

## Independent Mid-Term Evaluation

### Asia and the Pacific

### *Demonstration of BAT and BEP in open burning activities in response to the Stockholm Convention on POPs*

UNIDO SAP ID: 150033

GEF ID: 5082



UNITED NATIONS  
INDUSTRIAL DEVELOPMENT ORGANIZATION



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UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION  
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This document has not been formally edited.

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## Acronyms and abbreviations

BAT	Best available techniques
BEP	Best environmental practices
BTOMR	Back-to-office-mission-report
DENR	Department of Environment and Natural Resources
ESM	Environmentally Sound Management
FSP	Full-size Project
GEF	Global Environment Facility
GHG	Greenhouse Gas
IA	Implementing Agency
ISID	Inclusive and Sustainable Industrial Development
M&E	Monitoring and Evaluation
MNRE	Ministry of Natural Resources and Environment
MOE	Ministry of Environment
MoEGD	Ministry of Environment and Green Development
MSW	Municipal Solid Waste
MTE	Mid-term Evaluation
MTR	Mid-term Review
NIP	National Implementation Plan
NPC	National Project Coordinator
NPD	National Project Director
NPM	National Project Manager
PCBs	Polychlorinated biphenyls
PCDD	Polychlorinated dibenzodioxins
PCDF	Polychlorinated dibenzofurans
PIF	Project Identification Form
PIR	Project Implementation Review
PM	Project Manager
PMU	Project Management Unit
POPs	Persistent Organic Pollutants
PPG	Project Preparatory Grant
PSC	Project Steering Committee
RC	Regional Coordinator
SC	Stockholm Convention

SWM	Solid Waste Management
TOR	Terms of Reference
TOT	Training of Trainers
UN E	United Nations Environment (former UNEP)
UNIDO	United Nations Industrial Development Organization
U(P)-POPs	Unintentionally produced POPs
USD	US Dollar
VEA	Vietnam Environment Administration
WM	Waste Management

## Glossary of evaluation terms

Term	Definition
Baseline	The situation, prior to an intervention, against which progress can be assessed.
Effect	Intended or unintended change due directly or indirectly to an intervention.
Effectiveness	The extent to which the objectives of a development intervention were or are expected to be achieved.
Efficiency	A measure of how economically inputs (through activities) are converted into outputs.
Impact	Positive and negative, intended and non-intended, directly and indirectly, long term effects produced by a development intervention.
Indicator	Quantitative or qualitative factors that provide a means to measure the changes caused by an intervention.
Intervention	An external action to assist a national effort to achieve specific development goals.
Lessons learned	Generalizations based on evaluation experiences that abstract from specific to broader circumstances.
Logframe (logical framework approach)	Management tool used to guide the planning, implementation and evaluation of an intervention. System based on MBO (management by objectives) also called RBM (results based management) principles.
Outcome	The achieved or likely effects of an intervention's outputs.
Outputs	The products in terms of physical and human capacities that result from an intervention.
Relevance	The extent to which the objectives of a development intervention are consistent with beneficiaries' requirements, country needs, global priorities and partners' and donor's policies.
Risks	Factors, normally outside the scope of an intervention, which may affect the achievement of an intervention's objectives.
Sustainability	The continuation of benefits from an intervention, after the development assistance has been completed
Target group	The specific individuals or organizations for whose benefit an intervention is undertaken.



## Executive summary

### Introduction

The UNIDO-GEF project “***Demonstration of BAT and BEP in open burning activities in response to the Stockholm Convention on POPs***” commenced in April 2015, with a planned project duration of 5 years, and initially foreseen implementation end date in March 2020. Participating countries are Kingdom of Cambodia, Lao People’s Democratic Republic, Mongolia, the Republic of Philippines and the Socialist Republic of Vietnam. Project has received GEF funds amounting to USD 7,560,000 (excluding PPG), and committed co-finance (cash and in-kind) amounts to a total of USD 32,776,434. As foreseen in the project document, the mid-term evaluation has taken place between October and December 2018.

### Key findings and conclusions

#### Project Design

The project was formulated based on a logical framework. It has a clear thematically focused development objective – to create resource efficient waste management systems to reduce U-POPs emissions through the introduction of BAT/BEP in open burning sources. Project design is considered to be adequate to address the issues (the pre-requisite being a continuation of the project results as well as replication and building upon them). Project components encompass legislation, institutional strengthening via capacity building, demonstration activities, as well as education and awareness raising activities, thus covering various aspects of knowledge transfer and technology support.

#### Relevance and Ownership

All the five participating countries are parties to the Stockholm Convention. Parties to the Stockholm Convention are obliged to implement its requirements. They have signed the Convention, and submitted their respective NIPs. Open burning is listed as one of the priority areas in the NIPs of all the five participating countries. All the interviewed stakeholders, representatives of the Governments of both the visited countries, private sector, and academics emphasized the high relevance of the project.

#### Effectiveness at current stage of implementation

**Component 1** – legislation and regulatory framework - is ongoing. After the completion of the Manual on financing mechanisms one participating country, besides the approval of proposed new legislations in each country, this outcome would have been reached. **In Mongolia**, based on the review and suggestions made, an **Amendment Law on Waste 2017 was passed and ratified by the Mongolian Parliament on 12 May 2017**.

**Component 2** - capacity building - is ongoing. Institutions/human resources on regional/national level have been equipped with information and knowledge on SWM, U-POPs, GHG emissions and their monitoring. A **regional training course** – Monitoring for unintentional POPs and GHG from open burning activities - was

conducted by and at **the Laboratory of Dioxin and Toxic Substance Analysis, Northern Center for Environmental Monitoring in Hanoi**. It is realistic to achieve this Outcome in the planned project duration.

**Component 3** – demonstration of BAT/BEP - is ongoing. **In the Philippines, the MRF in General Santos City is ready, with constructions completed, and equipment delivered and installed, ahead of time.** Rest project duration time (around 1.5 years) is considered to be stringent to accomplish the interventions under Component 3.

**Component 4** – awareness-raising – is ongoing. Several activities have been accomplished; activities are on the right track and the achievement of Outcome 4 is considered to be realistic in the remaining time duration of the project.

### **Efficiency at current stage of implementation**

Many activities have been accomplished; many activities are ongoing. In the Philippines, the **cost for the upgrade for equipment to increase efficiency as well as one complete set of equipment was borne by Markell, the Contractor.** The main component which involves procurement, demonstration, is yet to be accomplished in four of the five participating countries. Time left till the initial/planned project end date is less than 1.5 years, and is considered to be stringent to accomplish the demonstration component.

### **Assessment of risks to likelihood of sustainability of project outcomes**

Technology alone does not guarantee sustainability of project outputs and outcomes. Continued financial support, till the Facility becomes 'self sustaining' is crucial. In the Philippines, the General Santos City Administration reiterated their commitment and support, also financial, to sustain the Facility. Socio-political and environmental risks are not considered to be high for project outcomes in any of the five participating country.

### **Assessment of M&E, monitoring of long-term changes, project coordination and management and gender mainstreaming**

The Regional Inception Workshop took place in May 2015; national Inception Workshops have taken place till June 2016 in all the 5 participating countries. A PMU has been set up in all five countries; and a Regional Coordinator selected. PSC and NPM meetings have taken place, albeit in time intervals of more than one year. The UNIDO-based management, coordination, monitoring, quality control and technical inputs of the PM are considered to be very effective, timely and helpful in effective project implementation. The national management and overall coordination mechanisms are reported and considered to be efficient and effective. The evaluation observed participation of both genders during all the evaluation meetings, in the PMUs and in other stakeholder institutions.

### **Key recommendations**

Component 3 - demonstration activities to be expedited in the other countries;

An extension of one year of the project duration might be necessary to accomplish the foreseen technology transfer under Outcome 3;

Relevant Ministries to pursue approval of proposed legislation / Technical Guidelines;

Cooperation Agreements for the demonstration sites to be signed as soon as realistically possible.

### **Lessons learned**

- Regular face-to-face PSC and NPM meetings facilitate joint efforts and can prove to be a motivational factor for achieving project outputs.
- Effective communication between various stakeholders facilitates joint efforts for effective and efficient project implementation.



# 1. Evaluation objectives, scope and methodology

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## 1.1 Scope and objectives

As foreseen in the project document, and according to the GEF<sup>1</sup> and the UNIDO<sup>2</sup> evaluation policies, the independent mid-term evaluation (MTE<sup>3</sup>) of the UNIDO GEF project “***Demonstration of BAT and BEP in open burning activities in response to the Stockholm Convention on POPs***” was carried out from October – December 2018. It was conducted by an independent evaluation consultant, Ms. Suman Lederer, team leader. The evaluation was accompanied by a technical expert, Mr. Petr Sharov. The evaluation mission was conducted in Vietnam and the Philippines from 19 – 27 November 2018.

The mid-term evaluation was carried out to assess the current status of implementation and to provide a comprehensive and systematic account of the project performance to date. It is a forward-looking exercise to identify best practices, areas for improvement and lessons to be incorporated in the remaining duration of the project as well as in similar future UNIDO interventions and in other UNIDO programmes and projects as applicable. The Terms of Reference (TOR) for the MTE is attached as Annex 5.4.

The MTE had to provide an analysis of the likelihood of attainment of the project objective(s) and the technical components or outputs. Through its assessments, the evaluation should enable the Government, counterparts, the GEF, UNIDO and other stakeholders to:

- a) Provide evidence of **results to date** and of the likelihood of outcomes and impact in the future. The assessment includes re-examination of the relevance of the objectives and other elements of project design according to the project review parameters defined in chapter VI in the TOR.
- b) Identify the challenges and risks to achievement of the project objectives and to derive improving actions needed for the project to achieve maximum impact and sustainability.
- c) Enhance project relevance, effectiveness, efficiency and sustainability by proposing a set of recommendations and/or corrective actions with a view to ongoing and future activities until the end of project implementation.

Intended users of the MTE are the UNIDO management and staff at Headquarters, UNIDO experts, the Governments of participating countries, counterpart agencies and other organizations in participating countries cooperating with UNIDO, donors and project beneficiaries. The MTE findings and recommendations are expected

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<sup>1</sup>[https://www.thegef.org/gef/sites/thegef.org/files/documents/ME\\_Policy\\_2010.pdf](https://www.thegef.org/gef/sites/thegef.org/files/documents/ME_Policy_2010.pdf)

<sup>2</sup><http://www.unido.org/en/resources/evaluation/evaluation-policy.html>

<sup>3</sup>In line with UNIDO’s Evaluation Guidelines, also called Mid-term Review (MTR)

to provide key inputs for the planning and continual improvement of future activities of the project, as well as other similar projects.

## 1.2 Information sources and availability of information

An evaluation mission to the Philippines (General Santos City and Manila) and Vietnam (Hanoi) took place to meet stakeholders and visit project demonstration site, to enable face-to-face interviews with stakeholders in the two countries. As such, this MTE assessment included a comprehensive desk review; one-to-one interviews with the relevant Ministries, Mayor of the General Santos City, UNIDO PM, UNIDO Country Office in the Philippines and Vietnam, the National Project Director (NPD), National Project Coordinator (NPC), National Project Managers(NPM), private sector, research laboratory, and demonstration site facility.

The UNIDO PM as well as PMU provided the evaluation with written documents and reports in a very timely manner, such as inter alia workshop reports, reports of awareness-raising activities, capacity-building workshops, assessment reports, which were reviewed. Moreover, stakeholders were requested during the meetings to provide further documents, which they readily made available to the evaluation in a very timely manner. A detailed list of documents is provided in Annex 5.2. All the documents and information readily made available to the evaluation by all people met and interviewed facilitated the work of the MTE enormously.

## 1.3 Methodological remarks and validity of the findings

Project implementation commenced in April 2015. As planned in the project document, the MTE has taken place “at the end of the third year of project implementation”<sup>4</sup>.

The MTE was carried out in the period October – December 2018 by an independent evaluation consultant, accompanied by a technical expert, and consisted of document review, interviews with project stakeholders, visit to laboratory and site visit to the selected demonstration site in General Santos City, in the Philippines. The following key instruments were used to collect data and evidence, on a participatory mixed-methods approach, and included:

- A comprehensive desk review of reports and documents collected;
- Interviews with stakeholders;
- Visit to the training laboratory in Vietnam
- Site visit to the selected demonstration site in General Santos City.

After conducting desk review of available documents, interviews were carried out with the stakeholders in Vietnam and the Philippines.

The GEF evaluation parameters have been operationalized into an evaluation matrix which is provided in Annex 5.3. The evaluation matrix contains the evaluation questions, sources of verification and relevant indicators.

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<sup>4</sup>CEO Endorsement document 01-27-2014, p.42.

## 1.4 Limitations of the evaluation

The project includes 5 participating countries. In line with the TOR, the evaluation visited and interviewed stakeholders in 2 of them, namely, the Philippines and Vietnam. As the demonstration site in the Philippines had already received the equipment and installed it, the evaluation visited the demonstration site in the Philippines. Owing to different stages of implementation of the participating countries, the mid-term evaluation did not visit all the countries. Nevertheless, documents from all the participating countries were reviewed and confirmed with the Regional Coordinator. Further, the findings of the mid-term evaluation were presented at the PSC meeting on 14 March 2019 in Hanoi, Vietnam, where feedback was received by representatives of the 3 countries, which were not included in the MTE mission. The list of persons met and organizations visited is provided in Annex 5.1.

## 2. Country and project background

### 2.1 Fact sheet

Project Title	Demonstration of BAT and BEP in open burning activities in response to the Stockholm Convention on POPs
UNIDO project No. / SAP ID	150033
GEF project ID	5082
Region / Country	Asia and Pacific Cambodia, Lao People's Democratic Republic, Mongolia, Philippines, Vietnam
GEF focal area(s) and operational programme	GEF-5: POPs
GEF implementing agency	UNIDO
GEF 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
Project size (FSP, MSP, EA)	FSP
Project CEO endorsement / Approval date	27 January 2015

Project implementation start date (First PAD issuance date)	01 April 2015
<b>Expected implementation end date</b> (as per CEO endorsement document)	March 2020
Revised expected implementation end date (if applicable)	
GEF project grant (Excluding PPG,USD)	7,560,000
<b>GEF PPG</b> (if applicable, in USD)	200,000
UNIDO co-financing (in USD)	106,000 (cash) + 150,000 (in-kind)
Total co-financing at CEO endorsement (in USD)	32,776,434 (cash and in-kind)
<b>Total project cost</b> USD (excluding PPG; GEF project grant + total co-financing at CEO endorsement)	40,336,434
Mid-term evaluation date	October – December 2018

Source: project document, GEF website.

## 2.2 Country and Project Background

According to Article 5(a) of the Stockholm Convention (SC) on Persistent Organic Pollutants (POPs), each Party to the Convention shall develop an action plan, or a regional or sub-regional plan to reduce the total release of chemicals listed in Annex C, with the goal of continuing the minimization and where feasible, elimination.

	<b>Signature, Succession to Signature (d)</b>	<b>Ratification, Acceptance (A), Approval (AA), Accession (a)</b>	<b>Deadline for transmission of NIP</b>	<b>Date when NIP was transmitted</b>
Cambodia	23/05/2001	25/08/2006	23/11/2008	3/5/2007
Lao People's Democratic Republic	5/3/2002	28/06/2006	26/09/2008	11/8/2010
Mongolia	17/05/2002	30/04/2004	29/07/2006	8/1/2008

Philippines	23/05/2001	27/02/2004	27/05/2006	19/06/2006
Vietnam	23/05/2001	22/07/2002	17/05/2006	09/11/2007

Source: Website of the Secretariat of the Stockholm Convention

Most of the developing countries and countries with economies in transition in East and South-East Asia (ESEA) region have completed the development of their NIPs for the Stockholm Convention and a number of issues have emerged as priority threats/root causes and barriers to be addressed.

The introduction of best available techniques (BAT) and best environmental practices (BEP) in the different source categories in Annex C of the Convention is the most important practical measure to continuing minimization of unintentionally-produced POPs (UP-POPs – PCDD/PCDF) releases.

According to the project document, the PCDD/PCDF (Polychlorinated dibenzodioxins and Polychlorinated dibenzofurans) inventories of the participating countries revealed that open burning activities sector is accountable for a total of about 3000 g TEQ/year PCDD/PCDF released into the environment, one of the leading sources of UP-POPs. According to the UN Environment toolkit for identification and quantification of dioxin and furan releases, this sector includes – various biomass burning activities (agricultural residue burning, sugarcane burning, forest fires, etc.), waste burning and accidental fires and backyard trash burning. Release reduction from these diffuse sources requires coherent legislative and institutional capacity from the government side and significant investments and technical capacity from the private/public sector.

The open burning sector involves two distinct sub-sectors – waste burning and accidental fires and biomass burning. Participating countries have different baseline situations, mainly depending on their financial, economic and socio-economic status. The disposal of municipal wastes and other types of wastes are usually carried out in open dump sites, in some isolated cases in dedicated landfills.

The National Implementation Plans of all the five participating countries list, amongst others, open burning, as a priority area to be covered and implemented.

## 2.3 Project Description

The project is funded through a GEF grant, amounting to USD 7,560,000 (and PPG Grant of USD 200,000), a UNIDO co-financing of USD 256,000(in-kind); and the counterparts' total co-financing of USD 32,776,434 (cash and in-kind) which amount to total project budget of USD 40,336,434. Planned project duration is 5 years.

According to the PIF, the main project objective is to 'create resource efficient waste management systems to reduce U-POPs emissions through the introduction of BAT/BEP in open burning sources.

