advanced systems to separate waste and produce compost. The equipment will be selected on the basis of the available financial resources. The site will be polished and prepared to receive the residual fraction.

- ii) In Lao PDR, the project will support current recycling activities of the Saplast company, and a Material Recovery Facility will be installed in the premises of the landfill, with the aim to recover not only plastic waste but also other fractions, such as glass, and paper. The waste collectors will be fully involved as well. This will allow reduction of illegal open burning activities and decrease the amount of potential sources of U-POPs and other chemicals. Synergies and linkages with the current activities of JICA at the landfill will be maximized.
- iii) In Mongolia, two types of activities are envisaged. In the framework of the “Green Bin” initiative, the activities will be focused on setting up a facility for cleaning and collecting metal drums (200 liters capacity) produced from recycled metals and preparing them to be used in UB city in the ger district to collect hot ashes. This will enable proper disposal of ashes at the dedicated site, instead of being dumped at open dumpsites usually causing open burning. The second activity is the rehabilitation of the Morin Davaa Disposal Site, where dedicated measures will be implemented to convert the dumpsite into a controlled landfill, with containment systems (liners, clay), leachate recovery and treatment, gas recovery, etc.
- iv) In the Philippines, the activities will be focused on the closure and remediation of two dumpsites, in General Santos and Lapu Lapu municipalities. The project will support and enhance the already ongoing activities and current renovation works, such as the site grading and stabilization of critical slopes, the application and maintenance of soil cover, the provision of drainage control system, the leachate and landfill gas management, the fencing and security of the site and setting up the Eco Center with composting plants.
- v) In Vietnam, the project activities will be carried out in the Binh Yen craft village in the North of Vietnam. In this village an informal aluminum recycling is performed by many families in their own households, with relevant problems of uncontrolled combustion and releases. The main activities will be focused on: (a) Implementation of basic pollution control measures in households in support of already existing measures; (b) Implementation of centralized system for aluminum recycling, with parallel incentive mechanism for families to keep on recovering scrap metals and deliver it to the centralized facility; (c) Improvement of treatment of waste waters and; (d) Development and application of guidelines and revision of regulations aimed at improving current practices of dealing with production waste in craft village and to reduce open burning.

The estimated U-POPs reduction potential from these demonstration activities is summarized in the table below:

| Country/site | Before BAT/BEP PCDD/PCDF mg TEQ/year | After BAT/BEP PCDD/PCDF mg TEQ/year |
|------------------------------|-----------------------------------------------------|----------------------------------------------------|
| Cambodia - Kampot | 553.8 | 10.1 |
| Lao PdR - Vientiane | 8335.5 | 222.2 |
| Mongolia Morin Daava | 9277.5 | 184.3 |
| Philippines - General Santos | 8099.0 | 176.8 |
| Philippine – Lapu Lapu | 6201.5 | 131.3 |
| Vietnam - Nam Dinh village | 5149.8 | 1725.2 |
| Total | 37617.1 | 2449.9 |

An estimated potential reduction of 93% could be achieved for emission to air and in solid residues if open burning practices could be decreased by implementing short and long term actions. Detailed assessment of the reduction potential and cost-benefit analysis are provided in **Annex O**.

- 47. Monitoring programs will be repeated after the modifications at the selected facilities have been implemented, in order to monitor changes in U-POPs releases and emissions of other U related contaminants, such as particulate matter, mercury and GHG. The project will therefore contribute with valuable data to the further enhancement of

UNEP Toolkit. Moreover, the project will develop quantifiable indicators for economic and social impacts, such as the cost/effectiveness ratios for pollutant reduction and the return rate of investment of BAT/BEP measures in different sub sectors of open burning.

The activities for Outcome 3 are listed in the table below:

| Outputs/Activities |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Output 3.1: Updated comprehensive assessment of the effects of current practices and impact indicators at the selected demonstration sites. |
| Activity 3.1.1: Collect detailed environmental and socio-economic data and formulate impact indicators, and evaluate climate change mitigation/adaptation aspects at the selected demonstration sites. Consider specific local/regional circumstances related to open burning. |
| Activity 3.1.2: Carry out preliminary monitoring campaigns for U-POPs, GHG emissions and other relevant contaminants released through current practices at the selected demonstration sites. |
| Output 3.2: BAT/BEP plans developed and implemented at the selected demonstration sites in each participating country. |
| Activity 3.2.1: Set up waste management plans with economic incentives and PPP mechanisms to discourage open burning, promote waste recycling, and consider climate change mitigation/adaptation measures. |
| Activity 3.2.2: Enhance effectiveness of waste collection and segregation, introduce BAT/BEP at the selected dumpsite in Cambodia and promote waste recycling activities. Consider climate change adaptation needs of the site. |
| Activity 3.2.3: Enhance effectiveness of waste selection and segregation, promote waste recycling activities and investigate climate change mitigation/adaptation measures at the selected landfill in Lao PDR. |
| Activity 3.2.4: Set up the system for reuse of metal drums to collect ashes, and introduce BAT/BEP at the selected dumpsite in Mongolia considering climate change mitigation/adaptation. |
| Activity 3.2.5: Set up integrated waste management systems including waste recycling, composting facilities and landfill gas utilization plants at selected municipalities and sites in Philippines. |
| Activity 3.2.6: Set up a centralized system for collection/reuse of scrap metals, and a system for agricultural residues utilization; develop financial schemes to incentivize full inclusion of local resources in craft villages in Vietnam. |
| Activity 3.2.7: Carry out monitoring of U-POPs, GHG emissions and other relevant contaminants on the demonstration sites after the implementation of BAT/BEP, and disseminate the results. |
| Activity 3.2.8: Evaluate environmental, socio-economic and other co-benefits of implemented measures/activities on all sites, on the basis of the formulated impact indicators. Disseminate the relevant results. |

Outcome 4: Improved knowledge and understanding on BAT/BEP and on risks connected with U-POPs, GHG emissions and other contaminants released through open burning

48. Awareness raising campaigns on the environmental and health hazards of U-POPs will be held for officials and technical personnel, community leaders, other stakeholders and for the public at large. They will be supported by dissemination of materials and targeted workshops. Education programs for disseminating knowledge on U-POPs

issues will be designed, and targeted courses will be organized by relevant universities and institutions. This will be linked to the development of education curricula at graduate and university level focused on BAT/BEP in waste management. The institutions and networks operating in the region that can be involved in the regional platform and have the technical capability to carry out targeted training on U-POPs and BAT/BEP have been preliminarily identified as follows:

| Country | Institution |
|----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Cambodia | Cleaner Production Centre, Institute of Technology of Cambodia, COMPED |
| Lao PdR | National University of Lao, Faculty of Engineering, |
| Mongolia | Mongolian University of Science and Technology, School of Engineering, Department of Performance monitoring of UB Mayor Office |
| Philippines | National Solid Waste Management Commission Secretariat, Environmental Management Bureau, Department of Environment and Natural Resources, Ecowaste Coalition |
| Vietnam | Pollution Control Department - Vietnam Environment Administration (VEA) by the Ministry of Natural Resources and Environment (MONRE), Hanoi University, Vietnam Cleaner Production Center |

The complete list of activities under Outcome 4 are presented below:

| Outputs/Activities |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Output 4.1: Awareness raising campaigns aimed to emphasize health and environment hazards of open burning practices, carried out on targeted relevant stakeholders. |
| Activity 4.1.1: Carry out targeted awareness raising campaigns on environmental and health hazards of U-POPs for public officials, professionals, community leaders, farmers and scavengers. Encourage women participation. |
| Activity 4.1.2: Develop project website and dissemination materials to share information with stakeholders, also using the established collaboration platform. Include information on business opportunities, incentive systems and financing mechanisms. |
| Output 4.2: Educational programs aimed at introducing and promoting alternatives to open burning practices, carried out on targeted groups at several levels. |
| Activity 4.2.1: Set up trainings for local stakeholders on alternative biomass utilization, recycling and reuse of waste. Include business opportunities and encourage participation of women. |
| Activity 4.2.2: Design educational programs for schools and families on open burning and waste management. Encourage participation of women. |
| Activity 4.2.3: Develop education curricula at university level focused on U-POPs, BAT/BEP in waste management and benefits of their implementation. Advanced information on incentive systems and financing mechanisms. |

Outcome 5: Established project management structure and the system for monitoring/evaluation of project impact

49. In addition to the above substantive activities, project management and monitoring and evaluation, including establishment of regional and national technical working groups and coordination units composed of national and regional stakeholder agencies, establishment and staffing of the national project management units, recruitment of national and international consultants and ongoing monitoring and reporting of project activities will be undertaken.

| Outputs/Activities |
|--------------------------------------------------------------------------------------------------------------------|
| Output 5.1: M&E framework of the project established |
| Activity 5.2.1: Hold project Inception Workshop |
| Activity 5.2.2: Measure impact indicators on an annual basis |
| Activity 5.2.3: Prepare Annual Project Reports and Project Implementation Reports |
| Activity 5.2.4: Hold Project Steering Committee meetings at least once a year. |
| Activity 5.2.5: Carry out mid-term external evaluation |
| Activity 5.2.6: Carry out annual visits to selected field sites |
| Activity 5.2.7: Establish a project management information system (MIS) to disseminate information to stakeholders |
| Activity 5.2.8: Carry out final external evaluation |
| Activity 5.2.9: Complete Project Terminal Report |

A.5.1 Innovativeness, sustainability and potential for scaling up

50. The sustainability of the project outputs will be ensured by the following:

- Setting up the conditions to strengthen and adapt the policies, laws, and regulations related to UP-POPs management and control will ensure the sustainability of the regulatory environment. By assuring the practicality of laws and regulations, enforcement will also be improved if supported by adequate and targeted capacity building.
- Compliance with ongoing monitoring and reporting requirements under the Stockholm Convention will be improved by increasing the capacity to collect and process data and to formulate reports to fit to the format and to meet the standards required by the Convention.
- The relevance of the project in the context of environmental and public health issues resulting in decreased exposure to U-POPs (emissions and wastes) guarantees sustainability of project outputs.
- Experience gained through successful demonstration of application of the BAT/BEP requirements for the operation of landfills in conjunction to the set up of waste management plans will provide a solid base for introducing sustainable management of municipal waste and to plan region-wide dissemination of project results.

51. To achieve replication, a wide range of innovative activities will be carried out:

- Demonstration programs: the Project will conduct pilot demonstrations at selected sites (dumpsites/landfill) or municipalities or villages. In the pilot demonstrations local staff will be educated and trained, so that after the project completion national experts will be available to conduct training for a nationwide implementation of BAT/BEP in this source category.
- Training: capacity building will be carried out by using a modular training program. The training modules will jointly be developed by international experts, who will work in close cooperation with national experts. The national experts will serve as resource persons in training programs beyond the project life. Consideration will

be given to the integration of U-POPs modules into the existing training programs of the environment and research organizations, such as universities, chemicals management organizations, foundations, etc.

- **Monitoring capacity:** an adequate monitoring capacity will be developed during the project. This could provide services to other BAT/BEP projects in the region and the capacity may be used in neighboring countries. Furthermore the development of monitoring capacity itself can be replicated in the country with the experience and under assistance of the capacity developed in the project.
- **Scientific and engineering capacity:** application of BAT/BEP requires the implementation of a series of measures in the waste management sector. To achieve this goal an adequate technical, scientific and engineering capacity shall be established to understand the principles of applied technologies and to optimize the management programs.
- **Innovative financing mechanisms:** replicability of BAT/BEP adaptation measures beyond the project life will require capacity that includes not only know-how and a supportive policy environment, but also innovative financing mechanisms. Through exploring and piloting BAT/BEP at the selected sites, the project will set models for identification of financing options, mobilizing funds and establish cooperation patterns with the private sector (PPP mechanisms), enabling replication of project results in the future. Possible financing mechanisms that maybe set-up or explored in the participating countries are provided in **Annex M**.
- **Linkage with technology providers:** the project will seek support from vendors and designers of technologies for landfill operations to better address the specific needs of the demonstrative sites.
- **Knowledge transfer through knowledge management:** a variety of reports such as workshop reports, toolkits, technical manuals and inventory and data collection reports will be published. In addition workshop modules will be developed and formulated for technical and in-plant workshops. Conclusions of the scientific evaluations of the data and regular monitoring results will be published in scientific journals and will be integrated into public awareness programs beyond the project life.