To achieve the main project objective, the project encompasses the following four components, besides M&E and project management:

1. Legislation improvement
  - Updated legal and regulatory frameworks for open burning to facilitate waste management improvements and BAT/BEP and to enable introduction of financing mechanisms.
2. Institutional strengthening
  - Strengthened human resources / institutions on regional / national levels on waste management and BAT/BEP implementation in open burning of biomass and wastes
  - Enhanced regional/national institutional capacity through the implementation of standardized analytical procedures, data collection, monitoring and reporting procedures and facilities.
3. Demonstration activities
  - Updated comprehensive assessment of the effects of current practices and impact indicators at the selected demonstration sites
  - BAT/BEP plans developed and implemented at the selected demonstration sites in each participating country.
4. Education and awareness
  - Awareness raising campaigns aimed to emphasize health and environment hazards of open burning practices, carried out on targeted relevant stakeholders
  - Educational programs aimed at introducing and promoting alternatives to open burning practices, carried out on targeted groups at several levels.

The following Outcomes are expected to be achieved:

- Strengthened legislative capacity for introducing BAT/BEP in waste open burning source category.
- Enhanced institutional capacity to carry out BAT/BEP implementation
- BAT/BEP implemented in open burning sources
- Improved knowledge and understanding on BAT/BEP and on risks connected with U-POPs, GHG emissions and other contaminants released through open burning.

Specifically, regarding U-POPs reduction potential from the demonstration sites, the PIF provides the following information:

<b>Country</b>	<b>Before BAT/BEP PCDD/PCDF mg TEQ/year</b>	<b>After BAT/BEP PCDD/PCDF mg TEQ/year</b>
<b>Cambodia - Kampot</b>	553.8	10.1
<b>Lao PdR - Vientiane</b>	8335.5	222.2
<b>Mongolia - Morin Daava</b>	9277.5	184.3

<b>Philippines - General Santos</b>	8099.0	176.8
<b>Philippines - Lapu Lapu</b>	6201.5	131.3
<b>Vietnam – Nam Dinh village</b>	5149.8	1725.2
<b>Total</b>	<b>37617.1</b>	<b>2449.9</b>

Source: PIF, rev1, 1-27-2014.

## 2.4 Project implementation

As mentioned in the project document, the implementation arrangement is as follows:

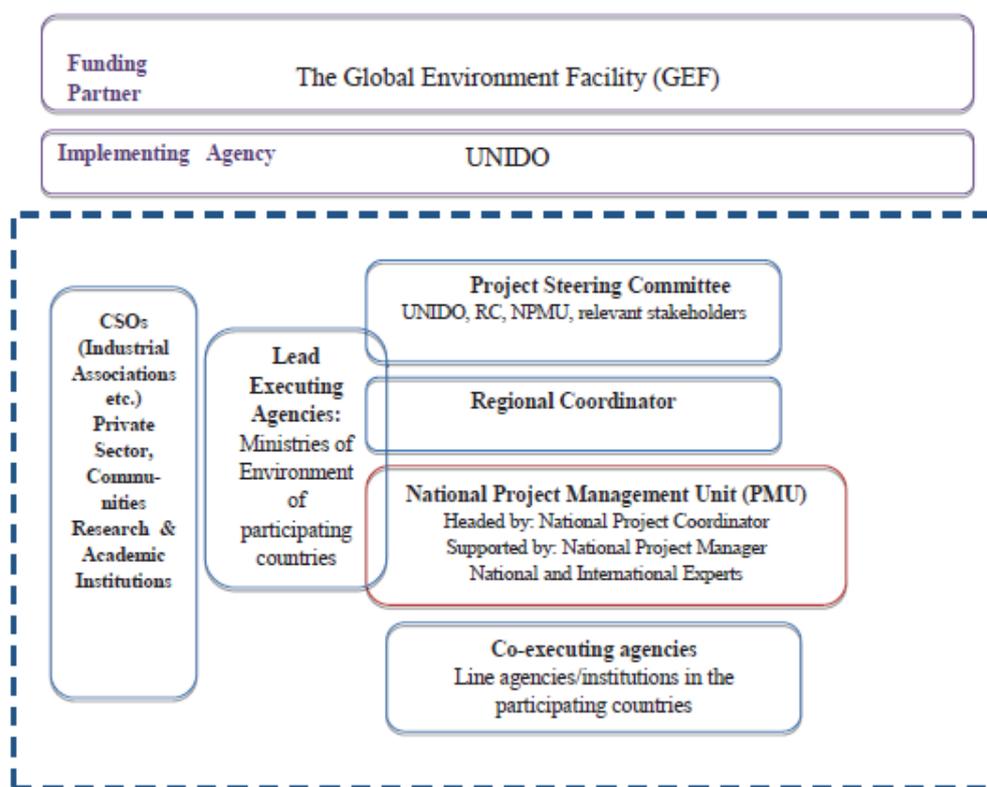
**UNIDO** is the Implementing Agency (IA) for the project.

A **National Project Management Unit (PMU)** was to be established in each country in the respective Ministry. A **National Project Coordinator (NPC)** was to be appointed by the respective Ministry to oversee the activities of the project, together with the **National Project Manager (NPM)**, who was to be recruited on a part-time basis to manage and execute the day-to-day tasks of the project, and to formulate the national project workplan, based on the agreed regional workplan.

A **Regional Coordinator (RC)** was to be appointed from the recruited NPMs during the Inception Phase, who was to be under the supervision of UNIDO, and coordinate the day-to-day administration of the project, coordinate timely inputs of different stakeholders, coordinate the timely involvement of international experts, plan and schedule the project meetings and supervise project-related publications.

**Project Steering Committee (PSC):** was to be established, comprising of UNIDO, a Regional Coordinator (RC), National Project Coordinators (NPC), National Project Managers (NPM) and other relevant stakeholders.

The following diagram is included in the PIF (revised), and illustrates the envisaged implementation structure:



Source: CEO Endorsement document

## 2.5 Counterpart organization(s)

Following are the counterpart institutions in the participating countries:

Cambodia	Ministry of Environment
Lao PDR	Ministry of Natural Resources and Environment
Mongolia	Ministry of Environment and Green Development
Philippines	Department of Environment and Natural Resources
Vietnam	Vietnam Environment Administration, Ministry of Natural Resources and Environment

### 3. Assessment

The following evaluation criteria from the TOR has been analysed based on interviews with the main project stakeholders; and document review, with reference to project objectives and the objectives of the GEF and the Stockholm Convention.

#### A. Project design

*The evaluation examines the extent to which:*

- *The project's design is adequate to address the problems at hand;*
- *The project has a clear thematically focused development objective, the attainment of which can be determined by a set of verifiable indicators;*
- *The project was formulated based on the logical framework (project results framework) approach;*
- *Was there a need to reformulate the project design and the project results framework given changes in the country and operational context?*
- *All GEF-5 projects have incorporated relevant environmental and social risk considerations into the project design, established at the time of project design.*

The project was formulated based on a logical framework, including outcomes, corresponding outputs and activities, verifiable indicators and sources of verification as well as assumptions. The project has a clear thematically focused development objective, namely, to create resource efficient waste management systems to reduce U-POPs emissions through the introduction of BAT/BEP in open burning sources. The project's design is considered by the evaluation to be adequate to address the problems at hand (the pre-requisite being a continuation of the project results as well as replication and building upon them). The project activities are aimed at legislation improvement, institutional strengthening via capacity building, demonstration activities – BAT/BEP implementation in open burning sources, and education and awareness raising in schools, universities and general public, thus covering various aspects of knowledge transfer and technology support. In the Philippines, at the time of project preparation, 2 demonstration sites were selected, in the General Santos City and in Lapu-Lapu City. However, the evaluation was informed that Lapu-Lapu City is not participating anymore in the project. No changes in project design have been reported to the evaluation. The project was developed with a very strong social and environmental risk consideration. It aims to support the legal and regulatory framework which at present does not encompass specific legislation for open burning and/or requires a further clarification on the definition.

#### B. Implementation Performance at current stage of implementation

##### 3.1 Relevance and Ownership

*The evaluation examines the extent to which the project is relevant to the:*

- *National development and environmental priorities and strategies of the Government and the population, and regional and international agreements. See possible evaluation questions under “Country ownership/drivenness” below.*
- *Target groups: relevance of the project’s objectives, outcomes and outputs to the different target groups of the interventions (e.g. companies, civil society, beneficiaries of capacity building and training, etc.).*
- *GEF’s focal areas/operational programme strategies: In retrospect, were the project’s outcomes consistent with the GEF focal area(s)/operational program strategies? Ascertain the likely nature and significance of the contribution of the project outcomes to the wider portfolio of POPs.*
- *Does the project remain relevant taking into account the changing environment?*

All the five participating countries are parties to the Stockholm Convention. Parties to the Stockholm Convention are obliged to implement its requirements. They have signed the Convention, and submitted their respective NIPs. Open burning is listed as one of the priority areas in the NIPs of all the five participating countries. All the interviewed stakeholders, representatives of the Governments of both the visited countries, private sector, and academics emphasized the high relevance of the project.

Project outcomes are consistent with the operational program strategies of GEF-5, focal area Chemicals – POPs. One of the three objectives for Chemicals under GEF-5 is – the phase out of POPs and reduce POPs releases. Project contributes to the foreseen GEF objective of reducing POPs releases. Further, activities aimed at building institutional and legislative frameworks for chemicals management, including POPs are also supported within the above-mentioned objective. The project includes working on legislation improvement as well as capacity building. The GEF-5 replenishment had allocated USD 375 million for POPs, an increase of 25% for the POPs focal area compared to the GEF-4 allocation of USD 300 million. This increase was done also to support the reduction of releases of unintentionally produced dioxins and furans from industrial and non-industrial sources.

The project remains highly relevant taking into account the changing environment.

### **3.2 Effectiveness at current stage of implementation**

*The evaluation assesses the objectives and current results (results to date)*

The following is based on document review and interviews for the Philippines and Vietnam, and on document review for Cambodia, Lao PDR and Mongolia.

#### **Outcome 1: 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 implementation, and to enable introduction of financing mechanisms.

**A 1.1.1:** Assess 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.

**A 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.

**A 1.1.3:** Develop and introduce financing mechanisms and incentive systems based on the updated legislation in support of BAT/BEP implementation.

**A 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 language).

**A 1.1.5:** Develop toolkit for waste management, including recommendations for BAT/BEP guidelines update (in English and local languages).

**A 1.1.6:** Develop manuals for using financing mechanisms and incentive systems in waste management (in English and local languages).

**A 1.1.5:** As reported to the evaluation, the SWM Toolkit was provided to the participants during the workshop on 'Training of Trainers on SWM Toolkit and Application of BAT and BEP in Open Burning', which was held from February 27 – March 1, 2018, in Manila. The SWM Toolkit can be applied in each country as needed. A 2.1.3 can be referred to for further details on the workshop.

### **Cambodia:**

**A 1.1.1:** A National Expert (NE) was recruited to conduct field surveys to identify sources and causes of U-POPs, GHG emissions and other contaminants. The field surveys have been completed, and the final report was submitted to UNIDO in December 2017. A report on the assessment of impact of common and traditional open burning practices has been prepared and provided to the evaluation. It includes an overview of and information on the institutional and legal framework for Solid Waste Management (SWM), present status of SWM in Cambodia, assessment of release of PCDD/PCDF and GHGs from the peculiar and traditional practices of uncontrolled disposal of waste; impacts of uncontrolled waste disposal; and potential impacts / benefits of the BAT/BEP application in Cambodia – Introducing BAT/BEP.

**A 1.1.2, A 1.1.3 and A 1.1.6:** An NE was recruited to carry out these activities and prepared a Technical Guideline on Waste and Landfill Management, Proposed Financing Mechanisms with Economic Instruments and Market-based Incentive Concepts / Schemes for Solid Waste Management and Disposal in Cambodia, and Manual for Using Financing Mechanisms and Incentive Systems in Waste Management.

**A1.1.4:** Two Consultation workshops on Technical Guideline on Waste and Landfill Management Introducing BAT/BEP, Financing Mechanisms, Incentive Systems and Manual for Using Financial Mechanism and Incentive System for Waste Management were conducted. The first was conducted on 21 July, 2017 and the

second was held on 26 December 2017 in Phnom Penh. Main objective of the workshops was to present the same to stakeholders. The 43 participants of the first workshop and 33 participants of the second workshop were representatives of the Government (Ministries), key officials from Municipality, landfill manager, Academia and NGO.

### **Lao PDR:**

**A 1.1.1:** An Assessment Report of the Impacts of Common and Traditional Open Burning Practices in terms of Releases of U-POPs, GHG emissions and other Contaminants, and the Effects/Benefits of BAT/BEP application was prepared by a National Expert and submitted to UNIDO in June 2017. It describes the general situation in Lao PDR with respect to open burning, providing information on the estimated amount of waste disposal in an uncontrolled manner. It provides an estimate of the potential release of PCDD/PCDF from the “peculiar and traditional practices” of uncontrolled disposal of waste, using the UNEP Toolkit.

**A 1.1.2, A 1.1.3, A 1.1.4, A 1.1.6:** A National Expert on Policy Review and Development prepared the report ‘Technical Guideline on Waste and Landfill Management Introducing BAT/BEP in Lao PDR’, including the Financing Instrument for SWM and the Manual for Using Financing Mechanisms and Incentive System in WM. It was submitted to UNIDO in July 2017. The report provides an overview of the situation on Waste and Landfill Management in Lao PDR, the institutional setting for Waste Management, current Policy and legal frameworks on waste and landfill management in Lao PDR, and international policy and legal frameworks on waste and landfill management, including Australia, EU, Germany, Netherlands, UK, and the USA.

Thereafter, the report includes proposals for the national policy and legal framework on waste management for Lao PDR, which are based on the ‘National Waste Management Strategy’ and the associated ‘Action Plan for Waste Minimization and Recycling’, amongst others. Some legal implications of the 3Rs Action Plan mentioned in the report are as follows:

Inter alia, need for local and provincial governments to address recycling issues within their integrated waste management plans, requiring industrial sector organisations to develop 3 Rs business plans to meet 3Rs targets, providing for the establishment of a Waste Information System, introducing legislation on extended producer responsibility and product take-back, and provision for the introduction of financial instruments such as user-pays and polluter-pays principles.

To comply with the objectives of the 3Rs, the legal definition of waste would have to be amended, in the drafting of the Environmental Protection Law and Decision on Waste Management.

Some of the most relevant instruments highlighted in the Section on Financing Instrument of SWM in Lao PDR are: Landfill taxes, advanced recycling fees, product taxes and other instruments supporting extended producer responsibility, deposit refund systems, funds for SWM and subsidies for private waste management enterprises, tax exemptions or rebates to incentivize the creation of small recovery, sorting or recycling enterprises or cooperatives.

The last section in the report is the Manual for using financing mechanisms and incentive systems in waste management. It provides an overview of the four ways of financing local public goods, namely, local fees, user charges, grants and subsidies, and loans. Moreover, it also includes, Public-private-partnerships and carbon financing, in the context of Lao PDR.

### **Mongolia:**

**A 1.1.1:** An Assessment Report of the impacts of common and traditional open burning practices in terms of releases of U-POPs, GHG emissions and other contaminants, and the effects/benefits of BAT/BEP application was prepared by the selected National Expert and sent to UNIDO in July 2018. The report included following contents:

- General Information of dump sites of Mongolia
- Inventory and Pollution information of dump sites of Mongolia
- Common and traditional open burning practices of Mongolia
- Results of open burning inventory and releases PCDD/ PCDF of Mongolia
- Information about Greenhouse gas emission

**A 1.1.2:** An assessment as well as gap analysis was carried out on existing national and international policy, legal and regulatory frameworks, open burning, and amendment of Law on Waste developed and submitted to the Mongolian parliament for approval.

***Amendment Law on Waste 2017 was passed and ratified by the Mongolian Parliament on 12 May 2017.***

**A 1.1.3:** Assessment and analysis were conducted on existing economic instrument and practices of financing mechanisms and incentive systems of waste management in Mongolia, and a report prepared by a National Expert and sent to UNIDO in January 2017. It included sections on the current situation and challenges of financial mechanism and incentive systems of waste management in Mongolia, and recommendations of improvement.

**A 1.1.4:** The following workshops/events were organised to raise awareness of the impacts and opportunities of the proposed revised legal framework:

A Focus Group Discussion was organised in the Municipal Office of Ulaanbaatar in September 2016 to introduce the study on existing national and international legal framework of waste, and amendment of waste law to receive feedback from the relevant public administrators.

The draft of the new waste law was presented to and discussed with around 80 key stakeholders, from 14-16 December 2016, under a different project.

A further Focus Group Discussion was organised on 30 March 2017 to discuss financing mechanism and incentive system, which was attended by around 20 people from City, District and Government Officials, and private sector, health institution and NGOs.

The above was also presented at the 5th Research Conference 'Sustainable Development – Waste Management', on 26 April 2017, organised by the Department of Environmental Engineering, School of Civil Engineering and Architecture and Mongolian University of Science and Technology.

After the approval of the new Amendment Law on Waste 2017, a training was organised for around 150 government employees and key stakeholders on 16 May 2017.

**A 1.1.6:** The Manual has been developed.

### **Philippines:**

**A 1.1.1:** The Assessment Report of the Health and Environmental Impacts of Common and Traditional Open Burning Practices has been prepared. Recommendations were:

- Amendment of RA 9003 specifically on the provision of backyard burning
- Formulate national policy prohibiting open burning of agricultural waste
- Strengthen the enforcement of the law especially on waste recovery and recycling
- Establishment of data on the other types of agricultural wastes being burned like weeds, trimmings, rice hulls, etc.
- Survey on the types and amount of solid waste burned such as plastics and other materials containing chlorine compound
- Laboratory analysis to support the establishment of the rate of emission in burning solid wastes

**A 1.1.2, A 1.1.3, A 1.1.4, A 1.1.6:** A National Expert has been recruited in January 2019, to accomplish these activities.

Solid Waste Management Law exists, LOG 9003 from 2001. However, some further clarifications are necessary about the classification and different cases of 'open burning'. Activity currently ongoing to make suggestions for the Law and Manual. This clarification will also be carried out by the above-mentioned NE.

### **Vietnam:**

**A 1.1.1:** A National Expert was recruited in September 2016 and prepared and submitted the report under this activity in February 2017, which encompasses the following content:

- Status of generation, collection and treatment of solid waste in Vietnam; Estimation of amount of waste disposal in an uncontrolled manner;
- The emissions estimation from open burning activities;
- Climate change and Greenhouse Gas (GHG) emissions;
- Environmental health and citizen awareness in environmental health hot spots; and
- Evaluate the potential benefit on the application of BAT/BEP to craft village in term of reduction of potential contaminants.

**A 1.1.2:** Owing to the varied nature of the reports, this activity was carried out by two National Experts.

**A 1.1.2a:** A National Expert was recruited to develop technical guidance for writing environmental protection scheme for four types of Craft Villages. The technical guidance is expected to support the implementation of the Decree 19/2015/ND-CP of the Government (guiding to implement several Article of Laws on Environmental

Protection, including general regulation on environmental protection of craft villages) and the Circular 31/2016/TT-BTNMT on environmental protection of industrial clusters, concentrate businesses, service providers, craft villages, production, commercial and service establishments.

Instead of one technical guideline as initially specified, the National Expert developed four separate technical guidelines corresponding with the four types of Craft Villages, metal recycling, paper recycling, plastic recycling and bamboo mat crafting. The technical consultation meeting was organized on August 23, 2018 to collect comments from senior expert in craft villages and waste management for finalization of the Technical guideline. The final report, including 4 separate technical guidelines, was submitted to UNIDO, for approval, in October, 2018.

**A 1.1.2b:** This activity focused on reviewing and amending the National technical regulation on industrial waste incinerators (QCVN 30:2012/BTNMT); and developing technical guideline on retrieval and disposal of discarded products in order to support the implementation the Circular 34/2017/TT-BTNMT on the retrieval and disposal of discarded products. A National Expert was recruited to conduct this activity, as well as activities A 1.1.3, A 1.1.4 and A 1.1.6, and completed the report on revision of the National technical regulation on industrial waste incinerators (QCVN 30:2012/BTNMT). The report was submitted to UNIDO in August 2018. The final report, including the draft technical guideline on retrieval and disposal of discarded products in order to support the implementation the Circular 34/2017/TT-BTNM, is expected to be submitted to UNIDO for review and approval in April 2019.

**A 1.1.3:** The National Expert studied the current economic instruments for environmental management and waste management and identified financial instruments for solid waste management under the Law on Environmental Management 2014. The PMU and NPM is reported to be working closely with the National Expert to propose the financial mechanism which shows sources of fund for households/SMEs to access loans to improve their infrastructure, technology and to apply CP, BAT/BEP as well as incentives towards green industry. Due to the complexity of the financing mechanism in environmental management in general and in BAT/BEP application, the final report is planned to be submitted in April 2019. As reported to the evaluation during the interviews, challenges are to establish the “best incentives” appropriate for (relevant industries in) Vietnam and then to formulate legislation accordingly.

**A 1.1.4:** This activity, to hold workshops and trainings to raise awareness of the impacts and opportunities of the proposed revised legal framework is planned to be conducted after the completion of A 1.1.3, to enable its inclusion in the workshop.

**A 1.1.6:** The Manual is being developed in parallel with A 1.1.3 (financing mechanisms and incentive systems).

## **Outcome 2: 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.

**A 2.1.1:** Establish a web-based regional cooperation platform to specifically address open burning issues.

Regional activity: A web-based regional cooperation platform has been established - <http://www.stopopenburning.org/>. It provides some information about the project basic information about open burning, as well as links to the national websites of all the five participating countries. The regional website was prepared and is being maintained by the AECOM company till the end of the project. However, the maintenance and responsibility of the website after project completion is not yet clarified. According to feedback received from the stakeholders, the regional website might be maintained by one of the participating countries after project completion or stopped. The national websites are planned to be continued even after project completion.

**A 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.

National Integrated Waste Management trainings were conducted as follows:

Cambodia	Lao PDR	Mongolia	Philippines	Vietnam
Planned tentatively end of March 2019	14-15 September 2017 <sup>5</sup>	25 January 2019	25-26 September 2018 <sup>6</sup>	Planned tentatively in 2nd Quarter 2019

**A 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.

Regional activities, to be followed by national trainings.

A **training of trainers (TOT) on Solid Waste Management (SWM) Toolkit** was conducted from 27 February – 1 March 2018, back to back with the 3rd Project Steering Committee (PSC) meeting, in Manila. The TOT transferred knowledge on SWM and BAT/BEP application to all the participants, including amongst others, overview of SWM, open burning, waste analysis and characterization, POPs characterization, MSW generation, dioxin generation, waste segregation, landfills and open burning, materials recovery facility, BAT. Relevant documents on open burning were reviewed, and made available to the participants. The workshop was participated by 22 participants from the 5 participating countries representing

<sup>5</sup>Together with the workshop on alternative biomass utilization.

<sup>6</sup>Together with the workshop on alternative biomass utilization.

industry, academia and government agencies. Around one third of the participants were women.

The regional TOT was to be followed by national trainings in each participating country. The Philippines conducted the training in September 2018, together with the biomass training.

**A 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.

This national activity is expected to be conducted after the finalization of financing mechanisms and incentive systems in each country.

**A 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.

All the five countries have conducted this activity nationally, together with A 1.1.1 in some cases. The standardized methodologies will be part of the regional report which is being prepared by the International Expert.

**Philippines:** The inventory activity was included in / done together with activity A 1.1.1.

**Vietnam:** A National Expert, Dr. Nguyen Du Quang, an expert on waste management was recruited in September 2018 to carry out the inventory of the number and types of waste disposal facilities, dumpsites and landfills in Vietnam. The NE, together with the IE, is planned to collate the information in a regional summary report.

**Output 2.2:** Enhanced regional/national institutional capacity through the implementation of standardized analytical procedures, data collection, monitoring and reporting procedures and facilities.

**A 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.

**A 2.2.2:** Train management personnel in monitoring, evaluating and reporting on U-POPs, GHG emissions and other contaminants released by open burning.

Regional activities: A **regional training course – Monitoring for unintentional POPs and GHG from open burning activities - was conducted by and at the Laboratory of Dioxin and Toxic Substance Analysis, Northern Center for Environmental Monitoring (NCEM) from 20 – 30 November 2017 in Hanoi, Vietnam.** Two candidates with relevant background and experience from each participating country were selected to participate in the training. The training workshop included three sections:

- Theoretical training – 2 days.  
This part provided an overview of the Stockholm Convention, POPs, U-POPs, study procedures for sampling and analysis of U-POPs, GHGs,

relevant equipment and operation, as well as study procedures for sampling and analysis of GHG.

- Field practical training – 2 days.  
This part was conducted in Minh Khai Craft Village, Van Lam District, Hung Yen Province; and included sample collection (ambient air, soil) and measurement of relevant parameters; and
- Laboratory practical training at the Dioxin Lab  
This part included training in sample extraction, clean-up and determination of U-POPs by GC/MS, GHGs by GC, study of data integration and quality assurance and quality control procedures.

#### **Dioxin Laboratory and Northern Center for Environmental Monitoring (CEM)**

Stemming from a project supported by the Bill & Melinda Gates Foundation, the Atlantic Philanthropies and the Ministry of Natural Resources and Environment (MONRE), the establishment of the Dioxin Lab was launched in 2009 and became a Division of the Northern Center for Environmental Monitoring (CEM), (former Center for Environmental Monitoring) in 2014. Total laboratorial space at the CEM is around 1000 sqm, out of which the Dioxin Lab encompasses around 300 sqm. All laboratorial spaces for analytical activities have been assessed and approved by the Vietnam Bureau of Accreditation for ISO 17025. Equipment has been procured and installed in accordance with the standards of the manufacturers. Operation and calibration of the equipment follow SOPs in accordance with the manuals and ISO-17025 guidelines. Equipment at the Dioxin Laboratory includes, inter alia, equipment for soil and sediment sampling, water sampling, ambient air sampling, as well as source sampling. Equipment for chemical determination includes amongst others, GC/MS-HR, GC/MS-LR, GC/MS-MS, GC/ECD.

Source: Presentation - Introduction of the Dioxin Laboratory and Center for Environment Monitoring. CEM, Vietnam Environment Administration.

**A 2.2.3:** Introduce/implement standardized methodologies to continuously update inventories of U-POPs releases from open burning practice.

This activity is ongoing to include methodology to continuously update inventories of U-POPs releases from open burning practice in the regional report, being drafted by the International Expert.

#### **Outcome 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.

**A 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.

This is planned to be conducted as a regional activity. An International Expert is planned to be recruited, the TOR is in the process of being finalised, who will carry out this activity in four countries, namely, Cambodia, Lao PDR, Mongolia and

Vietnam. Philippines is also planned to be included in the same report; with probably a different methodology however, since the facility is already constructed.

**A 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.

This activity has not been conducted. The PM pointed out to the evaluation that based on previous projects, the baseline assessment (dioxin monitoring) especially on ambient air is a very complex activity that varies greatly depending on different sets of parameters at the time of sampling – wind direction, open burning activity, seasonal variation, etc., thus making it difficult to replicate measurements. Baseline assessment maybe done with soil (or ash residues) and this is what the project is planning to carry out, as measurements are reproducible. For dioxins in ambient air, the PMU decided to use the UNEP Toolkit to estimate dioxin emission from the wastes.

**Output 3.2:** BAT/BEP plans developed and implemented at the selected demonstration sites in each participating country.

**A 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.

This activity is planned to be carried out targeting June 2019 for all the five participating countries.

**A 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.

This activity is ongoing.

### **Cambodia:**

Initially, 2 options – 1) Improvement of existing Material Recycling Facility (MRF) by landfill to produce valuable material to be sold on the recyclables market; 2) build a clean MRF close to landfill entrance to produce grinded and granulated plastics and other valuable materials from already segregated materials – were under consideration to be selected as the demonstration site. After a long time of negotiations, it was decided not to go ahead with the proposed two options owing to lack of willingness and interest to cooperate.

Thereafter, with Battambang Province, a “new partner” was considered. The Co-financing letter was received, the Cooperative Agreement (CA) finalized and is expected to be signed. Three mission visits were organized. A first visit was organised from 04-06 April, 2018 to assess the options in the Battambang Province. The new proposal relates to the Battambang Municipality, one of the major cities of Cambodia and focuses on exploring options for improving composting and recycling activities. The four proposed facilities are as follows:

- Battambang Plastic Products company
- COMPED composting plant
- Asian Development Bank (ADB) recycling facility, by Battambang Plastic Products Company

- Battambang dumpsite.

Meetings were held with the Governor of the Province and the Ministry of Environment and the following options identified:

**Battambang Plastic Products company:**

Battambang Plastic Products company recycles plastic bags, has a capacity of 1.5-2 tons/day, but is working only two weeks per month, owing to lack of input material, and producing about 22 tons/month. A granulating plant is present, but working only after securing enough material (20 tons), thus once a month. Lack of financial means hinders an improvement of its activity or an extension of the collection to other types of plastics.

After a second visit to the Battambang Province in October 2018, it was agreed to provide a granulating line 2-4 tons/day capacity, and to check if budget would be available for further equipment (blowers) to produce plastic bags from recycled plastics. Company is ready to buy plastics from the ADB plant at competitive prices, and to improve its processes by the implementation of BAT/BEP.

**COMPED composting plant (NGO):**

The plant is very basic with a capacity of 2 tons/day. It received discards from two vegetable markets.

The following measures for improvement were identified and under consideration:

Improvement of roofing and concrete floor to improve the condition of the plant. Further, supply of new equipment including one shredder for organic material, one revolving machine for composting line, and one screening machine to segregate the fines from the produced compost for the final packaging are being planned to enhance capacity, and improve the composting process; and a cooperation with the collection company CINTRI, which would be available to separately collect organic material from vegetable markets, garden trimmings and agricultural waste and deliver to COMPED, to have enough material to match the capacity of the new equipment. Moreover, personnel would need to be trained on the operation and business aspects of operating a bigger composting plant.

**ADB recycling facility by Battambang Plastic Products Company**

The facility is new and aimed at sorting recycled dry material. However, no dry segregated material is available, and it is planned to be used to sort commingled Municipal waste, though this has been explicitly ruled out in the feasibility study. LEAP LEM has been appointed to run it. Options to realise the operation of the facility were:

To start segregation at source in some districts to provide segregated material for the plant;

An MRF to separate recyclable from organics. Recyclables can be delivered to the ADB plant and non-recyclables to the dumpsite.

It was agreed with the Governor of the Province to assist CINTRI/LEAP LEM in getting dry recycled waste from the collected MSW by either starting door to door collection of recyclables or other activities such as setting up collection centers.

**Battambang dumpsite:**

The dumpsite is located beside the COMPED composting plant and the ADB facility, and it was identified that better management is necessary to stop the open burning activities.

The third visit to the Battambang Province was from 11-13 February 2019. According to information provided by the national PMU, the Governor of Battambang agreed to go forward with implementation of the segregation at source and to designate a person as a Focal Point for the coordination of activities.

**A 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 LaoPDR.

**Lao PDR:** Two main activities are under consideration for the demonstration site(s) as follows:

- Support SAPLAST for additional machine or equipment to improve their plastic recycling
- Exploring the possibility of establishing an MRF to promote the 3Rs in Thakek landfill

NPM and UNIDO International Expert visited demonstration unit SAPLAST in September 2018 to clarify the business plan (for after the supply of the new equipment). Bidding for equipment and signing of Cooperation Agreement with SAPLAST had been delayed owing to the status change of SAPLAST (from state enterprise to joint venture). Request for Proposals was initiated in October 2018. After evaluation of the biddings, a Contractor, Qingdao Haike Refrigeration Co., Ltd., has been selected.

Further, the NPM, the UNIDO IE and NEs visited the demonstration unit (Thakek landfill site) to finalise the workplan and promote 3Rs for Thakek City, in September 2018. Thakek City is in the process of organizing 3Rs survey with 7 villages. Based on the survey results, 3Rs campaigns will then be organized. UNIDO is currently reviewing the possibility of supporting material recovery facility (MRF) at the landfill site.

**A 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.

**Mongolia:**

This activity is ongoing.

The Tsagaan Davaa site in Ulaanbaatar City has been selected as the demonstration site for the project for the construction of landfill cell for ash disposal and a storage and maintenance facility for containers for Chemicals and ash.

The disposal site was selected during preparation of the project proposal. The Toonto Grand LLC was contracted for the design and cost estimates of the construction of landfill cell for ash disposal and the storage facility, in February 2017. The final draft for the design and cost estimates were submitted to UNIDO in December 2017, after which UNIDO IE reviewed the design and cost estimates and conducted a mission to Mongolia in January 2018. Updated design and cost estimates were submitted to UNIDO in May 2018. The TOR for the construction

and bidding documents for construction work were submitted to UNIDO in August 2018. The tender call and Request for Proposal were open from 8 August – 28 September 2018. Technical tender bid evaluation took place from 19 – 23 November 2018, after which the Tusgal Tuv LLC was awarded the contract in January 2019, for the construction of the landfill cell for ash disposal and a storage and maintenance facility.

**A 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.

**Philippines:**

This activity is ongoing.

At the time of project preparation, 2 demonstration sites were selected, in the General Santos City and in Lapu-Lapu City. However, the evaluation was informed that Lapu-Lapu City is not participating anymore in the project. MARKELL Machineries Manufacturing was contracted for providing a Material Recovery Facility (MRF) to be located at the Sanitary Landfill, the selected demonstration site in General Santos City, specifically for the following activities:

- Design and supply the Technical Specifications and Documentation necessary to manufacture, construct, erect, install test, commission, operate, repair and maintain the Plant as well as provide technical advice and basic specifications for the site preparation;
- Perform the Work relating to the manufacturing, construction, erection, testing, supply and delivery of DAP (Incoterms 2010), Barangay Sinawal, General Santos City, Philippines, of a Material Recovery Facility (MRF), including auxiliary equipment as well flooring and roofing constructions for the MRF and for unloading and storage areas; and
- Perform the Work of Contractor's Technical Personnel relating to the installation, testing and commission of the Plant at the Plant Site as well as provide Training of the staff/workers of the Project Counterpart and other relevant personnel primarily related to operation, safety, maintenance and repair of the Plant.

After a site visit to and the evaluation of the project site in October 2017, a few modifications and upgrades were recommended, the cost of which was borne by MARKELL and thus did not influence contract price, and were expected to improve efficiency of the operations of the MRF. The modifications are detailed in the Inception Report of MARKELL Machineries Manufacturing. MARKELL also added additional equipment to the initially requested ones, the cost of which were borne by MARKELL.

The evaluation visited the Facility on 19 November 2018. All the necessary constructions were already done, the equipment delivered and installed, and the Facility ready to operated. The Facility was expected to start its operations in February 2019.

***The MRF is ready ahead of time, and is expected to start operations tentatively in February 2019.***

**A 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.

**Vietnam:**

This activity is ongoing.

A technical meeting was conducted in July 2016 to develop criteria to select Craft Villages for the demonstration activity, based on feedback from participants who were representatives of the MONRE, MARD, local DONREs, universities, enterprises, and experts. Criteria is mentioned in the Summary report of achieved results 2018-11-19. A total of 12 Craft Villages in 6 Provinces were selected for the site visit, and 2 were selected for the demonstration activity

Minh Khai and Phan Boi Craft Villages in Hung Yen Province – Plastic recycling.

The TOR for “the Provision of Services and Equipment (Turnkey) for two Pilot Facilities at Phan Boi and Minh Khai Craft Villages” was finalised in March 2018, after which the RFP was issued which was open to receive proposals till 26 April 2018. Procurement evaluation was conducted from 2 – 6 July 2018 in Vienna, Austria. The Vietnam Cleaner Production Center Co. Ltd. (VNCPC), in cooperation with Vinacolor Company Limited and Viet Trung Environment Technology Company Ltd. Vietnam, was awarded the contract, which was signed on 17 October 2018. Inception meeting was conducted on 6 November 2018. The evaluation met the VNCPC during the evaluation mission on 26 November 2018.