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

The risks identified that might prevent project objectives to be achieved are provided below:

| Risks | Risk Level | Mitigation Measures |
|--------------------------------------------------------------------------------------------------------------------|------------|------------------------------------------------------------------------------------------------------------------------------------------------------|
| Outcome 1: Strengthened capacity in introducing BAT/BEP in waste open burning sector | | |
| Delays in updating the legal framework and specific policy and technical guidance | Low | All concerned stakeholders will be involved in the development of new/revised legislations. |
| Market-focused measures for supporting BAT/BEP implementation will not be supported by private sector investments. | Medium | Representatives of the industrial and banking sectors will be involved in developing the market-focused measures for green investment promotion. |
| Outcome 2: Human resources capacity available to carry out BAT/BEP implementation | | |
| The regional network for information exchange will not be maintained after project completion. | Low | The regional information exchange will be built on the currently available governmental and international infrastructures of the ESEA BAT/BEP Forum. |

| | | |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Training not fully relevant to the stakeholders | Low | Training needs will be assessed and pre- and post-training analysis will be undertaken. Relevant institutions will be identified. |
| Not all participating countries will have the necessary resources to maintain UP-POPs laboratory up to standard | Medium | National laboratories with the necessary resources can serve as the main partner for other countries in ensuring that UP-POPs analysis can be undertaken |
| Outcome 3: BAT/BEP implemented in open burning sources | | |
| Preliminary monitoring campaigns may not be representative | Low | Assessment and monitoring campaign will be carried out by national and international experts to assure reliable data |
| BAT/BEP measures and waste management plans in large landfills will not achieve the assumed positive results and thus will not be cost efficient within the project time | Low | To address costs and time constrains, the project will focus on already existing landfills and on specific portion of them, in order to demonstrate cost/effective BAT/BEP implementation and technology transfers. |
| The expected release reduction targets will not be achieved. | Medium | The release reduction targets will consider ongoing programs at the national level in order to set realistic and achievable targets for the participating countries. |
| Outcome 4: Improved knowledge and understanding on BAT/BEP and UP-POPs related risks concerning open burning activities | | |
| Low participation and interest from the stakeholders and general public. | Low | Dedicated workshops will address broader issues than UP-POPs, such as waste management and agricultural activities.. |
| Education programs not fully implemented due to lack of interest of relevant institutions | Low | Partnership with relevant institutions will be timely established. |
| Climate change risk: Natural disasters may result to destruction of the measures/ interventions applied to the demonstration sites. | Low | The feasibility study prior to the construction of project facilities should consider the historical flood records and changes in the weather in the demonstration sites. |

A.7. Coordination with other relevant GEF financed initiatives

The project will seek the coordination with several other GEF-financed projects currently ongoing in the region:

52. The East and South East Asia BAT and BEP Forum has generated a stronger regional cooperation especially in the issue of reduction of unintentionally-produced POPs. As members of the Forum, China and Thailand will be participating in the project as collaborating countries. China, with its experience on Municipal Waste Management through the World Bank project, and Thailand, through its ongoing initiatives on biomass management, will support the regional information sharing platform. Likewise, the Pollution Control Department of Thailand drafted the National Master Plan on Controlling Open Burning in order to discourage open burning in the agriculture. An action plan with 30 projects/activities with a budget of 4,928.42 million Baht in seven strategic plans in accordance with this plan and the ASEAN Agreement was also drafted. The action plan includes the advanced management of agricultural wastes and residues for producing fertilizers, other bio products and/or energy.
53. The project will identify linkages with the GEF-funded UNIDO projects “Introduction of BAT and BEP methodology to demonstrate reduction or elimination of unintentionally produced persistent organic pollutants (UP-POPs) releases from the industry in Vietnam” and the regional ESEA project "Regional Plan for the Introduction of BAT/BEP Strategies to Industrial Source Categories of SC Annex C of Article 5". It will also

explore the coordination with the full-size GEF-funded on "Demonstration of BAT and BEP in fossil fuel-fired utilities and industrial boilers in the ESEA region.", specifically on the possibility to reuse agricultural residues as alternative fuels, capacity building and awareness raising activities. Another GEF funded project is the POP monitoring program in Asian region, that foresees the establishment of network for monitoring 23 POPs in matrices (Air, water, human), capacity building for labs, contribute high data for GMP. Countries involved are Cambodia, Laos, Indonesia, Mongolia, Philippines, Vietnam, the same as the current proposed project.

54. In the Philippines, the Integrated Persistent Organic Pollutants Management Project (IPOP's Project) is ongoing. The project was intended to help the country meet its obligation as outlined in the NIP, particularly as it pertains to polychlorinated biphenyls (PCB), unintentional POPs, and POPs contaminated sites. The project's main objective is to assist the Philippines in minimizing the risk of human and environmental exposure to POPs by strengthening the regulatory and monitoring framework and improving capacity for and providing demonstrations of, safe management of PCBs, reduction of releases of unintentionally produced POPs, and reduction of exposure to POPs at the contaminated sites. The intended outcome indicators of the project include: a) Number of new legal instruments formulated/modified for POPs management that are adopted; b) Amount of UPOPs reduced; c) Amount of PCBs subject to environmentally sound management; and d) Adoption of national strategy on POPs contaminated sites by DENR. The project is currently being implemented with EMB – DENR as the one responsible for overall project management and facilitation. The project will be implemented for a period of five years.
55. As mentioned above, Vietnam has just successfully implemented the BAT/BEP Project funded by GEF through UNIDO on the capacity building of application of BAT/BEP measures and dioxins/furans monitoring in several key industrial source categories comprising waste incineration, steel making, cement kiln co-firing hazardous wastes and paper production. The project raised awareness of unintentionally produced POPs releases from industries in Vietnam, thus promote further initiatives on this issues. A national research program funded through the Ministry of Science and Technology with budget of approximately US\$ 700,000 has already started. The overall objective of the program is to provide a comprehensive assessment of dioxins/furans releases from industry in Vietnam, in which several key sectors such as waste incineration, steel making and open burning are major targets. This research program can be a good complementary activity with this regional GEF project to provide a good impacted result for the country to reduce UP-POPs releases. Finally, coordination will be sought with the project on the ongoing Sound Chemicals Management Project of Vietnam . It includes activities on policy framework, monitoring and reporting data on POPs (human, biota and food), management of POPs contaminated site, National mercury baseline inventory and release reduction strategy.

B. ADDITIONAL INFORMATION NOT ADDRESSED AT PIF STAGE:

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

56. The project will provide the opportunity for involving national stakeholders, such as ministries, municipalities, local authorities, research and academic institutions, and universities as technical partners. NGOs working in the field of industries and environment, including women's groups and organizations involved in the health of children will be invited as part of the project implementation. The private sector will be tapped to participate in the project. Pilot demonstration activities will address selected dumpsites, landfills and villages. These enterprises will be key stakeholders in implementing BAT/BEP, and making a shift from burning of waste to recycling or re-use. Relevant government ministries and departments will be involved for awareness raising activities and for the coordination of the project implementation. The relevant ministerial and line agencies relevant to the open burning issue are presented in **Annex K**. Additionally, the following stakeholders in each country will be involved:

i) In **Cambodia**, All government line ministries, departments and institutions will be involved, along with:

- NGOs: International Union for Conservation of Nature, SCARO, Mlup Baitong
- Private sector: Cintri, Global Action for Environmental Awareness (GAEA)
- Municipalities of Khampot and Phnom Penh
- Academy: Royal University of Phnom Penh

ii) In **Lao PDR:**

- National Level: Ministry of Natural Resources and Environment, Ministry of Science and Technology, Ministry of Public Works and Transport, Ministry of Industry and Commerce, Ministry of Health, National University of Lao, Urban Development Administration Authorities
- Local Level: Local Government unit, SAPLAST Plastic Factor, Lao Chareon Recycling Co.

iii) In **Mongolia:**

- The Ministry of Environment and Green Development (MEGD) will be responsible for the overall monitoring and coordination of the project.
- The Municipality of Ulaanbaatar is responsible for the development of local plans for waste reduction, maintain statistical records, approve rules, regulations and procedures for waste collection, transport and disposal; monitor the implementation of waste legislation; appoint final disposal sites and selecting those to be in charge of their operation. The role of Municipality of Ulaanbaatar in the project is to plan and draft project concept and to cooperate with other stakeholders, provide necessary information and support and assist to project implementation team.
- The District Governor Office is responsible in maintaining the public areas in clean condition, implementing waste legislation, to work with an entity in charge of collecting and transporting waste and to provide funds for these operations. The office will support in training and in the distribution of green bins.
- Khoroo\ Village\ Governor Office will be responsible in organizing cleaning activities, monitoring waste collection and transportation work.
- Some NGOs and companies

iv) In the **Philippines:**

At National Level:

- Department of Environment and Natural Resources (DENR)/Environmental Management Bureau is the lead implementing agency for this Project. In particular, DENR-EMB, will be responsible for the overall day-to-day management of the project on behalf of the GOP.
- National Solid Waste Management Commission (NSWMC) shall coordinate the implementation of BAT/BEP demonstration sites. NSWMC Secretariat will also be involved in developing guidelines on reduction of releases of unintentional POPs, and in conducting training and information dissemination to LGUs.
- Department of Science and Technology (DOST) was the lead in the conduct of the third National Inventory hence their inputs with regard to establishing the emissions factors and conducting Environmental Technology Verification (ETV) for selected sources of PCDD/PCDF emissions in the Philippine will be very crucial. They will also be involved in conducting ETV for technologies that may be applied in site remediation at demonstration sites.
- Other Government Agencies and groups shall be invited in project activities either to provide inputs or technical expertise. These include Department of Energy (DOE).
- Department of Agriculture (DA), Department of Interior and Local Government (DILG), National Economic and Development Authority (NEDA), Department of Labor and Employment (DOLE), Department of Trade and Industry (DTI), Department of Finance (DOF), Non-government Organization (NGO) – Eco-Waste coalition / SWAPP and the Private Sector e.g. Philippine Plastic Industry Association and Academe

At Local Level:

- Local Government Unit will be provided technical and investments assistance to develop and implement interventions in reducing PCDD/PCDF emissions through appropriate solid waste management practices and technologies. They will be responsible for providing counterpart fund and ensure the establishment and

maintenance of the demonstration site.

v) In **Vietnam:**

Management agencies:

- Ministry of Natural Resources and Environment
- Ministry of Agriculture and Rural development
- Ministry of Health
- Ministry of Industry and Trade
- Local governments

NGOs:

- Vietnam Farmer's Union
- Vietnam Women's Union
- Vietnam Association for Conservation of Nature and Environment
- Vietnam Association for Small and Medium Enterprises
- Vietnam Association for Craft Villages

Institutes:

- Hanoi University of Science
- Institute of Hygiene and Public Health
- Dioxin Laboratory – VEA

B.1.1 Institutional arrangement for project implementation:

57. The project implementation structure is given in Figure 1 below. UNIDO will be the GEF Implementing Agency (IA) for the project. A project officer will be appointed in UNIDO to oversee the implementation of the project, assisted by a support staff and supervised by a senior professional staff engaged in the management and coordination of UNIDO's Stockholm Convention Programme. A Project Assistant will be recruited to assist the UNIDO Project Manager on the administrative requirements of the project. The UNIDO Regional Office in Thailand and China and the UNIDO Country Offices in the Philippines and Vietnam will also play a significant role in the implementation and monitoring of the project.
58. The Ministry of Environment -Cambodia, Ministry of Natural Resources and Environment- Lao PDR, Ministry of Environment and Green Development-Mongolia, Department of Environment and Natural Resources - Philippines, Vietnam Environment Administration, Ministry of Natural Resources and Environment-Vietnam are the main national counterparts for project implementation. UNIDO will enter into contractual agreements with reputable institutions and entities to support the delivery of some project components. It is envisaged that Component 2: Institutional Stengthening will be supported by ISWA and Component 4: Education and Awareness will be executed by national contractual partners. Other contractual arrangements on the agreed BAT/BEP interventions on the demonstration sites will be arranged depending on the requirements of the project. Line agencies and other institutions in each country maybe identified to held support project execution.
59. A Project Steering Committee (PSC) will be established comprising of UNIDO, the Regional Coordinator (RC), the National Project Cordinators, National Project Managers and relevant project stakeholders who maybe invited based on the agreed agenda of the meeting. The PSC will hold its regular sessions at least once a year throughout the project implementation, but additional meetings can be held if necessary. Chairmanship of the PSC will be on rotational, voluntary basis. The TORs of the PSC will be formulated and agreed during the project inception phase.

The PSC should make necessary decisions within the rules and regulations of UNIDO and the GEF as per GEF C.39/inf3.

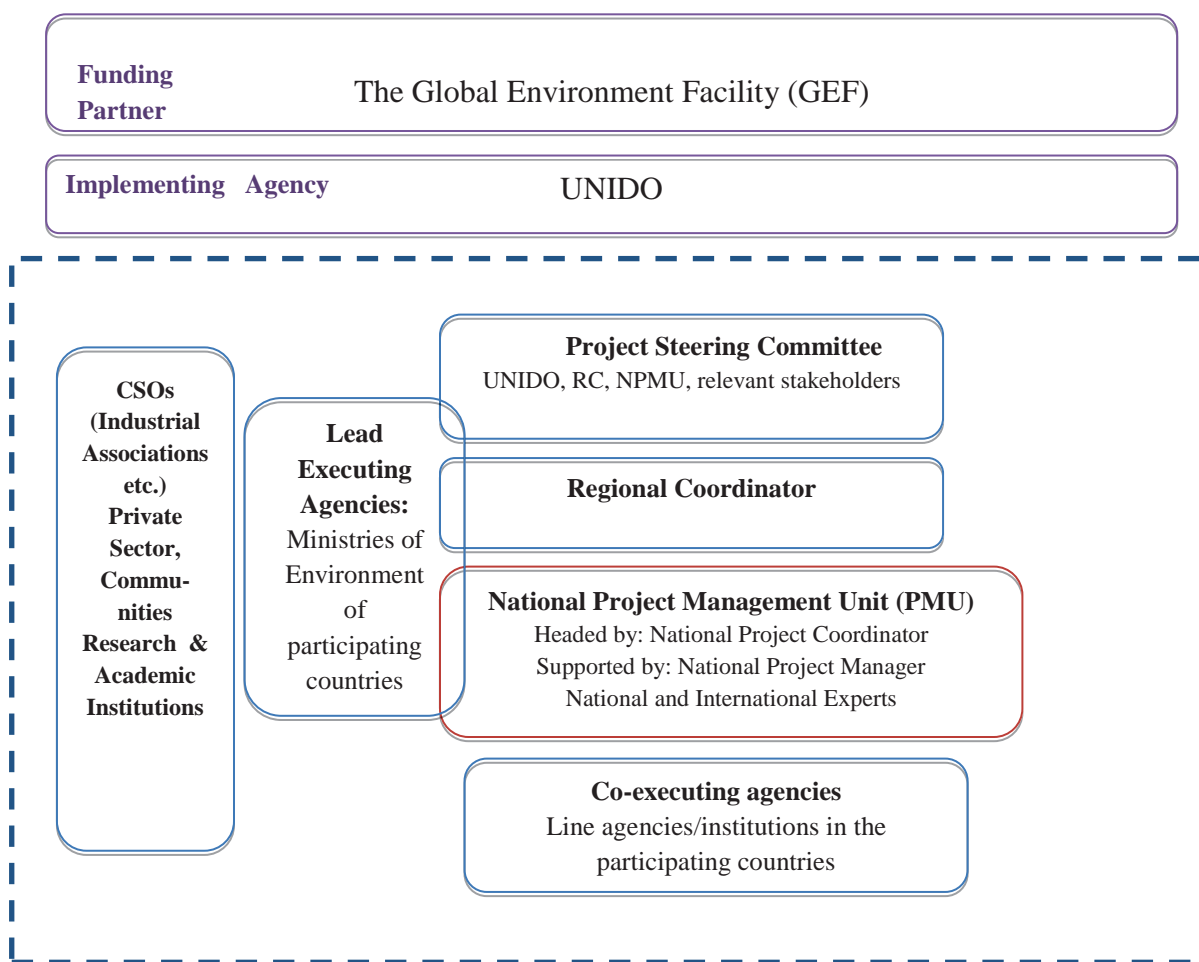


Figure 1 Project Implementation Structure

60. A National Project Management Unit (PMU) will be established within the Ministries. A National Project Coordinator (NPC) will be appointed by their respective Ministries and would oversee the activities of the project with the National Project Manager (NPM) who will be recruited on a part-time basis to manage and execute the day-to-day tasks required by the project. International and national experts will be recruited based on project requirement. The NPMs will be responsible in formulating the national project workplan based on the agreed regional workplan and in ensuring that project outputs are achieved on a timely manner. They should also provide timely contribution to the project management information system and to ensure their contribution to the UNIDO and GEF reportorial requirements.
61. A Regional Coordinator (RC) will be appointed from the recruited NPMs and will be agreed during the Inception Phase. He/she will be under the supervision of UNIDO. The role of the RC includes but is not limited to carry out the day-to-day administration of the project; coordinate the timely inputs of different stakeholders; coordinate the timely involvement of international experts and consultant as required by the progress of the project; plan and schedule the project meetings ensuring the highest coverage by the participating countries; and supervise the project related publications. He/she will supervise the overall implementation of the project and recommend modifications or change of work plan including budgetary provision if required. He/She will also be responsible in ensuring that related project documents, proceeding and reportorial requirement to UNIDO and the GEF are delivered in a timely manner. The RC will also ensure that the project management information system is continuously updated with relevant information and accomplishments of the project.

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

62. The Project's most significant contribution to the achievement of global environment benefits is the reduction of UP-POPs. As presented in para 24 of **Annex O**, an estimate of 93% reduction (from estimated value of 37,617.1 mg TEQ/year to 2,449.9 mg TEQ/year after BAT/BEP demonstration) of U-POPs is envisaged from the demonstration activities. In dealing with open burning, however, the project addresses vast sections of waste management in the participating countries, and the Project components cover, comprehensively, regulatory framework, capacity building and education, and pilot demonstration activities on single sites. Such comprehensive approach ensures broad and sustainable impacts on local and national levels, as well as contributions to achievement of global benefits in addition to the reduction of UP-POPs. Given the large scale of the Project and cooperation with other ongoing projects, the baseline situations and the development, geographical and socio-demographic contexts, the implementation of the Project will deliver significant socioeconomic and global environment benefits, and also support achievements of sustainable development goals of the participating countries:

| Category | Benefit | Impact | | | |
|----------------------------------|---------------------------------------------------------------------------------|--------|--------|--------|----------------|
| | | N/A | Partly | Highly | Type |
| Climate Change Mitigation | | | | | |
| | Reducing GHG emissions (N ₂ O, CH ₄ and CO ₂) | | | X | global |
| | Adopting low-carbon development path | | | X | national |
| Environment Benefits | | | | | |
| Air | Reducing SOx | | | X | local/national |
| | Reducing NOx | | | X | local/national |
| | Reducing Fly ash | | | X | local/national |
| | Reducing suspended particulate matter (SPM) | | | X | local/national |
| | Reducing Non Methane Volatile Organic Compounds (NMVOCs) | | | X | local/national |
| | Reducing Noise Pollution | | X | | local/national |
| | Reducing Odors | | | X | local/national |
| | Reducing Dust | | | X | local/national |
| | Other air quality improvements | | X | | |
| Land | Preventing end of life products/equipment (solid waste) | | X | | local/national |
| | Producing/using compost | | X | | local/national |
| | Producing/using manure, mineral fertilizer or other soil nutrients | X | | | |
| | Irrigation | X | | | |
| | Preventing soil erosion | | X | | local/national |
| | Minimum tillage | X | | | |
| | Other means to improve land quality | | | X | local/national |
| Water | Improving management/control of wastewater | | | X | local/national |
| | Saving/conserving of water | | X | | local/national |
| | Improving reliability/accessibility of water supply | X | | | |
| | Purification/cleaner water supply | | X | | local/national |
| | Improving ecological state of water bodies | | | X | local/national |
| | Other means to improve water | X | | | |
| Natural Resources | Protecting mineral resources | X | | | |
| | Protecting/enhancing plant life | X | | | |
| | Protecting/enhancing species diversity | X | | | |
| | Protecting/enhancing forests | X | | | |
| | Protecting/enhancing other depleted natural resources | X | | | |

| Socioeconomic Benefits | | | | | |
|------------------------|---------------------------------------------------------------|---|---|---|-----------------------|
| Jobs | New long-term jobs | | | X | local/national |
| | New short-term jobs | | | X | local/national |
| | New sources of income generation | | | X | local/national |
| | Other employment opportunities | | | X | local/national |
| Health & Safety | Disease prevention | | | X | local/national |
| | Reducing accidents | | | X | local/national |
| | Reducing crime | | X | | |
| | Preserving food | X | | | |
| | Reducing health damaging indoor air pollution | X | | | |
| | Enhancing health services | | X | | |
| | Improving sanitation and waste management | | | X | local/national |
| | Other health and safety improvement | | X | | |
| Education | Job-related training | | | X | local/national |
| | Enhanced educational services | | | X | local/national |
| | Project-related knowledge dissemination | | | X | global/local/national |
| | Other educational benefits | | | X | global |
| Welfare | Improving working conditions | | | X | local/national |
| | Community or rural advancement | | | X | local/national |
| | Poverty alleviation (more people above poverty level) | | X | | local/national |
| | Improving wealth distribution/generation of income and assets | | X | | local/national |
| | Increased municipal revenues | | X | | local/national |
| | Optimized women's empowerment | | X | | local/national |
| | Reduced traffic congestion | X | | | |
| | Other welfare benefits | X | | | |
| Economic growth | New investments | | | X | local/national |
| | New industrial/commercial activities | | | X | local/national |
| | New infrastructure | | X | | local/national |
| | Enhancement of productivity | X | | | |
| | Reduction of production costs (services) | | X | | local/national |
| | New business opportunities | | | X | local/national |
| | Other economic benefits | X | | | |
| Energy | Improvement in supply of energy | | X | | local/national |
| | Access to energy | | | X | local |
| | Affordability and/or reliability of energy | X | | | |
| | Other energy improvements | X | | | |
| Technology | Introducing/developing/diffusing imported technology | | X | | local/national |
| | Introducing/developing/diffusing local technology | | X | | local/national |
| | Adaptation of new technologies to local circumstances | | | X | global/local/national |
| | Know-how activities for a technology | | | X | global/local/national |
| | Other technological benefits | X | | | |

Detailed description and explanations of co-benefits are provided in **Annex P**.

63. **Climate Change Mitigation:** Although GHG emissions from waste sector are not a major contributor to global GHG emissions in developed countries, the damaging effects of open burning and overall current waste management practices have a large negative Climate Change impact. Beside fossil based CO₂ emission from combustion, open burning releases by-products from incomplete combustion such as hydrocarbons, particulate matter and black carbon, benzene and carbon monoxide. Recent research has shown that black carbon is the second

(after CO₂) largest contributor to global temperature increases, though the default values on the effects of black carbon on climate have not been published by the IPCC or any other international organization yet (the Gold Standard Foundation has recently started initiative to quantify effects of black carbon on climate).

The baseline situation, population growth and rapid urbanization in the participating countries make the Climate Change mitigation effects of the Project significant and important. This aspect is included in all Project components, and the implementation of Project components through technical and institutional actions (Legislation improvement, Institutional strengthening, and Education and Awareness) aimed to increase the efficiency of waste management and thus the reduction of open burning in dumpsites will contribute to Climate Change mitigation efforts on local, national and regional levels. In particular, the Project specifically addresses landfill gas recovery and utilization on some sites, so it will contribute to the reduction of landfill CH₄ emissions (the largest source of GHG emissions in waste sector, active for several decades after the waste disposal); the improved residue waste handling on some sites will decrease fugitive emissions and land contamination. There are several UNFCCC CDM approved methodologies for calculating GHG emission reductions from such measures, that will be described in the next chapter.

64. **Climate Change Adaptation:** Implementation of sound waste management practices in developing countries can deliver GHG emission savings and this sector has been recognized as an important area for mitigation measures in developing countries. However, recent extreme weather events showed the importance of adapting the current waste management systems and practices to the effects of climate change. Urban waste management systems are proven highly vulnerable to climate change and there are numerous examples of landfill floods and collection systems collapsed or blocked for a longer period due to extreme weather events. Negative health and environmental impacts caused by extreme weather phenomena and related to landfills and dumpsites are enormous, which makes adaptation of the current waste management to climate change a very important and urgent task. All Project components will address this issue, taking in consideration the institutional framework and specific local geographical characteristics and socio-demographic factors that influence and determine vulnerability of waste management systems to the effects of climate change. Given that most of the participating countries are highly exposed to the effects of climate change, the implementation of the Project will significantly contribute to the adaptation efforts in participating countries, delivering effective and immediate results.
65. **Gender Dimension and Inclusion:** The project will aim to mainstream gender in the activities. The implementation of the project components will be conducted having in mind global and specific national and local gender dimensions. The project will also observe UNIDO's gender policies. Training and employment opportunities will be generated, and respecting gender rights in education and employment will be observed. Participation of women at all activities will be encouraged and monitored. The Project also foresees human resource development at governmental institutions and environmental NGOs. These initiatives are open for all genders and the Project will encourage the participation of women. In general, the implementation of the Project will significantly improve the long-term gender equality in training and employment.
The project will also conduct information dissemination activities on the environmental and health impacts of open burning that will involve communities living near the dumpsites. It is evident in the information collected that women and children are involved in scavenging activities and are, arguably, the most vulnerable group in terms of the impacts of emissions from open burning activities.
66. **Stakeholder Inclusion and Project Sustainability:** The Project will ensure collection of adequate data to enable continuous monitoring of its implementation and achievements of environmental and socioeconomic impacts. Relevant stakeholders will be included in knowledge and data sharing, and thoroughly informed about the Project results. Communities will be included in the decision making process to an adequate and reasonable extent. The valuable data and knowledge gained through the Project will be managed and shared as described in **ANNEX P, Socioeconomic Benefits – Education** to ensure sustainability of the Project and its outcomes, as well as to enhance global impacts of the Project.
67. In addition to delivering socioeconomic and environment benefits listed above, the implementation of the Project will help solve some important problems and support achievements of specific sustainable development goals in the participating countries:

- i) In **Cambodia**, the Project (especially the demonstration activities in the dumpsite) will contribute to meet the concept of “green city” and sustainable standards. It will strongly support tourism sector development for the provinces and the whole country, improve the attractiveness of locations for tertiary and quaternary industry sectors related to pepper production and marketing, support the infrastructure development, and contribute to changing people behaviors towards waste generation and management.
- ii) In **Lao PDR**, the assistance to be provided to the Vientiane landfill in upgrading the segregation and recycling facility will provide additional income and may generate additional jobs for the people living in the site. The private sector partner, SAPLAST Vientiane, will be provided with more recyclable resources to keep their production running and provide economic benefit to the company and its staff.
- iii) In **Mongolia**, the main benefits of the “Green Bin” project will be the reduction of illegal dump spots by 50-60% and the reduction of open burning waste by 70-80 %. Also Ulanbaatar city will save around 0,1 million USD for cleaning illegal dump spots. Green Bin project will help to establish separate collection system in ger area; ger area residents will be able to reuse ash and recycle their waste, and generate income from recyclable waste. The country does not have facilities for treating hazardous wastes, and private companies and organizations that import and use chemicals and medical substances have a constant problem to dispose containers or packages. The re-use of metal and plastic containers/drums promoted by the Project will solve this important problem. Moreover, collection and disposal costs will be reduced, bringing savings for households and businesses and strengthening the local economy. Reuse of ash promoted by the Project is important in a national context, as it contributes to overall waste reduction and helps dealing with wider social issues in the country. Local community will also benefit from employment, training and volunteering opportunities, which will also develop the capacity of local people and communities to be more self-reliant.

Mongolia will also benefit from the rehabilitation of Morin Davaa disposal site. Disposal site does not have any leachate and methane removal systems, which makes it a constant severe threat to the environment and local population. The Municipality of Ulaanbaatar currently spends around 160,000 USD on operating the disposal site, with around 20 % of operation costs spent on fire quenching. The best way to stop open burning and reduce overall risks connected with this site is the rehabilitation of the site. Most important beneficial effects of the Project will be the elimination of open burning and mitigation of risks connected with the site, along with the reduction of operational costs, lowering releases of contaminants, landfill gasses, fly ash, odors, dust and particulate matter in air, water and soil, diminishing noise pollution and preventing diseases, etc.