The selected BAT/BEP interventions are

- Improvement of production processes, and
- Providing a pilot facility to demonstrate that implementation of BAT/BEP can lead to more efficient process and more profits.

As proposed by the Contractor, the above will inculcate three levels of BAT/BEP interventions, to improve the performance of the recycling sites; these are as follows:

- Development of a new recycling process with incorporation of key BAT/BEP measures to demonstrate improved technology, more effective and cleaner production line and to support trainings of BAT/BEP at the Minh Khai Village;
- Improvement of an existing production line with incorporation of some possible BAT/BEP measures to present the feasibility of BAT/BEP application and tier-investment approach for the villages, at the Phan Boi village; and
- Development of new and innovative technology as BAT for Vietnam to recycle plastic discards collected from dumpsite of the villages and turn them into new and useful materials and products; to be implemented at the Minh Khai village and in cooperation with a recycling company for full production line demonstration.

**A 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.

**A 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.

The above two activities are to be conducted after the interventions have been implemented at the demonstration sites.

**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.

**A 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.

**A 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.

All the five participating countries have prepared a national website dedicated to 'stop open burning', which are linked to the regional website <http://www.stopopenburning.org/>

Cambodia: <http://www.stopopenburningcam.org/en>

Lao PDR: <http://www.stopopenburninglaos.org/>

Mongolia: <http://stopopenburningmn.org/eng/>

Philippines: <https://stopopenburningph.org/>

Vietnam: <https://stopopenburningvietnam.org/en>

Two main awareness-raising activities were conducted by each of the five participating countries; one of the two being a Photo and Poster Contest. Two winners from each participating country were invited to the UNIDO HQ in Vienna for a regional contest, which took place on 20 September 2017.

**Cambodia:**

A **Photo and Poster Contest** was conducted in September 2016. It was attended by around 250 persons which included Primary School students, as well as teachers. Some issues were raised about the selection of the winning entry. Nevertheless, the event was successfully concluded on 26 September 2016.

A **National Youth Debate on Environmental Issues** was conducted on 20 October 2017, in Phnom Penh. Via an official letter issued by the Ministry of Environment (MoE) in June 2017, all universities and graduate schools in the capital and provinces were invited to participate in it. The same was also shared

via Facebook page and website of the MoE. Moreover, a public announcement was made with a poster. 14 universities from the whole country applied to participate in the Debate on environmental issues. The first round was organised on 18 August 2017, and was attended by 200 people including students, professors, journalists, etc. The quarter final was held on 7 September 2017, and was attended by 146 people from academia, non-profit organizations and government (more than 40% women). The semi-final and final of the Debate took place on 12 October 2017, attended by 156 people (around one-third women participants). The semi-final and final rounds were broadcasted on Cambodian national television (TVK) on 16, 23 and 30 November 2017.

A **training workshop** on 'The Effects of Open Burning on Human Health and Environment' was conducted by the Department of Environmental Education (DEE) on 4 October 2017. Participants were those students and professors of universities which were selected to the semi-final round of the Debate. The workshop was organised to deepen understanding on effects of open burning on human health and environment, and to gain an insight on the current situation of dump sites in Cambodia and to see some solutions.

A **national training course on health and environmental topics** of open burning practices for national and local authorities was conducted from 25 – 27 April 2018 and included slide presentations, group discussions and panel discussion. It was attended by around 100 participants from various institutions, both national and sub-national authorities, 12 Districts, Ministries and Universities.

A **video** cartoon on harmful effects of open burning on human health has also been prepared.

Moreover, various **dissemination material** was prepared, such as brochure, leaflets and poster and provided to the evaluation.

Further reported awareness-raising activities were: public awareness-raising carried out on 23 November 2018 on National Clean-up Day, Phnom Penh; 4th River Festival Exhibition from 9 – 11 March 2018; Workshop on Experiences on How a Normal School is Transferred into Eco-school, 4-5 April 2018 in Puok District, Siem Reap Province; and Workshop on Effect of Plastic Waste and Reduction, 21 – 22 April 2018, in Peam Ro District, Prey Veng Province. Another awareness event has been planned by the DEE in March 2019.

### **Lao PDR:**

The **Poster and Photo Contest** was organised by the Natural Resources and Environment Institute (NREI) as sub-contractor in July 2016. Various channels of communication were used to communicate the Contest, and the deadline for submission of entries was on 25 September 2016. The winners of the Contest were announced in October 2016.

A **Workshop** on Awareness Raising on Impacts of Open Activity on Environment and Human Health was conducted on 11 May 2018. The objective of the workshop was to provide information on the Stockholm Convention, POPs, open burning and its risks and impact on human health and environment. Around 60 participants from various organizations and solid waste collection companies, national university, government attended the workshop.

Moreover, the NREI, together with the Ministry of Science and Technology organised a **tree planting event**, on 1 June 2016, as celebration of International Environmental Day. It was attended by 350 people. Promotional material such as 300 t-shirts and caps with the caption 'stop open burning' were distributed.

**Promotional material** such as brochures and posters, t-shirts and caps were prepared for dissemination.

## **Mongolia:**

The **Photo and Poster-making Contest** was conducted in the second half of 2016. It was open from 1 June – 25 September 2016. 32 entries were received for the poster-making contest, and 3 for the photo contest. Closing ceremony was organised on 6 October 2016.

The Institute of Chemical and Chemical Technology (ICCT) under the Mongolian Science Academy has been contracted to carry out the activities under Component 4. The **project Inception Workshop** was held on 4 and 5 February 2016 in Ulaanbaatar. It was attended by around 80 people, representatives of Provinces, environment and waste management of 9 districts in Ulaanbaatar City, various Ministries, scientists from institutes and universities and the project team. During the Inception Workshop, technical presentations provided information on the different components of the project and methodology of calculation of waste normative and hazardous waste management.

The ICCT conducted a **workshop** about Legal Framework on Waste Management on 16 June 2017 for public officials and community leaders. It was attended by over 200 people.

Within the framework of "Cleaning activities of green area 2017" which is organized according to resolution A/04 of General manager of Ulaanbaatar city, the project team had organized a **cleaning activity** in two districts of Ulaanbaatar city. By cleaning the selected green spaces of 9,531,000 square meters, 121 ton of waste was removed. A total of 490 people participated in this cleaning activity. Awareness raising merchandizes, t-shirts and caps were distributed during the event to residents and participants [additional information sent by the national PMU].

Moreover, '**Ecoseminar 2017**' was conducted, and attended by over 400 young researchers. A short introduction of the project was presented, as well as POPs and POPs impact to human health and environment. A garbage bag was distributed to the participants to encourage the participants for a clean environment. Some promotional material, such as t-shirts and caps, was also distributed to the participants, who also actively participated in planting trees.

A 10-minute **video** about risk of human health and environment from open burning was produced and translated into English. The movie was introduced during the PSC meeting in March 2018.

An awareness-raising **workshop** on environmental and health hazards of U-POPs was conducted on 29 June 2018 in Ulaanbaatar which was participated by more than 70 people from different Provinces.

Further, **promotional material**, amongst others, eco bags (ecologically friendly textile bag), t-shirts (with caption 'Stop Open Burning', caps (with message

encouraging a proper waste management), two brochures and one booklet, was also prepared, and disseminated to workshop and training participants.

### **Philippines:**

AECOM Philippines has been contracted to implement Component. The AECOM conducted a **workshop** for the development of the Information, Education and Communication Plan, on 20 May 2016 in Quezon City, with participants from the private sector, public and government agencies in the Philippines. Further, a survey was conducted and data was collected by an interviewer using a structured questionnaire. The face-to-face **survey** was conducted with respondents from the community, LGUs, industries and the academia, to obtain the following information:

- Awareness/understanding of the issue on open burning
- Awareness/understanding of the responsible parties on open burning
- Preference for information materials on open burning
- Behavioural matrix on open burning issues
- Preference for channels in delivering 'no to open burning' messages
- Awareness of accessible channels
- Awareness of attitudes/practices on open burning.

Based on the findings obtained from the survey, a **Social Marketing and Strategic Advocacy Communication and Implementation Plan** was prepared by the Asian Institute of Journalism and Communication, management development center in the Philippines.

The Plan aims to identify key issues, target audiences, key messages, action plans and information, education and communication activities on BAT/BEP and risks involved in open burning activities. Social marketing seeks to develop and integrate marketing concepts with other approaches to influence behaviour that benefits individuals and communities for the greater social good.

The first awareness-raising campaign, the 2016 **Poster-making and Photo Competition** was launched during the 2016 Environmental Summit and Second National Integrated Waste Management Exhibition on 22 June 2016. Leaflets were distributed to interested participants at the booth of the Solid Waste Management Division of the DENR-EMB. Information about the Photo and Poster Making Competition was then disseminated via different channels, such as, amongst others, via EMB regional offices, Department of Education, school visits and visits to LGUs. A total of 113 posters and 55 photos were submitted, and the top 12 entries were exhibited at the DENR lobby from 5-9 September 2016. The award ceremony was held on 14 September 2016, with a total of 52 participants.

In July 2017, a 'Stop Open Burning Awareness **Fun Run**' was organised, and took place on 2 July 2017, with over 200 people attending the event.

A further **Fun Run** was organised in General Santos City on 10 December 2017, with more than 300 participants.

A **booth** was set up during the 4th Year Zero Waste Month Exhibition from 25 – 27 January 2018 in Quezon City. A total of 189 people visited the booth, representing schools, universities, LGUs and government agencies.

AECOM **distributed information, education, communication** materials like brochures and posters to 19 municipalities and 2 cities within the Province of Pampanga. The caravan was held on 19, 27 and 28 September 2018 and 11 October 2018. The materials were received by the Environment and Natural Resources Office (ENRO) of each LGU visited by AECOM.

Various **promotional material** were prepared, amongst others, brochures, leaflets, t-shirts, caps, mugs,

#### **Vietnam:**

The Center for Environmental Training and Communication (CETAC) was the designated sub-contractor for Component 4. The contract with the CETAC was signed in August 2016. Owing to the change of name of the sub-contractor to Center for Natural Resources and Environment Communication (CNREC), an amendment was signed in June 2017.

The first awareness-raising campaign on the environmental and health hazards of U-POPs was the event – World Environment Day (WED) 2016, organised by the Ministry of Natural Resources and Environment (MONRE), with the theme ‘the call of nature and our actions’. The Campaign took place on 4 June 2015 in Lao Cai City. The event consisted of two parts: the **Inception Workshop** in the morning session, and the **Awareness raising** part in the afternoon session. Around 160 participants from management agencies, Ministries, local authorities, industries, private sector, environmental officials, employees from waste treatment companies, experts, scientists, journalists and public in general attended the event.

The **Photo and Poster Contest** was launched on 30 June 2016, was open for two months, and received 2163 posters and 358 photos from the participants. While providing information about the Contest, awareness was also raised and information provided for topics such as ‘Open burning: Health and Environment Impacts’ and ‘3Rs for a Better Tomorrow’ to pupils, students as well as community. The Contest was also advertised on the Facebook website. The Award Ceremony took place on 23 November 2016 at the MONRE.

The **National training course** for national and local authorities on impacts of open burning on human health and environment was held on 16 and 17 September 2016 in Tam Ky City, Quang Nam Province. It was attended by more than 80 people who represented staff of central and local officials (district to commune levels), and included information on harmful effects of open burning, U-POPs and other toxic substances generated from open burning, national regulations on hazardous waste management and communication methods for communities in matters related to open burning. News about the training course was reported on 16 September 2016 on the daily news on national television channel VTV1.

The **second awareness-raising campaign** took place during the World Environment Day (WED) 2017 in Ba Ria – Vung Tau Province. The two main activities conducted were a workshop and a Cycling event. 174 people attended the Campaign and around 50 pupils and students from Youth Unions participated in the cycling event. The cycles bore the project’s slogans, and cyclists were provided with promotional material of the WED, t-shirts and caps.

The **second awareness-raising event**, a Running event, ‘Green Vietnam Journey’, was held on 23 September 2017, in Tu Son commune, Kim Boi district,

Hoa Binh Province. The event was attended by more than 500 participants from the Hoa Binh Province, as well as representative of the media. A video<sup>7</sup> on open burning was broadcasted on youtube to promote the Running event.

Diverse **promotional material** has been prepared and disseminated, such as, foldable fan, project brochures, animation on 5R and video clip on 'stop open burning'.

**Output 4.2:** Educational programs aimed at introducing and promoting alternatives to open burning practices, carried out on targeted groups at several levels.

**A 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.

All the five participating countries are reported to have conducted their workshop on biomass utilization, recycling and reuse of waste.

Cambodia	Lao PDR	Mongolia	Philippines	Vietnam
30 November 2017	14-15 Sept 2017	18 October 2018	25-26 Sept 2018	23 November 2017

**A 4.2.2:** Design educational programs for schools and families on open burning and wastemanagement. Encourage participation of women.

All the five countries carried out information dissemination for schools and families (general public) on open burning and waste management during the awareness-raising for the Photo and Poster-making Contest. Schools were visited and pupils and teachers received information on U-POPs and open burning. Moreover, information was provided to families and general public during the awareness-raising events in each country respectively.

**A 4.2.3:** Develop education curricula at university level focused on U-POPs, BAT/BEP inwaste management and benefits of their implementation. Advanced information on incentive systemsand financing mechanisms.

### **Cambodia:**

As mentioned earlier, a **National Youth Debate on Environmental Issues** was conducted on 20 October 2017, in Phnom Penh. Via an official letter issued by the Ministry of Environment (MoE) in June 2017, all universities and graduate schools in the capital and provinces were invited to participate in it. The same was also shared via Facebook page and website of the MoE. Moreover, a public announcement was made with a poster. 14 universities from the whole country applied to participate in the Debate on environmental issues. The first round was organised on 18 August 2017, and was attended by 200 people including students,

<sup>7</sup><https://www.youtube.com/watch?v=m5pRNPJepA&feature=youtu.be>

professors, journalists, etc. The quarter final was held on 7 September 2017, and was attended by 146 people from academia, non-profit organizations and government (more than 40% women). The semi-final and final of the Debate took place on 12 October 2017, attended by 156 people (around one-third women participants). The semi-final and final rounds were broadcasted on Cambodian national television (TVK) on 16, 23 and 30 November 2017.

No information received by the evaluation on university curriculum.

### **Lao PDR:**

The Department of Engineering, National University of Lao PDR, was the main counterpart to develop the education curricula for the university level. The Department agreed to include the curricula on U-POPs and BAT/BEP in waste management in the Industrial Engineering Program.

A course 'Municipal Solid Waste and Organic Pollutant' was then approved to be included in the Mechanical Engineering and Industrial Engineering Curriculums for Bachelor Degree for 2 credits, at the National University of Lao. The course would cover 11 topics, namely, Preface, Introduction to Solid Waste Management, Lao Environmental Law for the Emission pollutant Control, Stockholm Convention on the POPs, Organic Pollutants, Basic of Ozone Layers, Ozone depleting Substances, Vienna and Montreal Protocol, Greenhouse Gases, Organic Waste Utilization for a Family, and Waste to Energy.

### **Mongolia:**

A draft of textbook on solid waste management and U-POPs for university students was developed. This is planned to be used for the preparation of guidance material and education curricula at the university level. A meeting with the Director of the Technological University Shine Mongol took place to discuss cooperation for the development of the education curricula. An Agreement was signed between the ICCT and the Technological University Shine Mongol on 16 January 2019 in this regard.

### **Philippines:**

Modules have already been prepared. A Module on 'Open burning and Existing Philippines Laws' has been included in the syllabus for energy engineering graduate class at UP Diliman. Further, a Module on i) Existing Philippine Laws on Open burning, ii) the Importance of 3Rs (Reduce, Reuse, Recycle) and Material Recovery Facilities to the Chamber of Real Estate and Builders Association Diploma Course students at the College of St. Benilde, De La Salle, Taft, has been included. Cooperation Agreement is envisaged between the EMB and the University.

### **Vietnam:**

A Memorandum of Understanding (MOU) was signed on 24 September 2018 to prepare the Education Curricula between i) the PMU, ii) Center for Natural

Resources and Environment Communication (CNREC), and iii) Faculty of Environment, Hanoi University of Natural Resources and Environment. The Education Curriculum includes two parts:

1. Set of lectures on “Waste management and reducing open burning activities” for environmental students; and
2. A two-day training course for students on waste management and reducing open burning activities

The two-day training course was conducted on 29 – 30 September 2018. 119 students of Environmental Science from i) Ha Noi University of Natural Resources and Environment, ii) Hanoi University of Science, iii) Vietnam National University of Forestry and iv) University of Transport and Communication attended the training course. The training course included several relevant topics, including, inter alia, Stockholm Convention, POPs, U-POPs, U-POPs emissions due to open burning activities, and their impact on the environment and public health, BAT/BEP. Moreover, group activities were also encompassed in the training course. The photo from the training course shows both female as well as male students, not illustrating a lack of any gender.

- *Are the project outcomes, if any to date, commensurate with the original or modified project objectives? If the original or modified expected results are merely outputs/inputs, if there were any real outcomes of the project to date and, if there were, determine whether these are commensurate with realistic expectations from the project.*
- *The evaluation will assess to what extent results at various levels, including outcomes, if any at this current stage of implementation, have been achieved. In detail, the following issues will be assessed: To what extent have the expected outputs, and outcomes, if any, been achieved or are likely to be achieved?*
- *How do the stakeholders perceive the quality of outputs? Are the targeted beneficiary groups actually being reached?*
- *Has the project generated any results that could lead to changes of the assisted institutions? Have there been any unplanned effects?*

Project objective is to create resource efficient waste management systems to reduce U-POPs emissions through the introduction of BAT/BEP in open burning sources. Some activities have been completed, and some are ongoing, a few can be conducted after the completion of certain other activities. At the time of the MTE, Outcomes have not yet been achieved; nevertheless, the project is considered to be on a realistic way to achieve the envisaged outcomes. The planned outcomes are considered to be commensurate with the original project objective, which has not been changed.