- iv) In the **Philippines**, in addition to the benefits described above, important achievements of the Project will be the provision of alternative options and social safeguards for the informal waste sector (IWS), improvements in the recovery of materials from the waste stream, and the enhanced provision of services from the LGU for the sector.
- v) Currently, **Vietnam** is conducting environmental management in craft villages without information and knowledge on Dioxin/Furan emission control. Existing Decrees and Circulars do not contain dioxin/furan emission control. Damaging open burning practices are widespread in Vietnam especially in rural areas, mostly due to the lack of capacity and waste management knowledge. The GEF’s support to the Project will provide advantages and help creating enabling environment for drafting and implementing the relevant regulations (such as standard applied to small facilities), and contribute to awareness raising, capacity building and knowledge dissemination, hence strongly support sustaining of the national target on craft villages and the national strategy on solid waste management in rural areas. The Project’s most significant contribution to the achievement of global environment benefits is the reduction of UP-POPs. However, in dealing with open burning the Project addresses vast sections of waste management in the participating countries, and the Project components cover regulatory framework, capacity building and education, and pilot demonstration activities on single sites. Such comprehensive approach ensures broad and sustainable impacts on local and national levels, as well as contributions to achievement of global benefits in addition to the reduction of UP-POPs.

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

- 68. Detailed discussion of the interventions, estimated cost and the potential dioxin reduction in each case is presented in **Annex O**. It can be estimated that, the demonstration cases to be undertaken, a potential reduction of 93% could be achieved for UP-POPs emission to air and in solid residues if open burning practices could be decreased by implementing short and long term actions. In the long term scenario, if no contaminated waste will

be disposed in the sites and no open burning is carried out, a 100% release reduction maybe achieved. This would, however, require that municipal solid wastes are confined in engineered landfills applying BAT/BEP and recycling opportunities are maximized.

Some tentative estimation of the potential values of the recovered material can be done based on the Eurostat data on secondary materials, as it was not possible to obtain specific selling prices of recyclables in the participating countries. In total, it can be estimated that with the amount and nature of wastes coming into the different dumpsites reported, assuming a conservative target of 40% recovery, around 100,000 Tons/year of secondary materials can be recovered. Calculations made on the recyclables and the projected income is presented in **Annex O**.

69. In terms of co-benefits, the implementation of demonstration activities will generate measurable GHG emission reductions, and the outcomes of Monitoring and Evaluation will deliver valuable data about the mitigation effects of the BAT/BEPs. There are several UNFCCC CDM approved methodologies for calculating GHG emission reductions from such measures. These methodologies are used to calculate ex-post GHG emission reductions (in tCO₂eq) achieved by implementing waste management/handling residues measures on specific sites; applying these methodologies to ex-ante estimate the GHG emission reductions (in tCO₂eq) that will be achieved through the planned implementation of specific measures in the future requires reliable and accurate historical data on BAU scenario and verifiable results of BAT/BEP on the same, or a very similar site. Such data are not available for the Project’s demonstration sites, and applying these methodologies is not possible. Nevertheless, according to the UNFCCC database, several single CDM projects that include some of the measures foreseen in the Demonstration Activities are registered in the participating countries (1 project in Cambodia, 5 projects in Philippines, 6 projects in Vietnam). The monitored results of these CDM projects in terms of the achieved GHG emission reductions (in tCO₂eq) prove the Climate Change mitigation effects of the measures. Provision of comprehensive, reliable and accurate data required for estimating Climate Change mitigation effects of the Project on specific sites and in general (by policies, low-carbon development, etc.) is a very important deliverable of the Project. The data collected within the Project will also enable ex-post calculation of the amounts of GHG emission reductions (in tCO₂eq) generated through the implementation of BAT/BEPs on the selected demonstration sites.

70. The project is envisaged to achieve its objectives cost effectively. In addition to the significant and sustainable reduction of uPOPs releases in participating countries (as described in **Annex O**), the project will bring a reduction of GHG emissions and other contaminants, achievements of broad environmental and socio-economic co-benefits (as listed in B2), as well as deliver a valuable data and experience that will used in replicable projects around the world.

C. DESCRIBE THE BUDGETED M & E PLAN:

Monitoring and evaluation will facilitate tracking implementation progress toward the outcomes and objectives. Likewise, it will facilitate learning, feedback, and knowledge sharing on results and lessons among the primary stakeholders to improve knowledge and performance. This section of the project document presents a concrete and fully budgeted monitoring and evaluation plan of the project.

| Type of M&E activity | Responsible Parties | GEF Budget USD* | Co-financing | Time frame |
|------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------|-----------------|--------------|------------------------------------------------------------------------------------------|
| Regular monitoring and analysis of performance indicators | UNIDO PM, RC, NPMUs, and M&E consultants as required | 30,000 | 150,000 | Regularly to feed into project management and Annual Project Review |
| Annual Project Review to assess project progress and performance | RC, NPMUs, UNIDO PM, and Project Steering Committee to review the project performance and make corrective decision | 30,000 | 200,000 | Annually prior to the finalization of APR/PIR and to the definition of annual work plans |

| Type of M&E activity | Responsible Parties | GEF Budget USD* | Co-financing | Time frame |
|---------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-----------------|--------------|----------------------------------------------------------------------------------------------------------|
| Mid-term Evaluation | RC, NPMU, external consultants, UNIDO PM, Steering Committee | 40,000 | 50,000 | Mid of project |
| Terminal Project Evaluation | PMU ,MoE, UNIDO PM, and Project Steering Committee, independent external evaluators | 50,000 | 50,000 | Evaluation at least one month before the end of the project; report at the end of project implementation |
| Visits to field sites to monitor progress and assess delivery of services | UNIDO PM, RC, NPMU | 50,000 | 150,000 | Twice a year; as necessary for PMU |
| Total Indicative Cost | | 200,000 | 600,000 | |

Monitoring and reporting responsibilities

71. One month before the starting of each implementation year, the RC will draft an Annual Work Plan (AWP), complying with requirements and formats established for the first Annual Work Plan at IW. The AWP will be submitted to UNIDO for approval and shared with the NPMUs. The Annual Work Plan will set the target against which project performance shall be measured at the end of each implementation year.
72. Day to day monitoring of project implementation progress will be the responsibility of the National Project Managers (NPM) based on the project's Annual Work Plan (AWP) and its indicators. The NPM will coordinate the planning and monitoring activities with the National Project Coordinator (NPC) and the RC. The NPMU, via the NPM, will inform the RC and UNIDO of any delays or difficulties faced during implementation so that the appropriate support or corrective measures can be adopted in a timely and remedial fashion.
73. Targets and indicators will be reviewed annually as part of the internal evaluation and planning processes undertaken by the RC and National Project Management Units (NPMU) and communicated with UNIDO.
74. UNIDO through meetings (face-to-face or through teleconferencing) with project counterparts as frequent as deemed necessary but not less than twice per year will undertake periodic monitoring of the project implementation progress. This will allow parties to troubleshoot any problems pertaining to the project in a timely fashion to ensure the smooth implementation of project activities. Meetings with counterparts may coincide with the field visits to the project sites.
75. Annual Monitoring will occur through PSC meetings, which will take place at least once a year. The NPMs will prepare an Annual Project Report (APR) and submit it to the RC for review and consolidation at least two weeks prior to the PSC for review and comments. The annual progress report is a UNIDO requirement and part of the UNIDO central oversight, monitoring and project management.
76. The national project team and the RC in conjunction with UNIDO will be responsible for the preparation and submission of the following reports that form part of the monitoring process.

(a) Inception Report

A Project Inception Report (IR) will be prepared by the RC immediately following the Inception phase. It will include a detailed First Year Work Plan divided into quarterly timeframes, which detail the activities and progress indicators that will guide the implementation during the first year phase of the project. The Work Plan will include the tentative dates of specific field visits, support missions from UNIDO and/or UNIDO consultants, as well as timeframes for meetings of the project's decision-making structures. The report will also include the detailed project budget for the first full year of implementation, prepared on the basis of the Annual Work Plan, and including any monitoring and evaluation requirements to effectively measure project performance during the targeted 12 month timeframe.

(b). Project Implementation Report

The Project Implementation Report (PIR) is an annual monitoring process mandated by the GEF. It is an essential management and monitoring tool for project managers and offers the main vehicle for extracting lessons from ongoing projects. Once the project will be under implementation for a year, the project team shall complete the PIR. The PIR are prepared observing the GEF cycle (July-June). The PIR includes the following: (a) Analysis of the achievement of project objectives; (b) Analysis of project performance over the reporting period, including outputs produced and information on the status of the outcome; (c) Management of Risks (d) Co-financing accounting (resources provided both as in kind or cash contribution). Expenditure reports, lessons learned and recommendations to address key problems, if applicable, are reported. Likewise, part of this PIR is the reporting/updating of the co-financing committed and the UNIDO Stockholm Convention Unit indicators.

77. A Project Management Information System will be established to support the Project Manager and the project management team to ensure that all the project activities be completed on time, in quality and within budget. The MIS will include a database containing (in electronic format or scanned PDF) all the project technical and administrative documentation. The MIS will keep baseline records of Annual Work Plans and contracts with consultants and subcontracts with performance indicators, result reports, responsibilities and budgets, allowing the easy comparison of them with the progress of the activities. The RC and the NPMs will be responsible in updating and uploading the relevant documentation in the MIS.

Inception Phase

78. The project Inception Phase will involve the establishment of the NPMU, recruitment of the RC, designation of the members of the Steering Committee, the project launching through an Inception Workshop (IW) and convening of the first Project Steering Committee (PSC) meeting. The IW is aimed at launching the project with the full project team, relevant government counterparts, co-financing partners, key stakeholders, UNIDO and the other related organizations in Lao PDR, as appropriate. This will provide the platform to disseminate project objectives, general workplan and implementation structure to relevant stakeholders. Equally, the IW will provide an opportunity to inform the project team on UNIDO project related administrative and financial procedures, budgetary requirements and reviews and mandatory budget rephrasing. In the course of the project, the structure of the project's Management Information System will be also introduced.
79. The 1st PSC is aimed at convening the project team to better understand and assimilate the goals and objectives of the project, as well as to finalize the preparation of the project's first annual work plan on the basis of the project's results framework matrix. This work will include reviewing the results framework as necessary (indicators, means of verification, assumptions), imparting additional detail as needed, and completing an Annual Work Plan (AWP) for the first year of project implementation, including measurable performance indicators. Additionally, the meeting will: (i) introduce project staff to the UNIDO team, which will support the project during its implementation; (ii) delineate the roles, support services, and complementary responsibilities of UNIDO staff vis-à-vis the project team; (iii) provide a detailed overview of UNIDO reporting and Monitoring & Evaluation (M&E) requirements, with particular emphasis on the content and format of the Annual Project Implementation Reviews (PIRs), the Annual Project Report (APR), the Annual Work Plan (AWP), meetings, as well as mid-term and final evaluations and; (iv) review of the project logical framework and set midterm targets. The 1st PSC will also provide an opportunity for all parties to understand their roles, functions, and responsibilities within the project's decision-making structures, including reporting and communication lines and conflict resolution mechanisms. Specific targets for the first year implementation progress indicators together with their means of verification will be developed and agreed in this workshop. These will be used to assess whether implementation is proceeding at the intended pace and in the right direction and will form part of the AWP. The Inception (Phase) Report will be drafted and circulated for comments and approval by project partners within one month from the meetings.

Independent Evaluations

80. The project will be subjected to at least two independent external evaluations as follows:
- (a) Mid-term Evaluation. An independent Mid-Term Evaluation will be undertaken at the end of the third year of project implementation. The Mid-Term Evaluation, performed by an independent consultant, will measure progress made towards the achievement of outcomes and will identify corrections if needed. The evaluation will focus on the project performance in terms of relevance, effectiveness, efficiency and timeliness of project implementation;

highlight issues requiring decisions and actions; and present initial lessons learned on project design, implementation and management. Findings of this review will be incorporated as recommendations for enhanced implementation during the second half of the project's term. The organization, terms of reference and timing of the mid-term evaluation will be decided after consultation between the parties to the project document. The Terms of Reference for this mid-term evaluation will be prepared by UNIDO in accordance with the generic TORs developed by the GEF Evaluation Office.

- (b) Final Evaluation. An independent Final Evaluation will take place after the operational completion of the project, and will focus on the same issues as the mid-term evaluation, with a greater focus on project impact and sustainability of results, including the contribution to capacity development and the achievement of global environmental goals. The Final Evaluation should also provide recommendations for follow-up activities future projects, based on lesson learned and success stories. The Terms of Reference for this evaluation will be prepared by UNIDO in accordance with the generic TORs developed by the GEF and UNIDO Evaluation Offices.

Terminal Project Workshop

81. The terminal project workshop will be held in the last month of project operation. A draft final report will serve as the basis for discussions in the final workshop. This will serve as a venue to consider the implementation of the project as a whole, paying particular attention to whether the project has achieved its stated objectives and contributed to the broader environmental objective. It decides whether any actions are still necessary, particularly in relation to sustainability of project results and acts as a means, which lessons learned can be captured for use in other projects under implementation or formulation.