At the time of the MTE, many activities had been completed, and many activities were ongoing.

### **Component 1:**

**Output 1.1:** All the five participating countries have completed the report on the assessment of impacts of common and traditional open burning to facilitate waste

management improvements and BAT/BEP implementation, and to enable introduction of financing mechanisms. They have carried out a review of existing Laws; and in Mongolia, based on the review and suggestions made, an **Amendment Law on Waste 2017 was passed and ratified by the Mongolian Parliament on 12 May 2017**. Most of the countries have developed financing mechanisms and incentive systems in support of BAT/BEP implementation; Philippines has commenced with it. Some of the countries have yet to conduct workshops and trainings to raise awareness about the proposed revised legal framework. Three countries have prepared the Manual for using the financing mechanisms and incentive systems in waste management. In Vietnam, it was ongoing at the time of the MTE. A Toolkit for waste management was developed and provided to all the five participating countries, which can be adapted and used in each country.

**Outcome 1:** ongoing. After the completion of the Manual on financing mechanisms in Vietnam, besides the approval of proposed new legislations in each country, this outcome would have been reached. The acceptance and approval of new legislation on waste and landfill management in each country depends on the in-country approval procedures and time required for such [and thereafter its implementation].

### **Component 2:**

**Output 2.1:** A regional website has been created and is accessible. It links to the national websites of all the five participating countries, which have also been established and contain information on open burning. A regional TOT on SWM Toolkit has been conducted and the SWM Toolkit provided to the five participating countries. Standardized methodologies for updating the inventories are planned to be included in regional report being prepared by the International Expert. The national trainings on integrated waste management have been conducted in Lao, Mongolia and the Philippines; Vietnam is planning to conduct the training in the second quarter of 2019. The training on financing mechanisms and incentive systems is planned to take place after their finalization in each country.

**Output 2.2:** A regional training course – Monitoring for U-POPs and GHG emissions from open burning activities – took place in Hanoi for two participants each from the participating countries. The methodology to continuously update inventories of U-POPs releases from open burning practice is planned to be included in the regional report being prepared by the International Expert.

**Outcome 2:** ongoing. Institutions/human resources on regional/national level have been equipped with information and knowledge on SWM, U-POPs, GHG emissions and their monitoring. It is realistic to achieve this Outcome in the planned project duration.

### **Component 3:**

In **Cambodia**, after changing the initial two options, Battambang Province is the new partner for the selected demonstration sites, which are the Battambang Plastic Products company, COMPED composting plant (NGO), ADB recycling facility and Battambang dumpsite (better management suggested).

**Lao PDR:** No information received by the evaluation.

**Mongolia:** The Tsagaan Davaa site in Ulaanbaatar City has been selected as the demonstration site for the construction of landfill cell for ash disposal and a storage and maintenance facility for containers for Chemicals and ash.

**Philippines:** MARKELL Machineries Manufacturing was contracted for providing a Material Recovery Facility to be located at the Sanitary Landfill in General Santos City. At the time of the MTE mission, the **Facility was ready with constructions completed, and equipment delivered and installed, ahead of time.** It is expected to start operations tentatively in February 2019.

**Vietnam:** The Minh Khai and Phan Boi Craft Villages (plastic recycling) in Hung Yen Province have been selected as the demonstration sites. VNCPC has been selected as the Contractor for the BAT/BEP interventions.

The environmental monitoring and evaluation activities can be conducted after the interventions have taken place.

**Outcome 3:** ongoing. Rest project duration time (around 1.5 years) is considered to be stringent to accomplish the interventions under Component 3, if they have not been decided yet.

#### **Component 4:**

**Output 4.1:** The national project website 'stop open burning' has been prepared, as well as various dissemination material for awareness-raising, by each of the five participating country. At least two main national awareness-raising events have been conducted by all the five participating countries.

**Output 4.2:** All the five countries have carried out information dissemination for schools and families during the awareness-raising for the Photo and Poster-making Contest, and during other awareness-raising events, like, tree planting, Fun Run. University curriculum has been prepared in some cases, and / or is in the process of being prepared.

**Outcome 4:** ongoing. Activities are on the right track, and the achievement of Outcome 4 is considered realistic in the remaining time duration of the project.

All the interviewed stakeholders in the Philippines and Vietnam highlighted the high relevance of the project and its interventions. The produced outputs are considered highly relevant and of high quality by the interviewed stakeholders.

Several studies suggest the importance of environmental interventions such as this project. Expected effects or side-effects of this project are better health, especially of people living in close vicinity of open burning sites (which are then closed), job creation in the new MRF (such as in General Santos City), leading to employment and economic progress in better conditions - appropriate waste collection and waste management, and resulting reduction of environmental risks, such as the effects of air pollution, just to name a few.

Project interventions are targeted at national and local administrative officials, as well as, university students, school pupils and general public. Within the framework of the project, several awareness-raising workshops and events have been

conducted, where the above target group could be reached. At the same time, a continuation of the awareness-raising activities is necessary to ensure continued interest and active participation of the envisaged target group, and a change of mindset towards open burning.

Project implementation is more than half way through. One of the major components of the project is the demonstration activity which involves the selection of the demonstration site, interventions to be carried out, selection of technology, procurement of technology and then its delivery and instalment. Once installed and commenced, an improvement in the envisaged process can be expected. Nevertheless, technology in itself does not guarantee an improvement and maintenance of improved process. First and foremost, financial support can be expected to be required to commence and maintain operations; knowledge – both technical and business; and the mindset. In the Philippines, after having heard of the demonstration site, other LGUs were reported to have been interested in similar facilities.

- *Identify actual and/or potential longer-term impacts or at least indicate the steps taken to assess these (see also below “monitoring of long-term changes”). Indicate how findings on impacts will be reported in future.*

Knowledge transfer has taken place at trainings and workshops. Training was provided on monitoring for U-POPs and GHG emissions by open burning. Standardized methodologies to continuously update inventories of U-POPs releases from open burning will be included in the regional report under preparation by the International Expert. As such, it would be upto the relevant Ministries in the countries to continuously update this information and monitor it. Information has been disseminated, awareness raised on waste and open burning and its impact on the environment and human health. However, impact on the mindset of the people (general public) can be impacted by continuous awareness-raising.

- *Which technologies have / are being selected for the participating countries? Which alternative technologies should/could have been considered / can be considered?*

Reference is made to A 3.2.2 – A 3.2.6.

### **3.3 Efficiency at current stage of implementation**

*The extent to which:*

- *The project cost is effective? Is the project using the most cost-efficient options?*
- *Has the project produced results (outputs (and outcomes)) within the expected time frame? Has project implementation been delayed, and, if it is, is it affecting cost effectiveness or results? Wherever possible, the evaluator should also compare the costs incurred and the time taken to achieve outcomes with that for similar projects. Are the project's activities in line with the schedule of activities as defined by the project team and*

*annual work plans? Are the disbursements and project expenditures in line with budgets?*

- *Have the inputs from the donor, UNIDO and Government/counterpart been provided as planned, and were they adequate to meet the requirements? Was the quality of UNIDO inputs and services as planned and timely?*
- *Was there coordination with other UNIDO and other donors' projects, and did possible synergy effects happen?*
- *Are there delays in project implementation and if so, what are their causes?*
- *To what extent, in percentage, would the UP/POPs emissions be reduced with the selected technology at the demonstration sites?*

Project implementation commenced in April 2015. Many activities have been accomplished; many activities are ongoing. The main component which involves procurement, demonstration, is yet to be accomplished in four of the five participating countries. Time left till the initial/planned project end date is less than 1.5 years, and considered to be stringent to accomplish the demonstration component in those countries where the interventions have not yet been decided. Nevertheless, no issues regarding cost-effectiveness were reported to the evaluation. As reported to the evaluation, in the Philippines, the cost for the upgrade for equipment to increase efficiency as well as one complete set of equipment was borne by Markell, the Contractor.

All the interviewed stakeholders reiterated the significance and helpfulness of UNIDO's technical assistance. The work of the National Experts in each country, as well as that of the International Experts was very much appreciated. The national PMU could be easily contacted by (the interviewed) stakeholders and always received a timely response.

Co-finance was committed by each participating country, as illustrated in the table below:

<b>Name of co-financing institution</b>	<b>Type of Institution</b>	<b>Type of Co-finance</b>	<b>Amount (USD)</b>
Phnom Penh Capital	Local Government	In-kind	8,000,000
Ministry of Natural Resources and Environment - Lao PDR	National Government	Cash	300,000
		In-kind	1,000,000
SAPLAST Vientiane Co. Ltd	Private Sector	Cash	500,000
		In-kind	800,000
City of Ulaanbaatar, Mongolia	Local Government	Cash	6,328,800
Lapu Lapu City, Philippines	Local Government	Cash	7,873,665
General Santos City, Philippines	Local Government	Cash	412,510
		In-kind	696,389
Ministry of Natural Resources and Environment - Vietnam	National Government	Cash	200,000
		In-kind	5,540,000
GIZ	Bilateral Aid Agency	In-kind	171,740
City of Kitakyushu	Others	In-kind	200,000
COMPED - Cambodia	CSO	In-kind	497,330
UNIDO	IA	Cash	106,000

		In-kind	150,000
<b>Total</b>			<b>32,776,434</b>

Source: CEO endorsement req. rev 1, 27.1.2014.

Due to the change of initially planned demonstration site in Cambodia, the initially committed co-finance amount of USD 8,000,000 may not be reached.

Expenditure of co-finance is as follows:

**Cambodia:** from 2016 - 2018

Outcome 5: Establish project management structure and the system for monitoring / evaluation of the project impact (in-kind contribution amounting to):

#### **Ministry of Environment**

Activities	Amount in USD
Office space (project office)	30,000
Electricity and water	12,500
Janitorial and security service	7,500
Office equipment	17,500
Office supplies	10,000
Meeting venue	17,500
<b>Total</b>	<b>95,000</b>

Source: Co-finance report 2018.

#### **Battambang province**

Activities	Amount in USD
Battambang landfill	800,000
Operation facilities for COMPED	300,000
ADB project facility	500,000
National budget for solid and liquid waste management in Battambang	370,000
<b>Total</b>	<b>1,970,000</b>

Source: Co-finance letter Decemebr, 2018.

**Lao PDR:** yet to be received.

**Mongolia:** Till 2018

Outcome 3: BAT/BEP implemented in open burning sources

(USD 132,000 in kind; USD 1,300,566 grant)

Activities	Year	Amount (USD)
Issued land for construction of a landfill cell for ash disposal and a storage and maintenance facility (2.4 hectare)	2016	132,000
Purchased bulldozers for Tsagaan davaa disposal site operation 2017: 2 pieces 2018: 3 pieces	2017	224,500
	2018	445,833
Fencing of Tsagaan davaa disposal site	2018	60,404
Operational cost of Tsagaan davaa disposal site including daily covering soil on disposed waste	2016	327,977
	2017	237,762
Total		1,428,566

Source: Co-finance report Mongolia 2018.

**Philippines:**

**General Santos City:**

Outcome 3: BAT/BEP implemented in open burning sources (in-kind contribution, approximately in USD 6,054,174)

Activity	Amount in PhP
Construction of General Santos City Sanitary Landfill Facility (completed in May 2016)	219,978,150
Concreting of road network from GSC diversion road to GSC Sanitary Landfill and UNIDO funded City Central Materials Recovery Facility (completed in Nov. 2017)	40,000,000
Procurement of two 12cm <sup>3</sup> Garbage Compactors	24,000,000
Closure and rehabilitation of Open Dumpsite.	1,450,000
City wide IEC and enforcement campaign	4,309,794

Training and deputation of 800 Barangay Enforcers to implement laws and Ordinances, especially on open burning violators (120 IEC session from Jan. – May 2018)	
Technical Assistance and membership to Environmental protection policy making bodies	563,692
Waste management office allotted by the LGU with budgetary provision for city waste collection, cleanliness and operation of sanitary landfill.	27,003,702
Total	317,305,339

Source: Co-finance report.

**Environmental Management Bureau, Department of Environment and Natural Resources** (till 2018, in kind contribution of around USD 45,692)

Outcome 1: Strengthened legislative capacity for introducing BAT/BEP in waste open burning source A 10 category	
Output 1.1: Updated legal and regulatory frameworks for open burning	
Series of workshops for the intended clarification of the prohibition on open burning. Consultation workshop on the Prohibition Against Open Burning (2017)	2,160,000
Outcome 5: Established project management structure and the system for monitoring / evaluation of project impact	
Office space	750,000
Office furniture and fixtures, electricity and water, communication equipment	25,000
Meeting venue / use of conference rooms / rooms for meetings / workshops	67,500
Project team support staff time	720,997
Travel expenses	124,609
Total in PhP	2,284,609
Total in USD	45,692

Source: Co finance reports Philippines 2018.

**Vietnam:****Vietnam Environment Administration, Ministry of Natural Resource and Environment** (USD 1,300,000 in-kind contribution; USD 120,206 grant, till 2018)

Component 4: Grant contribution	Amount in USD
Campaigns for the World Environment Day 2016, 2017, Clean up the World Day 2017, 2018	73,582
Component 5	
Development of project's implementation contents	3,342
Hiring project office	11,224
Remuneration for supporting staff	10,801
Remuneration for plurality staff	6,257
Technical meetings and Consultation workshop	6,653
Operating cost	6,548
Management and other cost	1,798
Sub-total	120,206
In-kind contribution	
Laboratory for sampling, analysis and monitoring U-POPs from Dioxin Laboratory under VEA, MONRE	1,300,000
Sub-total	1,300,000
Total	1,420,206

Source: Co-financing report Vietnam 2018.

Item	Disbursement in 2015	Disbursement in 2016	Disbursement in 2017	Disbursement in 2018 (till 31 December 2018)	Total disbursement (in USD) 2015-31.12.2018
Staff & International Consultants	3.705,03	16.937,43	71.853,21	72.593,37	<b>165.089,04</b>
Local travel	8.062,69	25.913,98	14.371,55	55.027,02	<b>103.375,24</b>
Nat.Consult./Staff	41.376,74	132.596,03	225.249,32	185.212,24	<b>584.434,33</b>
Contractual Services	418.416,84	325.616,21	1.016.290,01	380.462,89	<b>2.140.785,95</b>
Train/Fellowship/Study	10.182,48	-11,22			<b>10.171,26</b>
Premises		927,80	660,40	1.313,80	<b>2.902,00</b>
International Meetings	12.078,61	46.144,58	38.950,70	75.202,75	<b>172.376,64</b>
Equipment	5.115,21	4.940,82	3.676,51	1.032,51	<b>14.765,05</b>
Other Direct Costs	4.562,94	4.903,91	6.545,93	2.738,56	<b>18.751,34</b>
<b>Total (in USD)</b>	<b>503.500,54</b>	<b>557.969,54</b>	<b>1.377.597,63</b>	<b>773.583,14</b>	<b>3.212.650,85</b>

Source: PMU, UNIDO SAP Database 05.02.2019.

### 3.4 Assessment of risks to likelihood of sustainability of project outcomes

*Sustainability is understood as the likelihood of continued benefits after the GEF project ends. The following four dimensions or aspects of risks to sustainability are addressed:*

*Financial risks, Socio-political risks, Institutional framework and governance risks, and Environmental risks.*

Technology alone does not guarantee sustainability of project outputs and outcomes. Continued financial support, till the Facility becomes 'self sustaining' is crucial. In the Philippines, the General Santos City Administration reiterated their commitment and support, also financial, to sustain the Facility. In Vietnam, it was pointed out to the evaluation that presentation of the economic benefits of the project interventions would be appealing to the people, to ensure their continued interest and active participation. At this stage of project implementation, when the MTE is being conducted, the significance of financial support, or support to reach the self-sustaining stage can only be highlighted.

Similarly, a discussion, adaptation, acceptance and approval of proposed laws is considered to be crucial for the sustainability of project outcomes, but above all, for the envisaged impact of the project, as well as to ensure appropriate compliance with the proposed actions.

Socio-political and environmental risks are not considered to be high for project outcomes in any of the five participating country.

### 3.5 Monitoring and evaluation (M&E) systems, long-term changes, project coordination and management

The Regional Inception Workshop took place on 18 May 2015, together with the Project Launch and the 1st PSC Meeting in Phnom Penh, Cambodia. The National Launching and Inception Workshops took place as follows:

Cambodia	Lao PDR	Mongolia	Philippines	Vietnam
18 May 2015	16 February 2016	4-5 February 2016	14-16 October 2015	4 June 2016

The NPMs report regularly to the PM in UNIDO HQ. They prepare progress reports, as well as summary reports of the status of activities, when necessary. Project Information Reports have been prepared annually. The MTE has been planned and budgeted appropriately, and conducted. Project Steering Committee (PSC) meets once every year, and the evaluation has received reports from 3 PSC meetings – May 2015, December 2016, February 2018:

1st PSC Meeting	18-20 May 2015	Cambodia
2nd PSC Meeting	6-8 December 2016	Austria
3rd PSC Meeting	27 February 2018	Philippines

1st NPM Meeting	18-19 February 2016	Thailand
2nd NPM Meeting	19-21 September 2017	Austria

Training was provided on monitoring for U-POPs and GHG emissions by open burning. Standardized methodologies to continuously update inventories of U-POPs releases from open burning will be included in the regional report under preparation by the International Expert. As such, it would be upto the relevant Ministries in the countries to continuously update this information and monitor it.

The national management and overall coordination mechanisms are reported and considered to be efficient and effective. A PMU has been set up in all the five participating countries, with an NPM; the PMU is established at the relevant Ministry of the participating country. A Regional Coordinator has been selected, the NPM from Philippines. Communication between the national stakeholders and the PMU, amongst the participating countries, and the PMU and PM in UNIDO HQ is reported to be regular and effective. During the evaluation mission, it was reported to the evaluation that each partner fulfills its roles and responsibilities effectively. The UNIDO-based management, coordination, monitoring, quality control and technical inputs of the PM are considered to be very effective, timely and helpful in effective project implementation. No issues were reported to the evaluation.

### 3.6 Assessment of gender mainstreaming

- *Did the project/programme design adequately consider the gender dimensions in its interventions? If so, how? Was a gender analysis included in a baseline study or needs assessment (if any)? How gender-balanced was the composition of the project management team, the Steering Committee, experts and consultants and the beneficiaries? Have women and men benefited equally from the project's interventions? Do the results affect women and men differently? If so, why and how? How are the results likely to affect gender relations (e.g., division of labour, decision-making authority)? Are women/gender-focused groups, associations or gender units in partner organizations consulted/included in the project?*

The project logical framework makes a mention of “special consideration on gender by encouraging participation of women” for training activities (A 2.1.2 and A 2.1.4). However, gender dimensions are not specifically considered in the interventions in any other manner. Gender analysis or needs assessment are not included in a baseline study (probably owing to the nature of the project – focus on open

burning/environment), nor are any women/gender-focused groups consulted/included in the project.

Nevertheless, the evaluation observed participation of both genders in all the evaluation meetings, the PMU, and in other stakeholder institutions. The evaluation also noted the participation of both genders from the photos of the training workshops. Some of the reports of trainings and workshops specify the participation number of each gender. The evaluation did not observe a lack of participation of any gender in any of the project activities (several photos of awareness raising events seen).

Both men and women are expected to benefit equally from the project interventions. Communities living near dumpsites (including both men and women), as well as women and children involved in scavenging activities, are expected to benefit from the project interventions (inter alia via awareness-raising activities).

## 4. Conclusions, recommendations, lessons learned

### 4.1 Conclusions and Recommendations

Conclusions	Recommendations
<p><b>Relevance and Ownership</b></p> <p>Considered highly relevant by ALL stakeholders interviewed in the Philippines and Vietnam:</p> <ul style="list-style-type: none"> <li>• The Governments</li> <li>• The Local Government (in General Santos City)</li> <li>• Academia</li> <li>• Private Sector</li> <li>• Other interviewed stakeholders</li> </ul> <ul style="list-style-type: none"> <li>• UNIDO</li> <li>• Compliance with the obligations under the Stockholm Convention / NIP</li> <li>• GEF</li> </ul> <p>In line with the strategies and policies of</p> <ul style="list-style-type: none"> <li>• The Governments</li> <li>• GEF</li> <li>• UNIDO</li> </ul>	<p>Continued cooperation and active participation of all stakeholders</p>

<p><b>Efficiency</b></p> <ul style="list-style-type: none"> <li>• Co-finance is being spent and documented</li> <li>• At the demonstration site in General Santos City, the equipment has been installed, and the Launch of the site is planned to take place in February 2019. As such, Component 3 has been <b>implemented ahead of expected time.</b></li> </ul> <p>Demonstration sites have been selected in the other countries, and interventions decided. Rest time duration of the project till completion considered to be stringent to accomplish Component 3</p>	<p>Document expenditure of co-finance, if any, in Lao PDR</p> <p>Component 3 activities to be expedited in the other countries;</p> <p>An extension of one year of the project duration might be necessary</p>
<p><b>Effectiveness</b></p> <ul style="list-style-type: none"> <li>• Regional Inception Workshop conducted</li> <li>• Project teams in place in each of the five participating countries</li> <li>• PSC in place</li> <li>• National Coordinators on board</li> <li>• Regional Coordinator selected</li> <li>• National Experts recruited/on board and activities conducted/ongoing</li> <li>• Regional meetings conducted on annual basis (PSC, NPMs)</li> <li>• Regional website created, linked to national websites</li> </ul> <p><b>Outcome 1: Strengthened legislative capacity for introducing BAT/BEP in waste open burning source category</b></p> <ul style="list-style-type: none"> <li>• The report on the assessment of impacts of common and traditional open burning practices has been prepared</li> <li>• A review of existing relevant Laws has been carried out.</li> </ul> <p><b>Cambodia:</b> A Technical Guideline has been prepared.</p>	<p>Clarify the responsibility and maintenance of the regional website, as well as the respective national websites, after project completion</p> <p>Relevant Ministries to pursue approval of</p>

<p><b>Lao PDR:</b> The legal definition of waste needs to be amended to ensure that the objectives of 3 Rs may be fully realised.</p> <p>In <b>Mongolia</b>, based on the review and suggestions made, <b>an Amendment Law on Waste 2017 was passed and ratified by the Mongolian Parliament on 12 May 2017.</b></p> <p><b>Philippines:</b> RA 9003 has limited definition of open burning. The term open burning needs to be clarified (defined).</p> <p><b>Vietnam:</b> 4 Technical Guidelines for 4 types of Craft Villages prepared</p> <ul style="list-style-type: none"> <li>• Most of the countries have developed financing mechanisms and incentive systems in support of BAT/BEP implementation</li> <li>• Some of the workshops and trainings to raise awareness on the proposed legal framework are yet to be conducted</li> </ul> <p>After the completion of the Manual on financing mechanisms in Vietnam, besides the approval of proposed new legislations in each country, this outcome would be achieved. The acceptance and approval of new legislation on waste and landfill management in each country depends on the in-country approval procedures and time required for such [and thereafter its implementation].</p> <p><b>Outcome 2: Enhanced institutional capacity to carry out BAT/BEP implementation</b></p> <ul style="list-style-type: none"> <li>• A regional website has been created, and is linked to the national websites</li> <li>• <b>Toolkit for waste management</b> has been developed and provided to all the countries, which can be adapted and used in each country</li> <li>• Trainings on integrated waste management have been conducted</li> <li>• Training on financing mechanism and incentive systems is planned to take place after their finalization in each country</li> <li>• Regional <b>training course on Monitoring for U-POPs and GHG emissions from open burning</b> took place in Hanoi</li> <li>• Methodology to continuously update inventories of U-POPs releases from open burning is planned to</li> </ul>	<p>proposed legislation / Technical Guidelines</p> <p>Philippines: Further clarification of the classification and different cases of open burning and suggestions formulated for inclusion in the existing Law, and approval possibly as a Memorandum Resolution, if deemed appropriate</p> <p>Vietnam: Consultation with main and relevant industry stakeholders and Ministry to decide on the “best incentives” for Vietnam and then to include in legislation</p> <p>Continued and active support and participation of stakeholders</p>
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<p>be included in the regional report being prepared by the International Expert</p> <p>Institutions/human resources on regional/national level have been equipped with information and knowledge on SWM, U-POPs, GHG emissions and their monitoring. It is realistic to achieve this Outcome in the planned project duration.</p> <p><b>Outcome 3: BAT/BEP implemented in open burning sources</b></p> <ul style="list-style-type: none"> <li>• Demonstration sites have been selected</li> <li>• <b>Cambodia:</b> <p>Cooperative Agreement (CA) with Battambang Province to be signed</p> <p>Battambang Plastic Products Company – provide a granulating line 2-4 tons/day capacity</p> <p>COMPED composting plant –improvement of roofing and concrete floor, supply of equipment to enhance capacity and improve the composting process</p> <p>ADB recycling facility–provide assistance in getting dry recycled waste from the collected MSW</p> </li> <li>• <b>Lao PDR:</b> Selected demonstration site: SAPLAST <p>Cooperation Agreement yet to be signed</p> <p>SAPLAST: Support with additional machine or equipment to improve plastic recycling</p> <p>Thakek Landfill site: Explore the possibility to establishing an MRF to promote 3Rs</p> </li> <li>• <b>Mongolia:</b> <p>The Tsagaan Davaa site in Ulaanbaatar City for the construction of landfill cell for ash disposal and a storage and maintenance facility for containers for chemicals and ash. After bidding process, the Tusgal Tuv LLC has been awarded the contract in January 2019</p> </li> <li>• <b>Philippines:</b> <p><b>MRF at the Sanitary Landfill in General Santos City</b></p> <p>At the time of the MTE mission, the Facility had been constructed, equipment delivered and installed and everything <b>ready, ahead of time</b>, for the Launch tentatively in February 2019.</p> </li> </ul>	<p>Cooperative Agreement (CA) with Battambang Province to be signed as soon as practically possible</p> <p>Expedition of project activities</p> <p>Cooperation Agreement to be signed as soon as practically possible</p> <p>Project activities to be expedited</p>
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<p>MARKELL Machineries Manufacturing is the Contractor, and has provided upgraded equipment as well as one set of equipment, cost of which are borne by MARKELL</p> <p>Strong support and commitment of General Santos City Administration for sustaining the Facility was reiterated to the evaluation</p> <ul style="list-style-type: none"> <li>• <b>Vietnam:</b></li> </ul> <p>Minh Khai and Phan Boi Craft Villages in Hung Yen Province selected – plastic recycling – for the following interventions:</p> <p>Development of a new recycling process with incorporation of key BAT/BEP measures</p> <p>Improvement of existing production line with some BAT/BEP measure</p> <p>Development of new and innovative technology as BAT to recycle plastic discards</p>	<p>Replications plans to be prepared, including budget (together with other LGUs)</p> <p>Visit of nearby communities and LGUs to the newly-established Facility</p>
<p>Rest project duration time (around 1.5 years) is considered to be stringent to accomplish the interventions under Component 3, if they have not been decided yet.</p>	<p>An extension of one year is considered to be realistic to complete all project activities</p>
<ul style="list-style-type: none"> <li>• <b>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</b></li> <li>• The national project websites have been prepared and linked to the regional website</li> <li>• Various information and dissemination material has been prepared for awareness-raising</li> <li>• Two main awareness-raising events have been carried out in each of the five participating countries</li> <li>• All countries have carried out information dissemination for schools and families during the awareness-raising for the Photo and Poster-making Contest</li> <li>• University curriculum has been prepared in some countries, and is under preparation in some others</li> </ul> <p>Activities are on the right track and the achievement of Outcome 4 is considered to be realistic in the remaining time duration of the project.</p>	<p>Continuation of awareness-raising activities</p> <p>National Governments can consider the development of a “lighter” curriculum for the different levels of schools (primary,</p>

<p>Time is considered to be stringent to accomplish Component 3 till the foreseen end of project.</p> <p>Nevertheless, Project is on the right track. It combines four different components to achieve its main objective. Within the framework of the project, the participating countries, with the strong support of the relevant Ministries, the PMU, and committed work of the Experts and other stakeholders, have successfully conducted several activities under the different components. Awareness-raising events have been successfully carried out and trainings conducted.</p>	<p>medium and high), in the form of different tasks and activities for school students (optional courses), even after project completion</p>
<p><b>Risks to Likelihood of Sustainability of Project Outcomes</b></p> <p>Project implementation has not come to an end. At this stage of implementation,</p> <ul style="list-style-type: none"> <li>• Budget, as well as policy and legislation, need to be prepared and included in national documents, to avoid financial risk to the sustainability of project outcomes</li> <li>• Sociopolitical and environmental risks are considered to be low</li> </ul>	<p>Continuation of activities of project outcomes to be included in national budget and policy documents</p>
<p><b>Cross-cutting Issues</b></p> <ul style="list-style-type: none"> <li>• Documentation very well maintained by the PMU in Philippines and Vietnam (shown and provided to the evaluation)</li> <li>• Good cooperation and work environment between PMU and stakeholders in Philippines and Vietnam observed by the evaluation</li> <li>• Strong support and commitment reiterated by all the interviewed stakeholders in Philippines and Vietnam</li> <li>• Involvement of UNIDO CO in project activities as necessary; receiving regular updates from the PMU</li> </ul> <ul style="list-style-type: none"> <li>• Timely and effective inputs provided by all the stakeholders</li> <li>• PMU, National experts and International experts and the project outputs appreciated by all the interviewed stakeholders</li> <li>• 3 PSC meetings have taken place</li> <li>• 2 NPM meetings have taken place</li> <li>• 3 PIRs have been submitted</li> </ul>	<p>Continued and active support and participation of stakeholders</p>

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| <ul style="list-style-type: none"><li>• Participation of both genders observed by the evaluation in all the meetings and photos in reports.</li></ul> |  |
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## 4.2 Lessons learned

- Regular face-to-face PSC and NPM meetings facilitate joint efforts and can prove to be a motivational factor for achieving project outputs.
- Effective communication between various stakeholders facilitates joint efforts for effective and efficient project implementation.

## 5. Annexes

- I Organizations visited and persons interviewed
- II Documents consulted/reviewed
- III Evaluation Matrix
- IV Terms of Reference (ToR)

## Annexes

### 5.1 Organizations visited and persons interviewed

<b>Name</b>	<b>Organization</b>	<b>Position</b>	<b>Role in Project</b>
Ms. Carmela Centeno	UNIDO	Industrial Development Officer	Project Manager
<b>Philippines</b>			
Mr. Conrado A. Bravante, Jr.	DENR (FASP)	Chief, Project Management Division	
Ms. Marianica Philina Obmerga	DENR		Project Officer at the DENR
Ms. Rose Argan	DENR		
Ms. Leoni	DENR	Chemical Management Section	
Ms. Mayeth Derumol	DENR	PM Section of the Planning Division	
Ms. Consolacion Crisostomo	DENR	Chief, Policy Planning Division	
Ms. Elma Eleria	GEF FP		
Mr. Ronnel Rivera	General Santos City	Mayor	Co-financer
Ms. Ma Socorro C. Lanto	EMB, DENR	Regional Director - EMB 12	Stakeholder
Mr. Allen Joy Saganay	EMB, DENR	Chem III - EMB 12	
Ms. Haidee Piniero	UNIDO		Regional Coordinator, NPM
Mr. Ferdinand Pareja	City Waste Management Office	GSC SWM Head	Demonstration site
Mr. John Hitalia		SLF FP + CMRF FP	
Central Materials Recovery Facility	CMRF, SLF Compound, Sinawal GSC		Demonstration site
Mercury Drug Corporation	Mercury Drug Corporation		Stakeholder
RDEX Foods	RDEX Food International Phils. Inc.		Stakeholder
Robinsons Land	Supermarket in Mall	Mall Operations Manager	Stakeholder
Ms. Annabelle Barquilla	EMB, Technical Staff Office of Under Secretary	Supervising Eco-systems Management Specialist	Stakeholder

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Ms. Joan Francis Flores	EMB, Solid Waste Management Division	Environmental Management Specialist	Stakeholder
Mr. Roger Evangelista	EMB, Environment Research Division	Science Research Specialist II	
Mr. Richard P. Andar	AECOM	Project Environmental Specialist	Sub-contractor
Mr. Gio Zaragosa	AECOM		
Mr. Mark	AECOM		
Mr. Jei De Claro	Markell Machineries Philippines		Sub-contractor, co-financer
Mr. Anthony Ong	Markell Machineries Philippines		
Mr. Teddy Monroy	UNIDO	National Programme Officer	
<b>Vietnam</b>			
Mr. Ngo Tuan Dung	ICD, MNRE	Deputy Director General	
Mr. Le Hoai Nam	Department of Environmental Quality Management, Vietnam Environment Administration (VEA), MNRE	Director	NPD
Ms. Dang Thuy Linh	Department of Environmental Quality Management VEA, MNRE	Official	NPC
Mr. Nguyen Thi Cam Uyon	ICD, MNRE	Official	
Mr. Do Tien Doan	Department of Waste Management VEA, MNRE	Head of Hazardous Waste Management Division	
Mr. Dinh Viet Cuong	Department of Waste Management VEA, MNRE	Official	
Ms. Linh Hoang Thi Dieu	UNIDO		NPM

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Ms. Le Thi Thanh Thao	UNIDO	Country Representative	
Mr. Nguyen Hung Minh	Northern Centre for Environmental Monitoring (NCEM) VEA, MNRE	Head of Department of Environmental Analysis, Dioxin and Toxic	Training
Dioxin Laboratory	NCEM		Training
Mr. Nguyen Duc Quang	Hanoi University of Science and Technology	Vice Head, Department of Environmental Management	
Ms. Nguyen Thi Anh Tuyet	Hanoi University of Science and Technology	Associate Professor Department of Environmental Management	NE
Mr. Le Xuan Thinh	Vietnam Cleaner Production Centre Co., Ltd.	Director	Sub-contractor Component 3
Ms. Duong Thi Lien	Vietnam Cleaner Production Centre Co., Ltd.	Official	Sub-contractor Component 3
Mr. Nguyen Thi Nhien	CNREC	Official	Sub-contractor Component 4
Mr. Ng Thi Ngoc Mei	CNREC	Official	Sub-contractor Component 4
Mr. Do Duc Tue	Song Hong Environment Mechanic Electric Company Limited	Director (Beneficiary representative of the training workshops under the awareness-raising component)	Component 4
Mr. Hoang Quoc Lam	CNREC	Director of Service	Sub-contractor Component 4
Mr. Vu Van Doanh	Hanoi University of Natural Resources and Environment	Lecturer	Sub-contractor Component 4
Mr. Phet Pichhara	Ministry of Environment	Director of Hazardous Substances Management Department	NPM, Cambodia
Mr. Virasack Chundara			NPM, Lao PDR
Mr. Badam Delgerbayar			NPM, Mongolia