General Consideration

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

Prior Obligations and Prerequisites

83. GEF grant assistance will be provided subject to UNIDO being satisfied that obligations and pre-requisites listed below have been fulfilled or are likely to be fulfilled. When fulfillment of one or more of these prerequisites fails to materialize, UNIDO may, at its discretion, either suspend or terminate its assistance.
- Prior to project effectiveness, financing by co-financiers other than the GEF and UNIDO specified in the project document and the respective commitment letters is to be made available to the Project;
 - During project implementation, progress reports and Project Implementation Review (PIR) reports should be prepared as per monitoring plan of the project.

Legal Context

Cambodia:

The Kingdom of Cambodia agrees to apply to the present project, mutatis mutandis, the provisions of the Standard Basic Assistance Agreement between the United Nations Development Programme and the Government, signed and entered into force on 19 December 1994.

Lao PDR:

The Government of the Lao People's Democratic Republic agrees to apply to the present project, mutatis mutandis, the provisions of the Standard Basic Assistance Agreement between the United Nations Development Programme and the Government, signed and entered into force on 10 October 1988.

Mongolia:

The Government of Mongolia agrees to apply to the present project, mutatis mutandis, the provisions of the Standard Basic Assistance Agreement between the United Nations Development Programme and the Government, signed and entered into force on 28 September 1976.

Philippines:

The present project is governed by the provisions of the Standard Basic Cooperation Agreement between the Republic of Philippines and UNIDO, signed and entered into force on 26 February 1993.

Viet-Nam:


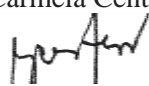
The Government of the Socialist Republic of Viet Nam agrees to apply to the present project, mutatis mutandis, the provisions of the Standard Basic Assistance Agreement between the United Nations Development Programme and the Government, signed and entered into force on 21 March 1978.

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

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

| NAME | POSITION | MINISTRY | DATE (MM/dd/yyyy) |
|--------------------------|--------------------------------------------------------------|--------------------------------------------------------------|-------------------|
| Lohn Heal | Director General, Technical Affairs | MINISTRY OF ENVIRONMENT, CAMBODIA | 05/21/2012 |
| Khampadith Khammounheung | Acting Director General | DEPARTMENT OF ENVIRONMENT, LAO PDR | 04/02/2012 |
| Enkhbat Altangerel | Director, Ecologically Clean Technology and Science Division | MINISTRY NATURE, ENVIRONMENT AND TOURISM, MONGOLIA | 05/16/2012 |
| Analiza Rebuelta-Teh | Undersecretary and Chief of Staff | DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES, PHILIPPINES | 05/21/2012 |
| Nguyen Van Tai | Director General, ISPONRE | MINISTRY OF NATURAL RESOURCES AND ENVIRONMENT, VIETNAM | 06/19/2012 |

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 CEO endorsement/approval of project. | | | | | |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------|---------------------------------------------------------------------------------------------------------|---------------------|-------------------------|
| Agency Coordinator, Agency Name | Signature | Date (Month, day, year) | Project Contact Person | Telephone | Email Address |
| Mr. Philippe R. Scholtès Managing Director Programme Development and Technical Cooperation Division UNIDO GEF Focal Point |  | | Carmela Centeno  | +43(1) 260263385 | c.centeno@ unido.org |
| | | | | | |

| Hierarchy of Objectives | Indicators | Baseline | Target | Sources of Verification | Assumptions |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| PROJECT OBJECTIVES: Create resource efficient waste management to reduce U-POPs emissions through the introduction of BAT/BEP in open burning sources. | mg TEQ/year of PCDD/PCDF estimated at the pilot demonstration sites in the participating countries. | Approximate values of mg TEQ/year at demonstration sites: 38 g TEQ/year | Achieve a reduction of app. 90% of current PCDD/PCDF releases at the pilot demonstration activities in the participating countries. | Reports of the analytical and theoretical results | Continuous international support and commitments of governments to address open burning issues. Commitments of stakeholders to address waste management issues in the participating countries. |
| OUTCOME 1: STRENGTHENED LEGISLATIVE CAPACITY FOR INTRODUCING BAT/BEP IN WASTE OPEN BURNING SECTOR | Number of regulatory instruments in national legislations with requirements on BAT/BEP and U-POPs compliant with Stockholm Convention. | Insufficient regulatory frameworks to address open burning, U-POPs emissions control and BAT/BEPs. | New sets of guidance/guidelines in national legislations focusing on BAT/BEP, U-POS and open burning control measures adopted. Incentives systems and financing mechanisms for the adoption of BAT/BEP developed. | Copies of proposed revisions of national legislations. | BAT/BEP implementation and enhancement of legislative tools for waste management policies remains among national priorities. |
| Output 1.1: Updated legal and regulatory frameworks for open burning to facilitate waste management improvements and BAT/BEP implementation, and to enable introduction of | Number of regulations aimed to discourage open burning in national legislations; existence of legal framework to enable incentive systems and financial support for integrated waste management systems. Availability of guidelines/guidance | Legal framework does not enable incentive systems and/or encourage financial instrument to support integrated waste management. Institutional capacity is low and knowledge about BAT/BEPs, U-POPs and open burning issue is insufficient. | Inclusion of regulations aimed to discourage open burning in national legislations; setting up the legal framework to enable incentive systems and financial support for integrated waste management systems. Introduction of financing mechanisms and incentive systems in the updated legislation in support of | Copies of proposed revisions of national legislations. Toolkits and manuals available for consultations. Training reports on policies, | BAT/BEP implementation in waste management policies remains among national priorities. Incentives and financial |

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| <p>financing mechanisms.</p> | <p>documents on BAT/BEP and incentive systems/financing mechanisms in participating countries.</p> <p>Number of persons trained (male female).</p> | <p>BAT/BEP implementation.</p> <p>One toolkit for waste management and 1 manual for financing mechanisms/incentive systems in each participating country.</p> <p>At least one regional training program (training of trainers) with 4 trainees per country (2 male, 2 female) on policies, regulations and standards. Special consideration of gender.</p> | <p>regulations and standards</p> <p>Workshop proceedings</p> | <p>instruments are capable of supporting integrated waste management.</p> |
| <p>OUTCOME 2: ENHANCED INSTITUTIONAL CAPACITY TO CARRY OUT BAT/BEP IMPLEMENTATION</p> | <p>Number of scientific/educational/professional centers of competency for POP related topics to be involved in trainings</p> <p>Number of laboratories adopting best practices on monitoring/evaluation of U-POPs.</p> | <p>Despite differences among participating countries, the institutional capacity to address waste management requirements is insufficient in all of them.</p> <p>At least 5 institutions in the region identified to act as sharing information centres for POPs and open burning related topics.</p> <p>At least 2 laboratories in the region strengthened for POPs analysis and 2 for analysis of basic parameters in landfill management .</p> | <p>Certificated participation at capacity building events.</p> <p>Existence of active regional cooperation, verified through collaboration among institutions. (joint programs, best practice, information and data exchange, regional conferences, etc.)</p> <p>Certified capability of selected laboratories.</p> | <p>Institutional capacity building in waste management remains among national priorities.</p> |
| <p>Output 2.1: Strengthened human resources/institutions on</p> | <p>Availability of a platform for regional collaboration.</p> | <p>Introduction of a web-based platform for regional cooperation on academic and professional levels.</p> | <p>Technical reports produced by regional experts available</p> | <p>Availability of international and local experts to provide</p> |

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| <p>regional/national levels on waste management and BAT/BEP implementation in open burning of biomass and wastes, considering gender and social inclusiveness.</p> | <p>Number of trainees (male/female) on landfill management</p> <p>Number of trainees (male/female) on financing mechanisms and incentive systems</p> <p>Application of a standardized methodology for site inventory.</p> | <p>Very limited capacity on BAT/BEP waste management plans implementation in some countries.</p> <p>Inventory of waste disposal sites is based on very different, non-standardized methodology and classification methods.</p> <p>Limited opportunities for education/training.</p> <p>Low women participation in waste management jobs.</p> | <p>At least 20 trainees on BAT/BEP and landfill management.</p> <p>At least 10 trainees on financing mechanisms and incentive systems</p> <p>Standardized methodology for site inventorying adopted.</p> <p>National inventories on type and number of disposal sites updated</p> | <p>for information exchange and transfer.</p> <p>Training reports and certificated participation of trainees.</p> <p>Standard methodologies for inventories adopted and reports available.</p> <p>Questionnaires and other survey tools used to update inventories.</p> | <p>assistance in trainings, and for setting up and reviewing the inventories.</p> |
| <p>Output 2.2: Enhanced regional/national institutional monitoring capacity through the implementation of standardized analytical procedures, data collection, monitoring and reporting procedures and facilities.</p> | <p>Adoption of standardized methodologies for U-POPs release inventory.</p> <p>Number of laboratories and technicians/researcher (male/female) in the region trained in conducting monitoring and analyses of U-POPs.</p> | <p>Currently only few regional laboratories (Vietnam, Thailand, Philippines) have the capability to carry out full monitoring of U-POPs.</p> <p>U-POP inventory update is often based on different calculation methods.</p> | <p>Standardized methodologies adopted for the continuous update of U-POPs release inventory.</p> <p>Capacity of at least 3 main laboratories in the region strengthened to enable U-POPs analyses/monitoring.</p> <p>2-3 technicians trained for U-POPs analyses/monitoring in at least 3 laboratories. At least 1 researcher per country trained in evaluating and reporting on U-POPs data</p> <p>At least 1 institution identified in the region to carry out trainings on U-POPs monitoring.</p> | <p>Certificates obtained for U-POPs analysis</p> <p>Assessment report on the monitoring capability of laboratories</p> <p>Reports on training courses and number of trained technicians and researchers.</p> <p>Training materials available</p> | <p>Regional and international experts are available in time to carry out trainings</p> <p>Strengthening national laboratories remains within NIP priorities</p> |

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| <p>OUTCOME 3: BAT/BEP IMPLEMENTED IN OPEN BURNING SOURCES</p> | <p>Quantity of U-POPs and other relevant contaminants reduced at the demonstration sites.</p> <p>Quantity of CO₂ emissions reduced.</p> <p>Value of materials recycled.</p> <p>Number of new businesses set up.</p> <p>Number of jobs created.</p> <p>Amount of new investments.</p> | <p>None of the selected sites/municipalities has developed integrated waste management system.</p> <p>BAT/BEPs, waste recycling, reuse, composting/waste-to-energy, etc. are generally not implemented and external financial and technical assistance is required.</p> <p>An estimation of CO₂ emissions, climate change mitigation/adaptation possibilities/needs has never been conducted at the sites.</p> | <p>At least 90% U-POPs reduction due to BAT/BEP implementation and proper waste segregation/ recycling at the demonstration sites.</p> <p>At least 20% CO₂ reduction achieved from the demonstration activities.</p> <p>Increase of at least 30% of reused/recycled materials</p> <p>At least one business created/upgraded dealing with recycling</p> <p>At least one job created in the recycling facilities</p> <p>US\$ invested in recycling and proper waste management.</p> | <p>UP-POPs release assessment.</p> <p>Experts and facility report on the recycling activity.</p> | <p>Support from local stakeholders and dumpsite operators at the demonstration activities.</p> |
| <p>Output 3.1: Updated comprehensive assessment of the effects of current practices and impact indicators at the selected demonstration sites.</p> | <p>Number of U-POPs analysis undertaken</p> <p>Quantity of CO₂ emissions reduced.</p> | <p>Depending on country, limited studies carried out at the selected demonstration sites.</p> | <p>At least 5 sampling campaigns on each of the demonstration sites on ambient air, soil and leachate collected and analyzed for U-POPs and related contaminants at each demonstration site aimed to assess the effects of current practices.</p> <p>At least 20% CO₂ reduction achieved from demonstration projects. Climate change aspects assessed on every demonstration site.</p> | <p>Reports on evaluation studies.</p> <p>Reports on monitoring campaigns.</p> <p>Reports on evaluation studies</p> | <p>Support from the local dumpsite operators in carrying out the assessment of the demonstration sites.</p> <p>Assessment and monitoring campaign will be carried out by national and international experts to assure reliable data.</p> |

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| <p>Output 3.2: BAT/BEP plans developed and implemented at the selected demonstration sites in each participating country.</p> | <p>Grams U-POPs and other relevant contaminants reduced at the demonstration sites.</p> <p>Quantity of GHG emissions reduced.</p> <p>Value of materials recycled.</p> <p>Number of new businesses set up.</p> <p>Number of jobs created.</p> <p>Amount of new investments</p> | <p>Approximate values of mg TEQ/year at demonstration sites: 38 g TEQ/year</p> <p>Currently, limited integrated waste management is in place at the selected sites. Institutional incentive systems/financing mechanisms are not provided on a public level.</p> | <p>Integrated waste management plans developed for the selected sites. BAT/BEP interventions carried out at the selected sites.</p> <p>At least 90% U-POPs reduction achieved in the demonstration sites</p> <p>Increase of at least 30% of reused/recycled materials.</p> <p>At least 30% CO₂ reduction achieved as co-benefit of the BAT/BEP implementation</p> <p>At least one business created/upgraded in the recycling/collection of different waste streams in all participating countries</p> <p>At least one additional job created in the enterprises involved.</p> | <p>Reports on BAT/BEP implementation, financing mechanisms introduced/implemented.</p> <p>Reports on monitoring activities containing values of U-POPs releases after the project implementation.</p> <p>Evaluation reports of environmental, socio-economic and other impact indicators.</p> | <p>Industrial sector interested in being involved in alternative use of fuel source or waste recycling.</p> <p>Support from regional and international experts.</p> |
| <p>OUTCOME 4: IMPROVED KNOWLEDGE AND UNDERSTANDING ON BAT/BEP AND ON RISKS CONNECTED WITH U-POPs, GHG EMISSIONS AND OTHER CONTAMINANTS RELEASED THROUGH OPEN BURNING</p> | <p>Number of awareness raising campaigns and activities, disseminated materials, web-based platforms.</p> <p>Number of institutions in the region engaged and capable of delivering awareness raising campaigns.</p> <p>Number of universities offering</p> | <p>The general awareness of the UP-POPs and BAT/BEP issues is very limited.</p> <p>Waste management is not included in education at the university level.</p> <p>Knowledge/awareness and capability for valued-added waste treatment is not available.</p> | <p>At least two awareness raising campaigns conducted.</p> <p>Number of participants (male/female in the awareness raising campaigns)</p> <p>At least 1 institution per country engaged to conduct dissemination and awareness activities.</p> <p>Inclusion of U-POPs/open burning topic in at least 1 university education curricula per country.</p> | <p>Cooperation agreements with training institutions.</p> <p>Awareness raising plan and strategy report.</p> <p>Availability of dissemination material and web-based collaboration platform.</p> | <p>Willingness of relevant stakeholders to cooperate and participate in the activities.</p> |