## 5.2 Documents consulted/reviewed

Project document - ID5082 CEO endorsement req rev1 1-27-2014

TOR MTE

National Activities per country

Cambodia National Activities 30 July 2018

Lao PDR National Activities 29 July 2018

Mongolia National Activities 26 July 2018

Philippines National Activities 27 July 2018

Vietnam National Activities 27 July 2018

Updates from Mongolia November 2018

PIR 2016

PIR 2017

PIR 2018

UNEP POPS NIP Cambodia

UNEP POPS NIP Laos

UNEP POPS NIP Mongolia

UNEP POPS NIP Philippines

UNEP POPS NIP VietNam

Inception Workshop and 1<sup>st</sup> PSC Meeting Report 18-20 May 2015

2<sup>nd</sup> PSC Minutes of the Meeting December 2016

3<sup>rd</sup> PSC Minutes of the Meeting February 2018

2<sup>nd</sup> NPM Minutes of the Meeting September 2017

Toolkit for SWM to implement BAT and BEP on open burning

How to use Toolkit TOT

### **Cambodia:**

Final Progress Report – Technical Guideline

Final Financial Mechanism Report

Final Manual Report

Progress Report October 2016

Consultation Workshop

Assessment Report of the Impact

National Training Course Report

National youth debate report

Co-Financing 2016-2018

Final Report of Photo and Poster Contest

Brochure English

Leaflet

Poster

Project Inception Report

Progress Report 1<sup>st</sup> set November 2016

Progress Report 2<sup>nd</sup> set May 2018

Summary Report of achieved results December 2018

**Lao PDR:**

Approval letter on curricula by NOUL

Final First Quarter Report April 2018

Final Progress Report February 2017

Report March 2018

Final Progress report Activities 1.1.2, 1.1.3, 1.1.4, 1.1.6

Assessment of common and traditional practices Activity 1.1.1

Report of workshop on alternative biomass Activity 4.2.1

Brochure

Poster

Report on tree planting in Laos

Report on website

Report on workshop on UPOPs and health

**Mongolia:**

Ash Survey Report

Report on Assessment of OB Practices

Study Materials Price Report

Report on financial mechanism and incentives

Financing Mechanism and Incentive System

Financing

Guidance Manual to encourage, promote and advertise individuals, businesses and organizations introduced activity or technology for reducing waste, saving natural resources, implementing 3R

Waste Management Law

Field visit report

Study Disposal Site Report

Brochure

Inception Report

Poster

Progress report Outcome 4 August 2017

Progress report May 2016

Progress report Outcome 4 2018

Summary Report Mongolia

**Philippines:**

IEC Progress report Nov 2018

Checklist on the establishment of information for existing waste disposal facility

Assessment of OB Practices

Memorandum of Agreement GSC – EMB

Final Report TOT SWM Toolkit BAT-BEP

SWM Toolkit

Report on TOT and SWM Toolkit Laurito

Regulating the use of Plastic GSC

Progress Report Markell Machineries

Generic Course Syllabus

Inception report Markell Machineries

Social Marketing and Advocacy Plan

Progress report AECOM

Inception report AECOM

Brochure Stop Open Burning

Merchandise

**VietNam:**

Presentation of Dioxin Lab

Summary of achieved results

Component 4 – Report on 1<sup>st</sup> awareness raising campaign on the environmental and health hazards of UPOPs

Component 4 – Report on 2<sup>nd</sup> awareness raising campaign on the environmental and health hazards of UPOPs

Component 4 - Report on website development

Component 4 - Report on Green Vietnam Journey – Running event

Component 4 – Summary of implemented activities of Component 4

National Training course on Health and Environment

Regional Laboratory Training on sampling and Monitoring UPOPs and GHG

Technical guideline on Environmental Protection for Craft Villages

Assessment of impacts of open burning

Co-financing letter

Report on assessment of waste management and impacts of open burning practices

Technical guidance – Metal recycling

Technical guidance – Paper recycling

Technical guidance – Plastic recycling

Technical guidance – Bamboo crafting

Report on reviewing and amending national technical regulations on industrial waste incinerators and developing technical guideline on retrieval and disposal of discarded products

Assessment report on current status of labs monitoring UPOPs

Training presentations

Report on analytical practical sessions

Presentation of VNCPC on demonstration activity

### 5.3 Evaluation Matrix

Criteria / Issues	Questions	Indicators	Sources of information
Relevance of objectives	Are the objectives of the project consistent with UNIDO and the GEF policies and strategies?	<ul style="list-style-type: none"> <li>➤ Policies and strategies of UNIDO</li> <li>➤ GEF focal areas</li> </ul>	<ul style="list-style-type: none"> <li>➤ Project document</li> <li>➤ UNIDO and GEF websites</li> </ul>
	Are the objectives of the project consistent with policies and strategies of participating countries?	<ul style="list-style-type: none"> <li>➤ Priorities established in NIPs, national legislation and government documents of participating countries</li> </ul>	<ul style="list-style-type: none"> <li>➤ Project document</li> <li>➤ Relevant legislation and government documents of participating countries</li> </ul>
Effectiveness at current state of implementation:	What activities have been started and to what extent completed since the project?	<ul style="list-style-type: none"> <li>➤ Government policies and regulations</li> <li>➤ Training programs initiated and number of trainers and trainees</li> <li>➤ Institutions acting as information centres for POPs and open burning data</li> <li>➤ Standard inventory methods developed and used</li> <li>➤ Web based platform for regional cooperation and project website</li> <li>➤ Integrated waste management plans</li> <li>➤ Sampling results from demonstration sites</li> <li>➤ Reduction of U-POPs and increase of reused/recycled materials</li> </ul>	<ul style="list-style-type: none"> <li>➤ PIR 2015, 2016, 2017</li> <li>➤ Technical reports</li> <li>➤ Training reports</li> <li>➤ Toolkits and manuals</li> <li>➤ Selection criteria for the technical options</li> <li>➤ Results and data from assessments at demonstration sites</li> <li>➤ Analytical reports</li> <li>➤ Dissemination materials</li> <li>➤ Interviews with project participants and stakeholders</li> </ul>

		<ul style="list-style-type: none"> <li>➤ Monitoring system in place</li> <li>➤ Awareness-raising trainings/brochures</li> </ul>	
Assessment of risks to likelihood of sustainability of results	<p>Financial risks,</p> <p>Sociopolitical risks,</p> <p>Institutional framework and governance risks,</p> <p>Environmental risks.</p>	<ul style="list-style-type: none"> <li>➤ Incentive systems and financial support for integrated waste management systems</li> <li>➤ Government plans</li> <li>➤ Government strategies</li> </ul>	<ul style="list-style-type: none"> <li>➤ Project reports</li> <li>➤ Interviews with major national stakeholders</li> <li>➤ Internet research</li> </ul>
Efficiency at current state of implementation	Has the project been cost effective?	<ul style="list-style-type: none"> <li>➤ Planned outputs produced with respect to budgeted funds</li> <li>➤ Delays in delivery of outputs</li> </ul>	<ul style="list-style-type: none"> <li>➤ Project reports including technical, progress, financial</li> <li>➤ Interviews with NPM, UNIDO</li> </ul>
UNIDO integration	<p>What are UNIDO's inputs in the implementation of the project?</p> <p>To what extent is UNIDO providing planned inputs and are they being provided in a timely manner?</p>	<ul style="list-style-type: none"> <li>➤ Contribution at meetings and workshops (PSC, inception, etc.)</li> <li>➤ Communications with NPM and other national stakeholders</li> <li>➤ Feedback from interviews</li> </ul>	<ul style="list-style-type: none"> <li>➤ Project document</li> <li>➤ Notes of meetings</li> <li>➤ Interviews with NPM, national stakeholders</li> </ul>

## 5.4 TOR



UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION

### TERMS OF REFERENCE

**Independent mid-term evaluation of the UNIDO project:**

***Demonstration of BAT and BEP in open burning activities in response to the Stockholm Convention on POPs***

UNIDO SAP ID: 150033

GEF ID: 5082

**SEPTEMBER 2018**

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## I. Project background and overview

### 1.1.1.1.1.1.1.1.1

#### 1. Project factsheet

<b>Project Title</b>	<b>Demonstration of BAT and BEP in open burning activities in response to the Stockholm Convention on POPs</b>
<b>UNIDO project No. and/or SAP ID</b>	<b>SAP ID: 150033</b>
<b>GEF project ID</b>	<b>5082</b>
<b>Region</b>	<b>Asia and the Pacific</b>
<b>Country(ies)</b>	<b>Cambodia, Lao People's Democratic Republic, Mongolia, Philippines, Vietnam</b>
<b>GEF focal area(s) and operational programme</b>	<b>GEF-5: POPs</b>
<b>GEF implementing agency(ies)</b>	<b>UNIDO</b>
<b>GEF executing partner(s)</b>	<b>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</b>
<b>Project size (FSP, MSP, EA)</b>	<b>FSP</b>
<b>Project CEO endorsement / Approval date</b>	<b>27 January 2015</b>
<b>Project implementation start date (First PAD issuance date)</b>	<b>01 April 2015</b>
<b>Expected implementation end date (indicated in CEO endorsement/Approval document)</b>	<b>31 March 2020</b>
<b>Revised expected implementation end date (if applicable)</b>	
<b>Actual implementation end date</b>	

<b>GEF project grant</b> (excluding PPG, in USD)	<b>7,560,000</b>
<b>GEF PPG</b> (if applicable, in USD)	<b>200,000</b>
<b>UNIDO co-financing</b> (in USD)	<b>106,000 (cash) + 150,000 (in-kind)</b>
<b>Total co-financing at CEO endorsement</b> (in USD)	<b>32,776,434 (cash+in-kind)</b>
<b>Materialized co-financing at project completion</b> (in USD)	
<b>Total project cost</b> (excluding PPG and agency support cost, in USD; i.e., GEF project grant + total co-financing at CEO endorsement)	<b>40,336,434</b>
<b>Mid-term review date</b>	<b>October – December 2018</b>
<b>Planned terminal evaluation date</b>	

(Source: Project document, GEF website, UNIDO website)<sup>8</sup>

## 2. Project background and context

According to Article 5(a) of the Stockholm Convention (SC) on Persistent Organic Pollutants (POPs), each Party to the Convention shall develop an action plan, or a regional or sub-regional plan to reduce the total release of chemicals listed in Annex C, with the goal of continuing the minimization and where feasible, elimination.

	<b>Signature, Succession to Signature (d)</b>	<b>Ratification, Acceptance (A), Approval (AA), Accession (a)</b>	<b>Deadline for transmission of NIP</b>	<b>Date when NIP was transmitted</b>	<b>UNIDO NIP project</b>
Cambodia	23/05/2001	25/08/2006	23/11/2008	3/5/2007	
Lao People's Democratic Republic	5/3/2002	28/06/2006	26/09/2008	11/8/2010	X
Mongolia	17/05/2002	30/04/2004	29/07/2006	8/1/2008	X

<sup>8</sup> Project information data throughout these TOR are to be verified during the inception phase.

Philippines	23/05/2001	27/02/2004	27/05/2006	19/06/2006	
Vietnam	23/05/2001	22/07/2002	17/05/2006	09/11/2007	

Source: Website of the Secretariat of the Stockholm Convention

Most of the developing countries and countries with economies in transition in East and South-East Asia (ESEA) region have completed the development of their NIPs for the Stockholm Convention and a number of issues have emerged as priority threats/root causes and barriers to be addressed.

The introduction of best available techniques (BAT) and best environmental practices (BEP) in the different source categories in Annex C of the Convention is the most important practical measure to continuing minimization of unintentionally-produced POPs (UP-POPs – PCDD/PCDF) releases.

According to the project document, the PCDD/PCDF (Polychlorinated dibenzodioxins and Polychlorinated dibenzofurans inventories of the participating countries revealed that open burning activities sector is accountable for a total of about 3000 g TEQ/year PCDD/PCDF released into the environment, one of the leading sources of UP-POPs. According to the UN Environment toolkit for identification and quantification of dioxin and furan releases, this sector includes – various biomass burning activities (agricultural residue burning, sugarcane burning, forest fires, etc.), waste burning and accidental fires and backyard trash burning. Release reduction from these diffuse sources requires coherent legislative and institutional capacity from the government side and significant investments and technical capacity from the private/public sector.

The open burning sector involves two distinct sub-sectors – waste burning and accidental fires and biomass burning. Participating countries have different baseline situations, mainly depending on their financial, economic and socio-economic status. The disposal of municipal wastes and other types of wastes are usually carried out in open dump sites, in some isolated cases in dedicated landfills.

The project overall objective aims to achieve sustainable release reduction of unintentionally-produced POPs (UP-POPs) in the open burning sector through the introduction of BAT and BEP.

The project is funded through a GEF grant, amounting to USD 7,560,000 (and PPG Grant of USD 200,000), a UNIDO contribution of USD 256,000 (cash and In-kind); and the counterparts' co-financing of USD 32,520,434 (cash and in kind), which amount to total project budget of USD 40,336,434.

Project implementation started in April 2015 and the expected project end date is March 2020.

### **3. Project objective and structure**

Project objective is to achieve sustainable release reduction of unintentionally produced POPs (UP-POPs) in the open burning sector through the introduction of BAT and BEP.

**4 substantive outcomes**, besides Monitoring and evaluation, have been developed to achieve the project objectives:

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

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

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

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

### **4. Project implementation and execution arrangements**

**UNIDO:** is the implementing agency for the project.

#### **National Executing Partners:**

Cambodia: Ministry of Environment

Lao PDR: Ministry of Natural Resources and Environment

Mongolia: Ministry of Environment and Green Development

Philippines: Department of Environment and Natural Resources

Vietnam: Vietnam Environment Administration, Ministry of Natural Resources and Environment

City of Kitakyushu

International Solid Wastes Association

## 6. Budget information

The project is funded through a GEF grant, amounting to USD 7,560,000 (and PPG Grant of USD 200,000), a UNIDO co-financing of USD 256,000 (in-kind); and the counterparts' total co-financing of USD 32,776,434 (cash and in-kind) which amount to total project budget of USD 40,336,434.

Project budget:

Project outcomes	GEF (\$)	Co-Financing (\$)	Total (\$)
1. Strengthened legislative capacity for introducing BAT/BEP in waste open burning source category	500,000	4,200,000	<b>4,700,000</b>
2. Enhanced institutional capacity to carry out BAT/BEP implementation	800,000	4,000,000	<b>4,800,000</b>
3. BAT/BEP implemented in open burning sources	4,700,000	17,576,434	<b>22,276,434</b>
4. Improved knowledge and understanding on BAT/BEP and on risks connected with U-POPS, GHG emissions and other contaminants released through open burning	1,000,000	4,300,000	<b>5,300,000</b>
5. Monitoring and evaluation	200,000	600,000	<b>800,000</b>
Project management	360,000	2,100,000	<b>2,460,000</b>
<b>Total</b>	<b>7,560,000</b>	<b>32,776,434</b>	<b>40,336,434</b>

(Source: CEO endorsement document)

Expected co-financing source breakdown is as follows:

Name of Co-financier (source)	Classification	Type	Project
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<b>Cambodia: Phnom Penh Capital</b>	Government	In-kind	8,000,000
<b>Lao PDR: Ministry of Natural Resources and Environment</b>	Government	Cash	300,000
		In-kind	1,000,000
<b>SAPLAST Vientiane Co Ltd</b>	Private sector	Cash	500,000
		In-kind	800,000
<b>Mongolia: City of Ulaanbaatar</b>	Government	Cash	6,328,800
<b>Philippines: Lapu Lapu City</b>	Government	Cash	7,873,665
<b>General Santos City</b>	Government	Cash	412,510
		In-kind	696,389
<b>Vietnam: Ministry of Natural Resources and Environment</b>	Government	Cash	200,000
		In-kind	5,540,000
<b>GIZ</b>	Bilateral Aid Agency	In-kind	171,740
<b>City of Kitakyushu</b>	Others	In-kind	200,000
<b>COMPED – Cambodia</b>	CSO	In-kind	497,330
<b>UNIDO</b>	GEF Agency	Cash	106,000
		In-kind	150,000
<b>Total Co-Financing</b>			<b>32,776,434</b>

(Source: CEO endorsement document)

### II. Scope and purpose of the evaluation

The independent mid-term evaluation (MTE) will cover the whole duration of the project from its commencement in April 2015 till September 2018 and assess the likelihood of the project achieving its intended outcomes and impacts, including their likelihood of sustainability. It will analyse project performance to date against the evaluation criteria: relevance, effectiveness, efficiency, likelihood of sustainability and impact.

The MTE should provide an analysis of the likelihood of attainment of the project objective(s) and the technical components or outputs. Through its assessments, the evaluation should enable the Government, counterparts, the GEF, UNIDO and other stakeholders and donors to:

- (a) Provide evidence of **results to date** and of the likelihood of outcomes and impact in the future. The assessment includes re-examination of the relevance of the objectives and other elements of project design according to the project review parameters defined in chapter V.
- (b) Identify the challenges and risks to achievement of the project objectives and to derive improving actions needed for the project to achieve maximum impact and sustainability.
- (c) Enhance project relevance, effectiveness, efficiency and sustainability by proposing a set of recommendations and/or corrective actions with a view to ongoing and future activities until the end of project implementation.

### III. Evaluation approach and methodology

The mid-term evaluation will be conducted in accordance with the UNIDO Evaluation Policy<sup>9</sup>, the UNIDO Guidelines for the Technical Cooperation Programme and Project Cycle<sup>10</sup>, the GEF Monitoring and Evaluation Policy<sup>11</sup> and the GEF Minimum Fiduciary Standards for GEF Implementing and Executing Agencies<sup>12</sup>.

It will be carried out as an independent in-depth evaluation using a participatory approach whereby all key parties associated with the project are kept informed and regularly consulted throughout the evaluation. The evaluation team will liaise with the UNIDO project manager (PM) on the conduct of the evaluation and methodological issues.

The evaluation team will be required to use different methods to ensure that data gathering and analysis deliver evidence-based qualitative and quantitative information, based on diverse sources, as necessary: desk studies and literature review, statistical analysis, individual interviews, focus group meetings, surveys and direct observation. This approach will not only enable the evaluation to assess causality through quantitative means but also to provide reasons for why certain results were achieved or not and to triangulate information for higher reliability of findings. The specific mixed methodological approach will be described in the inception report.