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| <p>Output 4.1: Awareness raising campaigns aimed to emphasize health and environment hazards of open burning practices, carried out on targeted relevant stakeholders.</p> | <p>courses that includes U-POPs/open burning topics</p> <p>Number of targeted awareness raising and dissemination workshops for public at large available.</p> <p>Number of awareness raising campaigns/materials that include information on business opportunities and financing mechanisms in waste management sector.</p> <p>Number of training courses and number of trainees (male/female) for public officials and authorities.</p> | <p>Awareness raising campaigns seldom focus on U-POPs and other negative effects of open burning.</p> <p>Limited access for population to information tools on U-POPs and possibilities of integrated waste management.</p> | <p>Project website developed and promoted at the regional level</p> <p>Materials produced in English and main local languages, including information on business opportunities and financing mechanisms in waste management sector.</p> <p>At least 2 targeted awareness raising campaigns implemented and delivered.</p> <p>At least 5 National training courses and one regional training program with 10 trainees on health and environmental topics of open burning practices</p> | <p>Reports on awareness raising campaigns and workshops proceedings.</p> <p>Copies of training materials, activity reports.</p> <p>Dissemination material (flyers, brochures, newsletters) available at the project web-site and the collaboration platform.</p> | <p>International support provided.</p> <p>Specifically targeted groups (public officials/local governments, local NGOs, women associations, professional associations, farmers cooperatives, etc.) actively participate at the campaigns.</p> |
| <p>Output 4.2: Educational programs aimed at introducing and promoting alternatives to open burning practices, carried out on targeted groups at several levels.</p> | <p>Number of training courses for local stakeholders and businesses.</p> <p>Number of universities involved in setting up dedicated courses.</p> | <p>Alternatives to open burning, integrated waste management opportunities, and U-POPs topics are rarely included in the educational system.</p> <p>Insufficient information is available for local business.</p> | <p>At least 1 training course on open burning and integrated waste management opportunities delivered per country.</p> <p>At least 1 training course for interested stakeholders and businesses carried out per demonstration site.</p> <p>At least 1 university curricula on U-POPs and BAT/BEPs developed per country.</p> | <p>Reports on awareness raising campaigns.</p> <p>Reports on training courses</p> <p>Full inclusion of teaching module at the university.</p> | <p>Increase of knowledge and capacity on open burning, waste management, and U-POPs and BAT/BEP is among national priorities.</p> <p>Universities and educational institutions are willing to cooperate.</p> |

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

A. Scientific and Technical Advisory Panel

I. STAP Advisory Response:

Based on this PIF screening, STAP's advisory response to the GEF Secretariat and GEF Agency(ies): **Consent**

II. Further guidance from STAP

PIF Information: The project objective is stated as: "To achieve sustainable release reduction of unintentionally produced-POPs (UP-POPs) in the open burning sector through the introduction of BAT and BEP".

STAP Comments:

The components of the PIF are appropriately designed to address the problems, with good interaction or complementarities with related projects and initiatives in the region.

The PIF is quite comprehensive and appears sensitive to the unique issues and circumstances in the region. Some points worth mentioning:-

- a) Monitoring and evaluation of the multi-country project will be crucial. Up-front schemes for communication and responsibility for lines of reporting about specific outcomes should be established.

Response: The project implementation strategy is fully described in B.1.1 Institutional arrangement for project implementation (pp 34-35). The project will set up a national project monitoring unit and a regional coordinator who will oversee the day-to-day administration of the project and coordinate the timely inputs of the various stakeholders and timely involvement of experts, among other tasks. A Project Steering Committee, chaired by the countries on a rotational basis, will be established to ensure that the project is on track and the desired outputs are achieved. UNIDO will ensure that project monitoring and implementation is effectively carried out through a dedicated project manager and through the assistance of its Field Offices.

- b) The Education and Awareness component of the project (requesting \$1 million from GEF) should be adequately elaborated per country according to their particular situations, as soon as possible. Given the predicted increases in waste streams in countries, then there should be better awareness of waste minimization, life cycle approaches, and overall planning in anticipation of such increases.

Response: This is duly noted. UNIDO will enter into contractual arrangement with reputable organizations/institutions in the country that will be able to effectively deliver the education and awareness component. UNIDO agrees that a sound communication plan should be designed in order to ensure that the envisaged outcome is realized. For projects of this nature, better awareness of both the environmental, social and health impacts must be communicated to all relevant stakeholders, including the public at large.

- c) It may be worth noting, and looking for complementarity with two other GEF projects that include some of the same countries, that are also looking at POPs/PTS monitoring, namely:-

- Project 5067 (UNEP) "Vietnam PIPs and Harmful Chemicals management Project" (UNDP) (Component 2 looks at Monitoring)
- Project 4894 (UNEP) "Implementation of the POPs Monitoring Plan in Asia", which includes Cambodia, Indonesia, Lao PDR, Vietnam and the Philippines.

Response: The project will endeavor to seek coordination with all the ongoing projects in each country and the region.

ANNEX C: STATUS OF IMPLEMENTATION OF PROJECT PREPARATION ACTIVITIES AND THE USE OF FUNDS⁵

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

| PPG Grant Approved at PIF: USD 200,000 | | | |
|------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------|-----------------------------|-------------------------|
| <i>Project Preparation Activities Implemented</i> | <i>GEF/LDCF/SCCF/NPIF Amount (\$)</i> | | |
| | <i>Budgeted Amount</i> | <i>Amount Spent To date</i> | <i>Amount Committed</i> |
| Activity 1: Update of the UP-POPs baseline information of open burning practices and the inventory of dumpsites/landfills in the region. | 125,000 | 82,123 | 39,775 |
| Activity 2: Creation of framework and structure of the regional cooperation | 15,000 | 14,896 | |
| Activity 3: Generate public and private sectors involvement in the project | 15,000 | 13,210 | |
| Activity 4: Development of the logical framework and project document | 45,000 | 50,016 | |
| | | | |
| | | | |
| | | | |
| Total | 200,000 | 160,245 | 39,775 |

The PPG activities undertaken have resulted to the achievement of the objectives set in the project preparation phase.

During the PPG phase, studies and assessments of different elements that makes up the components of the project framework were undertaken. The PPG developed an updated UP-POPs inventory of the open burning practices with special attention on existing dumpsites, landfills, agricultural residue burning. Comprehensive inventory of landfills and dumpsites were made available for Mongolia and the Philippines. For Lao and Cambodia, specific details were provided for the planned demonstration site. Vietnam has undertaken a very comprehensive report on the craft villages. All studies and assessment are provided in Annexes G-L.

As part of these activities the candidate demonstration locations/activities have been selected. Preliminary site investigations has been undertaken. The PPG phase was also utilized to put in place the necessary coordination network at the national and regional levels, including national, and international experts, focal points in each country, the relevant stakeholders, and laboratories in the region for UP-POPs analysis. Further on the national level, initial discussions with the private and public stakeholders led to co-financing commitments.

A regional workshop was held in September 2013 to launch the project, set up the coordination mechanism and agree on the workplan and to harmonize the collection of information. A second regional workshop was held in April 2014 to formulate the project document and to validate the information collected.

⁵ If at CEO Endorsement, the PPG activities have not been completed and there is a balance of unspent fund, Agencies can continue undertake the activities up to one year of project start. No later than one year from start of project implementation, Agencies should report this table to the GEF Secretariat on the completion of PPG activities and the amount spent for the activities.

ANNEX D: CALENDAR OF EXPECTED REFLOWS (if non-grant instrument is used)

Provide a calendar of expected reflows to the GEF/LDCF/SCCF/NPIF Trust Fund or to your Agency (and/or revolving fund that will be set up)

| TIMELINE FOR COMPONENT 2 | | | | | | | | | | | | | | | | | | | | | |
|--------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|-----|-----|-----|--------|-----|-----|-----|--------|-----|-----|-----|--------|-----|-----|-----|--------|-----|-----|-----|
| Outcome/Output/Activity | Quarter | Year 1 | | | | Year 2 | | | | Year 3 | | | | Year 4 | | | | Year 5 | | | |
| | | Q 1 | Q 2 | Q 3 | Q 4 | Q 1 | Q 2 | Q 3 | Q 4 | Q 1 | Q 2 | Q 3 | Q 4 | Q 1 | Q 2 | Q 3 | Q 4 | Q 1 | Q 2 | Q 3 | Q 4 |
| 2.1.4 | incentive systems in support of BAT/BEP implementation. Special consideration on gender by encouraging participation of women | | | | | | | | | | | | | | | | | | | | |
| Activity 2.1.5 | Introduce standardized methodologies for carrying out inventories of number and types of waste disposal facilities, dumpsites and landfills in the participating countries, and update them continuously | | | | | | | | | | | | | | | | | | | | |
| Output 2.2 | Enhanced regional/national institutional capacity through the implementation of standardized analytical procedures, data collection, monitoring and reporting procedures and facilities | | | | | | | | | | | | | | | | | | | | |
| Activity 2.2.1 | Enhanced regional/national institutional capacity through the implementation of standardized analytical procedures, data collection, monitoring and reporting procedures and facilities | | | | | | | | | | | | | | | | | | | | |
| Activity 2.2.2 | Train management personnel in monitoring, evaluating and reporting on U-POPs, GHG emissions and other contaminants released by open burning. | | | | | | | | | | | | | | | | | | | | |
| Activity 2.2.3 | Introduce/implement standardized methodologies to continuously update inventories of U-POPs releases from open burning practices. | | | | | | | | | | | | | | | | | | | | |

| TIMELINE FOR COMPONENT 3 | | | | | | | | | | | | | | | | | | | | | |
|--------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|-----|-----|-----|--------|-----|-----|-----|--------|-----|-----|-----|--------|-----|-----|-----|--------|-----|-----|-----|
| Outcome/Output/Activity | Quarter | Year 1 | | | | Year 2 | | | | Year 3 | | | | Year 4 | | | | Year 5 | | | |
| | | Q 1 | Q 2 | Q 3 | Q 4 | Q 1 | Q 2 | Q 3 | Q 4 | Q 1 | Q 2 | Q 3 | Q 4 | Q 1 | Q 2 | Q 3 | Q 4 | Q 1 | Q 2 | Q 3 | Q 4 |
| OUTCO ME 3 | BAT/BEP IMPLEMENTED IN OPEN BURNING SOURCES | | | | | | | | | | | | | | | | | | | | |
| Output 3.1 | Updated comprehensive assessment of the effects of current practices and impact indicators at the selected demonstration sites. | | | | | | | | | | | | | | | | | | | | |
| Activity 3.1.1 | Collect detailed environmental and socio-economic data and formulate impact indicators, and evaluate climate change mitigation/adaptation aspects at the selected demonstration sites. Consider specific local/regional circumstances related to open burning | | | | | | | | | | | | | | | | | | | | |
| Activity 3.1.2 | Carry out preliminary monitoring campaigns for U-POPs, GHG emissions and other relevant contaminants released through current practices at the selected demonstration sites | | | | | | | | | | | | | | | | | | | | |
| Output 3.2 | BAT/BEP plans developed and implemented at the selected demonstration sites in each participating country | | | | | | | | | | | | | | | | | | | | |
| Activity 3.2.1 | Set up waste management plans with economic incentives and PPP mechanisms to discourage open burning, promote waste recycling, and consider climate change mitigation/adaptation measures | | | | | | | | | | | | | | | | | | | | |
| Activity 3.2.2 | Enhance effectiveness of waste collection and segregation, introduce BAT/BEP at the selected dumpsite in Cambodia and promote waste recycling activities. Consider climate change adaptation needs of the site. | | | | | | | | | | | | | | | | | | | | |
| Activity 3.2.3 | Enhance effectiveness of waste selection and segregation, promote waste recycling activities and investigate climate change mitigation/adaptation measures at the selected landfill in Lao PDR. | | | | | | | | | | | | | | | | | | | | |
| Activity 3.2.4 | Set up the system for reuse of metal drums to collect ashes, and introduce BAT/BEP at the selected dumpsite in Mongolia considering climate change mitigation/adaptation. | | | | | | | | | | | | | | | | | | | | |

| TIMELINE FOR COMPONENT 3 | | Year 1 | | | | Year 2 | | | | Year 3 | | | | Year 4 | | | | Year 5 | | | | | | | |
|--------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|-----|-----|-----|--------|-----|-----|-----|--------|-----|-----|-----|--------|-----|-----|-----|--------|-----|-----|-----|-----|-----|-----|-----|
| | | Q 1 | | Q 2 | | Q 3 | | Q 4 | | Q 1 | | Q 2 | | Q 3 | | Q 4 | | Q 1 | | Q 2 | | Q 3 | | Q 4 | |
| | | Q 1 | Q 2 | Q 3 | Q 4 | Q 1 | Q 2 | Q 3 | Q 4 | Q 1 | Q 2 | Q 3 | Q 4 | Q 1 | Q 2 | Q 3 | Q 4 | Q 1 | Q 2 | Q 3 | Q 4 | Q 1 | Q 2 | Q 3 | Q 4 |
| | | Outcome/Output/Activity | | | | | | | | | | | | | | | | | | | | | | | |
| | Quarter | | | | | | | | | | | | | | | | | | | | | | | | |
| Activity 3.2.5 | Set up integrated waste management systems including waste recycling, composting facilities and landfill gas utilization plants at selected municipalities and sites in Philippines. | | | | | | | | | | | | | | | | | | | | | | | | |
| Activity 3.2.6 | Set up a centralized system for collection/reuse of scrap metals, and a system for agricultural residues utilization; develop financial schemes to incentivize full inclusion of local resources in craft villages in Vietnam. | | | | | | | | | | | | | | | | | | | | | | | | |
| Activity 3.2.7 | Carry out monitoring of U-POPs, GHG emissions and other relevant contaminants on the demonstration sites after the implementation of BAT/BEP, and disseminate the results. | | | | | | | | | | | | | | | | | | | | | | | | |
| Activity 3.2.8 | Evaluate environmental, socio-economic and other co-benefits of implemented measures/activities on all sites, on the basis of the formulated impact indicators. Disseminate the relevant results. | | | | | | | | | | | | | | | | | | | | | | | | |

| TIMELINE FOR COMPONENT 4 | | Year 1 | | | | Year 2 | | | | Year 3 | | | | Year 4 | | | | Year 5 | | | | | | | |
|--------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|-----|-----|-----|--------|-----|-----|-----|--------|-----|-----|-----|--------|-----|-----|-----|--------|-----|-----|-----|-----|-----|-----|-----|
| | | Q 1 | | Q 2 | | Q 3 | | Q 4 | | Q 1 | | Q 2 | | Q 3 | | Q 4 | | Q 1 | | Q 2 | | Q 3 | | Q 4 | |
| | | Q 1 | Q 2 | Q 3 | Q 4 | Q 1 | Q 2 | Q 3 | Q 4 | Q 1 | Q 2 | Q 3 | Q 4 | Q 1 | Q 2 | Q 3 | Q 4 | Q 1 | Q 2 | Q 3 | Q 4 | Q 1 | Q 2 | Q 3 | Q 4 |
| | Outcome/Output/Activity | | | | | | | | | | | | | | | | | | | | | | | | |
| | Quarter | | | | | | | | | | | | | | | | | | | | | | | | |
| OUTCOME 4 | IMPROVED KNOWLEDGE AND UNDERSTANDING ON BAT/BEP AND ON RISKS CONNECTED WITH U-POPs, GHG EMISSIONS AND OTHER CONTAMINANTS RELEASED THROUGH OPEN BURNING | | | | | | | | | | | | | | | | | | | | | | | | |
| Output 4.1 | Awareness raising campaigns aimed to emphasize health and environment hazards of open burning practices, carried out on targeted relevant stakeholders. | | | | | | | | | | | | | | | | | | | | | | | | |
| Activity 4.1.1: | Carry out targeted awareness raising campaigns on environmental and health hazards of U-POPs for public officials, professionals, community leaders, farmers and scavengers. Encourage women participation. | | | | | | | | | | | | | | | | | | | | | | | | |
| Activity 4.1.2: | Develop project website and dissemination materials to share information with stakeholders, also using the established collaboration platform. Include information on business opportunities, incentive systems and financing mechanisms. | | | | | | | | | | | | | | | | | | | | | | | | |
| Output 4.2 | Education programme at all levels for introducing alternatives to open burning practices | | | | | | | | | | | | | | | | | | | | | | | | |
| Activity 4.2.1 | Set up trainings for local stakeholders on alternative biomass utilization, recycling and reuse of waste. Include business opportunities and encourage participation of women. | | | | | | | | | | | | | | | | | | | | | | | | |
| Activity 4.2.2 | Design educational programs for schools and families on open burning and waste management. Encourage participation of women. | | | | | | | | | | | | | | | | | | | | | | | | |
| Activity 4.3.1 | Develop education curricula at university level focused on U-POPs, BAT/BEP in waste management and benefits of their implementation. Advanced information on incentive systems and financing mechanisms. | | | | | | | | | | | | | | | | | | | | | | | | |

ANNEX F: PROJECT BUDGET: GEF GRANT ALLOCATION

| STRENGTHENED LEGISLATIVE CAPACITY FOR INTRODUCING BAT/BEP IN WASTE OPEN BURNING SECTOR | | | | | | | | | | | | | | |
|----------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|----------------|-----------|----------------|-----------|----------------|-----------|---------------|-----------|---------------|----------|----------------|-------------|
| Outcome 1 | GEF Outputs | Description | Year 1 | | Year 2 | | Year 3 | | Year 4 | | Year 5 | | Total | |
| | | | US\$ | w/m | US\$ | w/m | US\$ | w/m | US\$ | w/m | US\$ | w/m | US\$ | w/m |
| Output 1.1: | Updated legal and regulatory frameworks for open burning to facilitate waste management improvements and BAT/BEP implementation, and to enable introduction of financing mechanisms | International Consultants | 36,000 | 3 | 48,000 | 4,0 | 24,000 | 2 | 24,000 | 2 | | | 132,000 | 11,0 |
| | | Nat. Experts | 25,000 | 10 | 37,500 | 15 | 30,000 | 12 | 25,000 | 10 | 12,500 | 5 | 130,000 | 52,0 |
| | | Sundries | 10,000 | | 15,000 | | 15,000 | | 8,000 | | | | 48,000 | |
| | | Project staff travel | 20,000 | | 30,000 | | 20,000 | | 10,000 | | | | 80,000 | |
| | | Equipment | 10,000 | | 10,000 | | | | | | | | 20,000 | |
| | | Workshops | 20,000 | | 25,000 | | 30,000 | | 15,000 | | | | 90,000 | |
| | | Subcontracts | | | | | | | | | | | | |
| | | Sub-total | 121,000 | 13 | 165,500 | 19 | 119,000 | 14 | 82,000 | 12 | 12,500 | 5 | 500,000 | |
| | Sub Total for Component 1 | | 121,000 | 13 | 165,500 | 19 | 119,000 | 14 | 82,000 | 12 | 12,500 | 5 | 500,000 | 63,0 |

| ENHANCED INSTITUTIONAL CAPACITY TO CARRY OUT BAT/BEP IMPLEMENTATION | | | | | | | | | | | | | | |
|---------------------------------------------------------------------|------------------------------------------------------------------------------------------------------|---------------------------|--------|-----|--------|-----|--------|-----|--------|-----|--------|-----|---------|------|
| Outcome 2 | GEF Outputs | Description | Year 1 | | Year 2 | | Year 3 | | Year 4 | | Year 5 | | Total | |
| | | | US\$ | w/m | US\$ | w/m | US\$ | w/m | US\$ | w/m | US\$ | w/m | US\$ | w/m |
| Output 2.1: | Strengthened human resources/institutions on regional/national level on waste management and BAT/BEP | International Consultants | 36,000 | 3 | 36,000 | 3 | 24,000 | 2 | 12,000 | 1 | | | 108,000 | 9,0 |
| | | Nat. Experts | 30,000 | 12 | 37,500 | 15 | 25,000 | 10 | 12,500 | 5 | | | 105,000 | 42,0 |
| | | Sundries | 10,000 | | 15,000 | | 12,000 | | 10,000 | | | | 47,000 | 0,0 |
| | | Project staff travel | 25,000 | | 25,000 | | 25,000 | | 20,000 | | | | 95,000 | 0,0 |

| Output | implementation in open burning of biomass and wastes, considering gender and social inclusiveness | Equipment | Year 1 | | Year 2 | | Year 3 | | Year 4 | | Year 5 | | Total | |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|----------------|----------------|----------------|---------------|----------------|---------------|---------------|----------|----------------|----------------|-------------|---------|------|
| | | | US\$ | w/m | US\$ | w/m | US\$ | w/m | US\$ | w/m | US\$ | w/m | | |
| Output 2.3: Enhanced regional/national institutional capacity through the implementation of standardized analytical procedures, data collection, monitoring and reporting procedures and facilities | Equipment | | | | | | | | | | | | 0 | 0,0 |
| | Workshops | 20,000 | | 30,000 | | 30,000 | | | 15,000 | | | | 95,000 | 0,0 |
| | Subcontracts | | | | | | | | | | | | 0 | 0,0 |
| | Sub-total | 121,000 | 15 | 143,500 | 18 | 116,000 | 12 | 69,500 | 6 | 0 | 450,000 | 51,0 | | |
| | International Consultants | 24,000 | 2,0 | 24,000,0 | 2,0 | 12,000,0 | 1,0 | | | | | | 60,000 | 5,0 |
| | Nat. Experts | 25,000 | 10 | 25,000 | 10 | 12,500 | 5 | 12,500 | 5 | | | | 75,000 | 30,0 |
| | Sundries | 5,000 | | 5,000 | | 5,000 | | | | | | | 15,000 | 0,0 |
| | Project staff travel | 10,000 | | 10,000 | | 10,000 | | | | | | | 30,000 | 0,0 |
| | Equipment | 50,000 | | 50,000 | | 50,000 | | | | | | | 150,000 | 0,0 |
| | Workshops | 10,000 | | 10,000 | | | | | | | | | 20,000 | 0,0 |
| Subcontracts | | | | | | | | | | | | 0 | 0,0 | |
| Sub-total | 124,000 | 12 | 124,000 | 12 | 89,500 | 6 | 12,500 | 5 | 0 | 350,000 | 35,0 | | | |
| | Sub Total for Component 2 | 245,000 | 27 | 267,500 | 30 | 205,500 | 18 | 12,500 | 5 | 800,000 | 86,0 | | | |

| BAT/BEP GRADUALLY IMPLEMENTED IN OPEN BURNING SECTOR | | | | | | | | | | | | | | |
|--------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|---------------|----------|---------------|-----------|---------------|----------|----------|----------|----------------|-------------|---------|--------|------|
| Output | Description | Year 1 | | Year 2 | | Year 3 | | Year 4 | | Year 5 | | Total | | |
| | | US\$ | w/m | US\$ | w/m | US\$ | w/m | US\$ | w/m | US\$ | w/m | US\$ | w/m | |
| Output 3.1: Updated comprehensive assessment of the effects of current practices and impact indicators at the selected demonstration sites | International Consultants | 24,000 | 2 | 24,000 | 2 | 12,000 | 1 | | | | | | 60,000 | 5,0 |
| | Nat. Experts | 12,500 | 5 | 20,000 | 8 | 12,500 | 5 | | | | | | 45,000 | 18,0 |
| | Sundries | 5,000 | | 5,000 | | 5,000 | | | | | | | 15,000 | 0,0 |
| | Project staff travel | 10,000 | | 15,000 | | 10,000 | | | | | | | 35,000 | 0,0 |
| | Equipment | 15,000 | | 15,000 | | 10,000 | | | | | | | 40,000 | 0,0 |
| | Workshops | | | | | | | | | | | | 0 | 0,0 |
| | Sub-total | 76,500 | 7 | 89,000 | 10 | 59,500 | 6 | 0 | 0 | 225,000 | 23,0 | | | |
| Output 3.2: BAT/BEP plans developed and implemented at the selected | International Consultants | 24,000 | 2 | 36,000 | 3 | 36,000 | 3 | 24,000 | 2 | 12,000 | 1 | 132,000 | 11,0 | |
| | Nat. Experts | 20,000 | 8 | 30,000 | 12 | 25,000 | 10 | 25,000 | 10 | 10,000 | 4 | 110,000 | 44,0 | |

| demonstration sites in each participating country | Sundries | 5,000 | 5,000 | 5,000 | 5,000 | 5,000 | 5,000 | 5,000 | 5,000 | 5,000 | 0,0 |
|---------------------------------------------------|------------------|----------------------|------------------|------------------|------------------|------------------|----------------|----------------|---------------|-----------|------------------|
| | | Project staff travel | 15,000 | 20,000 | 20,000 | 20,000 | 10,000 | 10,000 | 10,000 | 10,000 | 10,000 |
| Sub Total for Component 3 | Equipment | 100,000 | 2,800,000 | 1,000,000 | 1,000,000 | 1,000,000 | 1,000,000 | 200,000 | 200,000 | 4,100,000 | 0,0 |
| | Workshops | | | | | | | | | | 0 |
| | Subcontracts | 5,000 | 10,000 | 10,000 | 10,000 | 8,000 | 8,000 | 8,000 | 8,000 | 33,000 | 0,0 |
| | Sub-total | 169,000 | 2,901,000 | 15 | 1,096,000 | 13 | 272,000 | 12 | 37,000 | 5 | 4,475,000 |
| | | 245,500 | 17 | 2,990,000 | 25 | 1,155,500 | 19,0 | 272,000 | 12 | 5 | 4,700,000 |
| | | | | | | | | | | | 78,0 |

| IMPROVED KNOWLEDGE AND UNDERSTANDING ON BAT/BEP AND ON RISKS CONNECTED WITH U-POPs, GHG EMISSIONS AND OTHER CONTAMINANTS RELEASED THROUGH OPEN BURNING | | | | | | | | | | | | | |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|---------------|----------|---------------|-----------|---------------|-----------|----------------|-----------|----------------|-----------|----------------|-------------|
| OUTCOME 4 | Description | Year 1 | | Year 2 | | Year 3 | | Year 4 | | Year 5 | | Total | |
| | | US\$ | w/m | US\$ | w/ m | US\$ | w/m | US\$ | w/m | US\$ | w/m | US\$ | w/m |
| Output 4.1: Awareness raising campaigns aimed to emphasize health and environment hazards of open burning practices, carried out on targeted relevant stakeholders. | International Consultants | 6,000 | 0,5 | 18,000 | 1,5 | 24,000 | 2 | 12,000 | 1,0 | 12,000 | 1,0 | 72,000 | 6,0 |
| | Nat. Experts | 12,500 | 5 | 20,000 | 8 | 25,000 | 10 | 25,000 | 10 | 12,500 | 5 | 95,000 | 38,0 |
| | Sundries | | | 5,000 | | 5,000 | | 5,000 | | 5,000 | | 20,000 | 0,0 |
| | Project staff travel | 5,000 | | 10,000 | | 10,000 | | 10,000 | | 5,000 | | 40,000 | 0,0 |
| | Equipment | | | | | | | | | | | 0 | 0,0 |
| | Workshops | | | 10,000 | | 10,000 | | 10,000 | | 5,000 | | 35,000 | 0,0 |
| | Subcontracts | | | 10,000 | | 10,000 | | 10,000 | | 8,000 | | 38,000 | 0,0 |
| | Sub-total | 23.500 | 6 | 73,000 | 10 | 84,000 | 12 | 72,000 | 11 | 47,500 | 6 | 300,000 | 44,0 |
| Output 4.2: Educational programs aimed at introducing and promoting alternatives to open burning practices, carried out on targeted groups at several levels. | International Consultants | | | 36,000 | 3 | 36,000 | 3 | 24,000 | 2 | 24,000 | 2 | 120,000 | 10 |
| | Nat. Experts | | | 37,500 | 15 | 37,500 | 15 | 37,500 | 15 | 37,500 | 15 | 150,000 | 60 |
| | Sundries | | | 10,000 | | 15,000 | | 15,000 | | 10,000 | | 50,000 | 0 |
| | Project staff travel | | | 20,000 | | 30,000 | | 30,000 | | 30,000 | | 110,000 | 0 |
| | Equipment | | | | | | | | | | | 0 | 0 |
| | Workshops | | | 20,000 | | 40,000 | | 40,000 | | 30,000 | | 230,000 | 0 |
| | Subcontracts | | | 10,000 | | 10,000 | | 10,000 | | 10,000 | | 40,000 | 0 |
| | Sub-total | | | 133500 | 18 | 168500 | 18 | 156,500 | 17 | 141,500 | 17 | 600000 | 70,0 |

SUMMARY OF GEF GRANT AND COFINANCING ALLOCATIONS PER ACTIVITY

| Project Framework | Financing | | |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|------------------|------------------|
| | GEF | COFI | Total |
| OUTCOME 1: STRENGTHENED LEGISLATIVE CAPACITY FOR INTRODUCING BAT/BEP IN WASTE OPEN BURNING SECTOR | 500,000 | 4,200,000 | 4,700,000 |
| Output 1.1: Updated legal and regulatory frameworks for open burning to facilitate waste management improvements and BAT/BEP implementation, and to enable introduction of financing mechanisms. | 500,000 | 4,200,000 | 4,700,000 |
| Activity 1.1.1: Asses the impacts of common and traditional open burning practices in the region in terms of releases of U-POPs, GHG emissions, and other contaminants, and the effects/benefits of BAT/BEP application. | 50,000 | 500,000 | 550,000 |
| Activity 1.1.2: Formulate and propose legislative changes and updated regulations on waste and landfill management targeting common open burning practices. Specifically address U-POPs and other contaminants, consider enabling establishment of financing mechanisms. | 100,000 | 900,000 | 1,000,000 |
| Activity 1.1.3: Develop and introduce financing mechanisms and incentive systems based on the updated legislation in support of BAT/BEP implementation. | 50,000 | 400,000 | 450,000 |
| Activity 1.1.4: Hold workshops and trainings to raise awareness of the impacts and opportunities of the proposed revised legal framework; discuss and disseminate to all relevant stakeholders (in English and local languages). | 100,000 | 1,000,000 | 1,100,000 |
| Activity 1.1.5: Develop toolkits for waste management, including recommendations for BAT/BEP guidelines update (in English and local languages). | 100,000 | 700,000 | 800,000 |
| Activity 1.1.6: Develop manuals for using financing mechanisms and incentive systems in waste management (in English and local languages). | 100,000 | 700,000 | 800,000 |
| OUTCOME 2: ENHANCED INSTITUTIONAL CAPACITY TO CARRY OUT BAT/BEP IMPLEMENTATION | 800,000 | 4,000,000 | 4,800,000 |
| Output 2.1: Strengthened human resources/institutions on regional/national levels on waste management and BAT/BEP implementation in open burning of biomass and wastes, considering gender and social inclusiveness. | 450,000 | 2,100,000 | 2,550,000 |

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| Activity 2.1.1: Establish a web-based regional cooperation platform to specifically address open burning issues. | 50,000 | 300,000 | 350,000 |
| Activity 2.1.2: Carry out targeted trainings for public officers and local authorities involved in waste management, as well as for community stakeholders, aimed to introduce BAT/BEP concepts. Special consideration on gender by encouraging participation of women. | 125,000 | 600,000 | 725,000 |
| Activity 2.1.3: Carry out targeted trainings for regional/national/local technical staff on disposal facilities (landfill, open dumpsites) on issues connected with open burning sector and BAT/BEP. | 125,000 | 500,000 | 625,000 |
| Activity 2.1.4. Carry out education and training on application of financing mechanisms and incentive systems in support of BAT/BEP implementation. Special consideration on gender by encouraging participation of women. | 100,000 | 400,000 | 500,000 |
| Activity 2.1.5: Introduce standardized methodologies for carrying out inventories of number and types of waste disposal facilities, dumpsites and landfills in the participating countries, and update them continuously. | 50,000 | 300,000 | 350,000 |
| Output 2.2: Enhanced regional/national institutional capacity through the implementation of standardized analytical procedures, data collection, monitoring and reporting procedures and facilities. | 350,000 | 1,900,000 | 2,250,000 |
| Activity 2.2.1: Strengthen the capability of regional/national laboratories for sampling and analysing UP-POPs, GHG emissions and other contaminants relevant for common landfill management and open burning practices. | 200,000 | 1,000,000 | 1,200,000 |
| Activity 2.2.2: Train management personnel in monitoring, evaluating and reporting on U-POPs, GHG emissions and other contaminants released by open burning. | 100,000 | 500,000 | 600,000 |
| Activity 2.2.3: Introduce/implement standardized methodologies to continuously update inventories of U-POPs releases from open burning practices. | 50,000 | 400,000 | 450,000 |
| OUTCOME 3: BAT/BEP IMPLEMENTED IN OPEN BURNING SOURCES | 4,700,000 | 17,576,434 | 22,276,434 |
| Output 3.1: Updated comprehensive assessment of the effects of current practices and impact indicators at the selected demonstration sites. | 225,000 | 1,000,000 | 1,225,000 |
| Activity 3.1.1: Collect detailed environmental and socio-economic data and formulate impact indicators, and evaluate climate change mitigation/adaptation aspects at the selected demonstration sites. Consider specific local/regional circumstances related to open burning. | 75,000 | 500,000 | 575,000 |

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| Activity 3.1.2: Carry out preliminary monitoring campaigns for U-POPs, GHG emissions and other relevant contaminants released through current practices at the selected demonstration sites. | 150,000 | 500,000 | 650,000 |
| Output 3.2: BAT/BEP plans developed and implemented at the selected demonstration sites in each participating country. | 4,475,000 | 16,676,434 | 21,151,434 |
| Activity 3.2.1: Set up waste management plans with economic incentives and PPP mechanisms to discourage open burning, promote waste recycling, and consider climate change mitigation/adaptation measures. | 175,000 | 600,000 | 775,000 |
| Activity 3.2.2: Enhance effectiveness of waste collection and segregation, introduce BAT/BEP at the selected dumpsite in Cambodia and promote waste recycling activities. Consider climate change adaptation needs of the site. | 500,000 | 1,300,000 | 1,800,000 |
| Activity 3.2.3: Enhance effectiveness of waste selection and segregation, promote waste recycling activities and investigate climate change mitigation/adaptation measures at the selected landfill in Lao PDR. | 600,000 | 2,300,000 | 2,900,000 |
| Activity 3.2.4: Set up the system for reuse of metal drums to collect ashes, and introduce BAT/BEP at the selected dumpsite in Mongolia considering climate change mitigation/adaptation. | 1,000,000 | 3,300,000 | 4,300,000 |
| Activity 3.2.5: Set up integrated waste management systems including waste recycling, composting facilities and landfill gas utilization plants at selected municipalities and sites in Philippines. | 1,100,000 | 4,376,434 | 5,476,434 |
| Activity 3.2.6: Set up a centralized system for collection/reuse of scrap metals, and a system for agricultural residues utilization; develop financial schemes to incentivize full inclusion of local resources in craft villages in Vietnam. | 900,000 | 3,600,000 | 4,500,000 |
| Activity 3.2.7: Carry out monitoring of U-POPs, GHG emissions and other relevant contaminants on the demonstration sites after the implementation of BAT/BEP, and disseminate the results. | 150,000 | 900,000 | 1,050,000 |
| Activity 3.2.8: Evaluate environmental, socio-economic and other co-benefits of implemented measures/activities on all sites, on the basis of the formulated impact indicators. Disseminate the relevant results. | 50,000 | 300,000 | 350,000 |
| OUTCOME 4: IMPROVED KNOWLEDGE AND UNDERSTANDING ON BAT/BEP AND ON RISKS CONNECTED WITH U-POPs, GHG EMISSIONS AND OTHER CONTAMINANTS RELEASED THROUGH OPEN BURNING | 900,000 | 4,300,000 | 5,200,000 |

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| Output 4.1: Awareness raising campaigns aimed to emphasize health and environment hazards of open burning practices, carried out on targeted relevant stakeholders. | 300,000 | 1,450,000 | 1,750,000 |
| Activity 4.1.1: Carry out targeted awareness raising campaigns on environmental and health hazards of U-POPs for public officials, professionals, community leaders, farmers and scavengers. Encourage women participation. | 250,000 | 1,250,000 | 1,500,000 |
| Activity 4.1.2: Develop project website and dissemination materials to share information with stakeholders, also using the established collaboration platform. Include information on business opportunities, incentive systems and financing mechanisms. | 50,000 | 200,000 | 250,000 |
| Output 4.2: Educational programs aimed at introducing and promoting alternatives to open burning practices, carried out on targeted groups at several levels. | 600,000 | 2,850,000 | 3,450,000 |
| Activity 4.2.1: Set up trainings for local stakeholders on alternative biomass utilization, recycling and reuse of waste. Include business opportunities and encourage participation of women. | 300,000 | 1,300,000 | 1,600,000 |
| Activity 4.2.2: Design educational programs for schools and families on open burning and waste management. Encourage participation of women. | 200,000 | 1,000,000 | 1,200,000 |
| Activity 4.2.3: Develop education curricula at university level focused on BAT/BEP in waste management and benefits of their implementation. Advanced information on incentive systems and financing mechanisms. | 100,000 | 550,000 | 650,000 |
| OUTCOME 5: ESTABLISHED PROJECT MANAGEMENT STRUCTURE AND THE SYSTEM FOR MONITORING/EVALUATION OF PROJECT IMPACT | 300,000 | 600,000 | 900,000 |
| Output 5.2: Project impact monitoring system identified and implemented. | 200,000 | 600,000 | 800,000 |
| Activity 5.2.1: Hold project Inception Workshop. | 10,000 | 50,000 | 60,000 |
| Activity 5.2.2: Measure impact indicators on an annual basis | 10,000 | 50,000 | 60,000 |
| Activity 5.2.3: Prepare Annual Project Reports and Project Implementation Reports | 10,000 | 50,000 | 60,000 |
| Activity 5.2.4: Hold annual PET meetings | 20,000 | 100,000 | 120,000 |
| Activity 5.2.5: Carry out mid-term external evaluation | 40,000 | 50,000 | 90,000 |

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| Activity 5.2.6: Carry out annual visits to selected field sites | 50,000 | 150,000 | 200,000 |
| Activity 5.2.7: Establish a project management information system (MIS), including project website to disseminate information to stakeholders | 5,000 | 50,000 | 55,000 |
| Activity 5.2.8: Carry out final external evaluation | 50,000 | 50,000 | 100,000 |
| Activity 5.2.9: Complete Project Terminal Report | 5,000 | 50,000 | 55,000 |
| Project costs | 7,200,000 | 30,676,434 | 37,876,434 |
| Project management cost | 360,000 | 2,100,000 | 2,460,000 |
| TOTAL Project costs | 7,560,000 | 32,776,434 | 40,336,434 |

LIST OF ANNEXES ATTACHED TO SUBMISSION:

Annex G: Baseline Situation on Open Burning in Lao PDR

Annex H: Inventory Data on Dumpsites and Landfills in Mongolia

Annex I: Results of Dumpsites and Landfill Inventory in the Philippines

Annex J: Review on Open Burning Activities and their PCDD/Fs Emission in Vietnam

Annex K: Legislative Framework and Institutional Setting

Annex L: Assessment of the Kampot Dumpsite

Annex M: Review of Financial Mechanisms

Annex N: Planned BAT/BEP Interventions in the Demonstration Sites

Annex O: Estimation of Dioxin Reduction on the Demonstration Cases

Annex P: Assessment of Co-benefits of the Project