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<sup>9</sup> UNIDO. (2015). Director General's Bulletin: Evaluation Policy (UNIDO/DGB/(M).98/Rev.1)

<sup>10</sup> UNIDO. (2006). Director-General's Administrative Instruction No. 17/Rev.1: Guidelines for the Technical Cooperation Programme and Project Cycle (DGAI.17/Rev.1, 24 August 2006)

<sup>11</sup> GEF. (2010) The GEF Monitoring and Evaluation Policy (Evaluation Office, November 2010)

<sup>12</sup> GEF. (2011). GEF Minimum Fiduciary Standards: Separation of Implementation and Execution Functions in GEF Partner Agencies (GEF/C.41/06/Rev.01, 3 November 2011, prepared by the Trustee)

The evaluation team will develop interview guidelines. Field interviews can take place either in the form of focus-group discussions or one-to-one consultations.

The methodology will be based on the following:

1. A desk review of project documents, including, but not limited to:
  - (a) The original project document, monitoring reports (such as progress and financial reports to UNIDO and UNIDO-GEF annual Project Implementation Reports (PIRs)), mid-term review report, output reports (case studies, action plans, sub-regional strategies, etc.), back-to-office mission report(s), end-of-contract report(s) and relevant correspondence.
  - (b) If applicable, notes from the meetings of committees involved in the project (e.g. approval and steering committees).
  - (c) Other project-related material produced by the project.
2. The evaluation team will use available models of (or reconstruct if necessary) theory of change for the different types of intervention (enabling, capacity, investment, demonstration). The validity of the theory of change will be examined through specific questions in interviews and possibly through a survey of stakeholders.
3. Counterfactual information: In those cases where baseline information for relevant indicators is not available, the evaluation team will aim at establishing a proxy-baseline through recall and secondary information.
4. Interviews with project management and technical support including staff and management at UNIDO HQ and in the field and – if necessary - staff associated with the project's financial administration and procurement.
5. Interviews with project partners and stakeholders, including, among others, government counterparts, GEF OFP, project stakeholders, and co-financing partners as shown in the corresponding sections of the project documents.
6. On-site observation of results achieved in **at least 2 selected participating countries**, including interviews of actual and potential beneficiaries of improved technologies. Selection of the participating countries to be done in agreement with the UNIDO PM and is to be specified in the inception report.
7. Interviews and telephone interviews with intended users for the project outputs and other stakeholders involved in the project. The evaluation team shall determine whether to seek additional information and opinions from representatives of any donor agency(ies) or other organizations.
8. Interviews with the relevant UNIDO Field Offices in the 5 participating countries, to the extent that they were involved in the project, and the project's management members and the various national and sub-regional authorities dealing with project activities as necessary. If deemed necessary, the evaluation team shall also gain broader perspectives from discussions with relevant GEF Secretariat staff.
9. Other interviews, surveys or document reviews as deemed necessary by the evaluation team and/or UNIDO PM.
10. The inception report will provide details on the methodology used by the evaluation team and include an evaluation matrix.

#### IV. Evaluation team composition

The evaluation team will be composed of one international evaluation consultant acting as the team leader, and maybe accompanied by one international technical expert. The consultants will be contracted by UNIDO. The tasks of each consultant are specified in the job descriptions annexed to these terms of reference.

The evaluation is required to provide information relevant for follow-up studies, including mid-term evaluation verification on request to the GEF partnership up to three years after completion of the mid-term evaluation.

Members of the evaluation team must not have been directly involved in the design and/or implementation of the projects/programme under evaluation.

The UNIDO project manager and the project teams in the participating countries will support the evaluation team. GEF OFP will, where applicable and feasible, also be briefed and debriefed at the start and end of the evaluation mission.

#### V. Time schedule and deliverables

The evaluation is scheduled to take place from 1 October – 31 December 2018. The evaluation mission is planned for October 2018. At the end of the field mission, there will be a presentation of the preliminary findings for all stakeholders involved in this project/programme.

After the evaluation mission, the evaluation team will come to UNIDO HQ for debriefing and presentation of the preliminary findings of the mid-term evaluation. This can however, also be done online via any web-conference tool. The draft MTE report will be submitted 4 to 6 weeks after the end of the mission. The draft MTE report is to be shared with the UNIDO PM, and other relevant stakeholders for receipt of comments. The evaluation team is expected to revise the draft MTE report based on the comments received, edit the language and form and submit the final version of the MTE report in accordance with UNIDO standards.

#### VI. Project evaluation parameters

##### 6.

The evaluation team will rate the projects. The **ratings for the parameters described in the following sub-chapters A to J will be presented in the form of a table** with each of the categories rated separately and with **brief justifications for the rating** based on the findings of the main analysis. An overall rating for the project should also be given.

## **A. Project design**

Project design quality assessment criteria derive from the logical framework approach (LFA) methodology, leading to the establishment of LogFrame Matrix (LFM) and the main elements of the project, i.e. overall objective, outcomes, outputs, to defining their causal relationship, as well as indicators, their means of verification and the assumptions.

The evaluation will examine the extent to which:

- The project's design is adequate to address the problems at hand;
- The project has a clear thematically focused development objective, the attainment of which can be determined by a set of verifiable indicators;
- The project was formulated based on the logical framework (project results framework) approach, including realistic risks;
- Was there a need to reformulate the project design and the project results framework given changes in the country and operational context?
- All GEF-5 projects have incorporated relevant environmental and social risk considerations into the project design, established at the time of project design.

## **B. Implementation Performance at current stage of implementation**

### **a) Relevance and ownership**

The evaluation will examine the extent to which the project is relevant to the:

- National development and environmental priorities and strategies of the Government and the population, and regional and international agreements. See possible evaluation questions under "Country ownership/drivenness" below.
- Target groups: relevance of the project's objectives, outcomes and outputs to the different target groups of the interventions (e.g. companies, civil society, beneficiaries of capacity building and training, etc.).
- GEF's focal areas/operational programme strategies: In retrospect, were the project's outcomes consistent with the GEF focal area(s)/operational program strategies? Ascertain the likely nature and significance of the contribution of the project outcomes to the wider portfolio of POPs.
- Does the project remain relevant taking into account the changing environment?

### **b) Effectiveness at current stage of implementation**

- The evaluation will assess the objectives and results achieved to date

- The evaluation will assess to what extent results at various levels, including outcomes, if any at this current stage of implementation, have been achieved. In detail, the following issues will be assessed: To what extent have the expected outputs, and outcomes, if any been achieved or are likely to be achieved? Has the project generated any results that could lead to changes of the assisted institutions? Have there been any unplanned effects?
- Are the project outcome, if any to date, commensurate with the original or modified project objectives? If the original or modified expected results are merely outputs/inputs, the evaluators should assess if there were any real outcomes of the project to date, and, if there were, determine whether these are commensurate with realistic expectations from the project
- How do the stakeholders perceive the quality of outputs? Are the targeted beneficiary groups actually being reached?
- What outputs and outcomes has the project achieved so far (both qualitative and quantitative results)? Has the project generated any results that could lead to changes of the assisted institutions? Have there been any positive or negative unplanned effects?
- Identify actual and/or the likelihood of potential longer-term impacts or at least indicate the steps taken to assess these (see also below “monitoring of long term changes”). Wherever possible, evaluators should indicate how findings on impacts will be reported in future.
- Which technologies have / are being selected for the participating countries? Which alternative technologies should/could have been considered / can be considered?

### **c) Efficiency at current stage of implementation**

The extent to which:

- The project cost is effective? Is the project using the most cost-efficient options?
- Has the project produced results (outputs and outcomes) within the expected time frame? Was project implementation delayed, and, if it was, did that affect cost effectiveness or results? Wherever possible, the evaluator should also compare the costs incurred and the time taken to achieve outcomes with that for similar projects. Are the project's activities in line with the schedule of activities as defined by the project team and annual work plans? Are the disbursements and project expenditures in line with budgets?
- Have the inputs from the donor, UNIDO and Government/counterpart been provided as planned, and were they adequate to meet the requirements? Was the quality of UNIDO inputs and services as planned and timely?
- Was there coordination with other UNIDO and other donors' projects, and did possible synergy effects happen?
- Are there delays in project implementation and if so, what were their causes?
- To what extent, in percentage, would the UP-POPs emissions be reduced with the selected technology at the demonstration sites?

### **d) Assessment of risks to likelihood of sustainability of project outcomes**

Sustainability is understood as the likelihood of continued benefits after the GEF project ends. Assessment of sustainability of outcomes will be given special attention but also technical, financial and organization sustainability will be reviewed. This assessment should explain how the risks to project outcomes will affect continuation of benefits after the GEF project ends. It will include both exogenous and endogenous risks. The following four dimensions or aspects of risks to sustainability will be addressed:

- **Financial risks.** Are there any financial risks that may jeopardize sustainability of project outcomes? What is the likelihood of financial and economic resources not being available once GEF assistance ends? (Such resources can be from multiple sources, such as the public and private sectors or income-generating activities; these can also include trends that indicate the likelihood that, in future, there will be adequate financial resources for sustaining project outcomes.) Was the project successful in identifying and leveraging co-financing?
- **Sociopolitical risks.** Are there any social or political risks that may jeopardize sustainability of project outcomes? What is the risk that the level of stakeholder ownership (including ownership by governments and other key stakeholders) will be insufficient to allow for the project outcomes/benefits to be sustained? Do the various key stakeholders see that it is in their interest that project benefits continue to flow? Is there sufficient public/stakeholder awareness in support of the project's long-term objectives?
- **Institutional framework and governance risks.** Do the legal frameworks, policies, and governance structures and processes within which the project operates pose risks that may jeopardize sustainability of project benefits? Are requisite systems for accountability and transparency and required technical know-how in place?
- **Environmental risks.** Are there any environmental risks that may jeopardize sustainability of project outcomes? Are there any environmental factors, positive or negative, that can influence the future flow of project benefits? Are there any project outputs or higher level results that are likely to have adverse environmental impacts, which, in turn, might affect sustainability of project benefits? The evaluation should assess whether certain activities will pose a threat to the sustainability of the project outcomes.

### C. Assessment of monitoring and evaluation (M&E) systems

- **M&E design.** Did the project have an M&E plan to monitor results and track progress towards achieving project objectives? The evaluation will assess whether the project met the minimum requirements for the application of the Project M&E plan (see annex 3).
- **M&E plan implementation.** The evaluation should verify that an M&E system was in place and facilitated timely tracking of progress toward project objectives by collecting information on chosen indicators continually throughout the project implementation period; annual project reports were complete and accurate, with well-justified ratings; the information provided by the M&E system was used during the project to improve performance and to adapt to changing needs; and the project had an M&E system in place with proper training for parties responsible for M&E activities to ensure that data will continue to be collected and used after project closure. Was monitoring and self-evaluation carried out effectively, based on indicators for outputs, outcomes and impacts? Are there any annual work plans? Was any steering or advisory mechanism put in place? Did reporting and performance reviews take place regularly?
- **Budgeting and Funding for M&E activities.** In addition to incorporating information on funding for M&E while assessing M&E design, the evaluators will determine whether M&E was sufficiently budgeted for at the project planning stage and whether M&E was adequately funded and in a timely manner during implementation.

### D. Monitoring of long-term changes

The M&E of long-term changes is often incorporated in GEF-supported projects as a separate component and may include determination of environmental baselines; specification of indicators; and provisioning of equipment and capacity building for data gathering, analysis, and use. This section of the evaluation report will describe project actions and accomplishments towards establishing a long-term monitoring system. The evaluation will address the following questions:

- a. Did the project contribute to the establishment of a long-term monitoring system? If it did not, should the project have included such a component?
- b. What were the accomplishments and shortcomings in establishment of this system?
- c. Is the system sustainable — that is, is it embedded in a proper institutional structure and does it have financing? How likely is it that this system continues operating upon project completion?
- d. Is the information generated by this system being used as originally intended?

## **E. Project coordination and management**

The extent to which:

- The national management and overall coordination mechanisms have been efficient and effective? Did each partner have assigned roles and responsibilities from the beginning? Did each partner fulfill its role and responsibilities (e.g. providing strategic support, monitoring and reviewing performance, allocating funds, providing technical support, following up agreed/corrective actions)?
- The UNIDO HQ-based management, coordination, monitoring, quality control and technical inputs have been efficient, timely and effective (e.g. problems identified timely and accurately; quality support provided timely and effectively; right staffing levels, continuity, skill mix and frequency of field visits)?

## **F. Assessment of gender mainstreaming**

The evaluation will consider, but need not be limited to, the following issues that may have affected gender mainstreaming in the project:

- Did the project/programme design adequately consider the gender dimensions in its interventions? If so, how?
- Was a gender analysis included in a baseline study or needs assessment (if any)?
- How gender-balanced was the composition of the project management team, the Steering Committee, experts and consultants and the beneficiaries?
- Have women and men benefited equally from the project's interventions? Do the results affect women and men differently? If so, why and how? How are the results likely to affect gender relations (e.g., division of labour, decision-making authority)?
- Are women/gender-focused groups, associations or gender units in partner organizations consulted/included in the project?
- To what extent were socioeconomic benefits delivered by the project at the national and local levels, including consideration of gender dimensions?

## **VII. Reporting**

### **Inception report**

These terms of reference (TOR) provide some information on the evaluation methodology, but this should not be regarded as exhaustive. After reviewing the project documentation and initial interviews with the project manager, the evaluation team will prepare a short inception report that will operationalize the TOR relating to the evaluation questions and provide information on what type of and how the evidence will be collected (methodology). It will be discussed with and approved by the responsible in the UNIDO Office for Independent Evaluation.

The inception report will focus on the following elements: preliminary project theory model(s); elaboration of evaluation methodology including quantitative and qualitative approaches through an evaluation framework (“evaluation matrix”); division of work between the international evaluation consultants; mission plan, including places to be visited, people to be interviewed and possible surveys to be conducted and a debriefing and reporting timetable<sup>13</sup>.

### **Evaluation report format and review procedures**

The draft report will be delivered to UNIDO Independent Evaluation Division (the suggested report outline is in annex 1) and circulated to UNIDO staff, the GEF OFP, and national stakeholders associated with the project for factual validation and comments. Any comments or responses, or feedback on any errors of fact to the draft report provided by the stakeholders will be sent to UNIDO PM, for collation and onward transmission to the project evaluation team who will be advised of any necessary revisions. On the basis of this feedback, and taking into consideration the comments received, the evaluation team will prepare the final version of the terminal evaluation report.

A presentation of preliminary findings will take place at UNIDO HQ after the field mission. This can also be done via Skype or any other web-based tele-conferencing tool, as deemed appropriate.

Findings, conclusions and recommendations should be presented in a complete, logical and balanced manner. The evaluation report shall be written in English and follow the outline given in annex 1.

### **Evaluation work plan**

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<sup>13</sup> The evaluator will be provided with a Guide on how to prepare an evaluation inception report prepared by the UNIDO Office for Independent Evaluation.

The “Evaluation Work Plan” includes the following main products:

1. Desk review, briefing by project manager and development of methodology: Following the receipt of all relevant documents, and consultation with the Project Manager about the documentation, including reaching an agreement on the methodology, the desk review could be completed.
2. Inception report: At the time of departure to the field mission, all the received material has been reviewed and consolidated into the Inception report.
3. Field mission: The principal responsibility for managing this evaluation lies with UNIDO. It will be responsible for liaising with the project team to set up the stakeholder interviews, arrange the field missions, coordinate with the Government. At the end of the field mission, there will be a presentation of preliminary findings to the key stakeholders in the country where the project was implemented.
4. Preliminary findings from the field mission: Following the field mission, the main findings, conclusions and recommendations would be prepared and presented in the field and at UNIDO Headquarters.
5. A draft mid-term evaluation report will be forwarded electronically to the UNIDO Independent Evaluation Division and circulated to main stakeholders.
6. Final mid-term evaluation report will incorporate comments received.

<b>Evaluation phases</b>	<b>Deliverables</b>
Desk review	Development of methodology approach and evaluation tools
Briefing with UNIDO Independent Evaluation Division, Project Managers and other key stakeholder at HQ	Interview notes, detailed evaluation schedule and list of stakeholders to interview during field mission
Data analysis	Inception evaluation report
Field mission Present preliminary findings and recommendations to key stakeholders in the field	Presentation of main findings to key stakeholders in the field.

Debriefing at UNIDO HQ	Present preliminary findings and recommendations to the stakeholders at UNIDO HQ Additional interviews and analysis
Analysis of the data collected	Draft mid-term evaluation report
Circulation of the draft report to UNIDO/relevant stakeholders and revision	Final mid-term evaluation report

## 7.

### 7.1

## 7.2 Annex 1 - Outline of an in-depth project evaluation report

### 1.1.1.1.1.1.2 Executive summary

- Must provide a synopsis of the storyline which includes the main evaluation findings and recommendations
- Must present strengths and weaknesses of the project
- Must be self-explanatory and should be maximum 3-4 pages in length

### I. Evaluation objectives, methodology and process

- Information on the evaluation: why, when, by whom, etc.
- Scope and objectives of the evaluation, main questions to be addressed
- Information sources and availability of information
- Methodological remarks, limitations encountered and validity of the findings

### 1.1.1.1.1.1.3

### II. Country and project background

- Brief country context: an overview of the economy, the environment, institutional development, demographic and other data of relevance to the project
- Sector-specific issues of concern to the project<sup>14</sup> and important developments during the project implementation period
- Project summary:
  - Fact sheet of the project: including project objectives and structure, donors and counterparts, project timing and duration, project costs and co-financing
  - Brief description including history and previous cooperation
  - Project implementation arrangements and implementation modalities, institutions involved, major changes to project implementation
  - Positioning of the UNIDO project (other initiatives of Government, other donors, private sector, etc.)
  - Counterpart organization(s)

### III. Project assessment

This is the key chapter of the report and should address all evaluation criteria and questions outlined in the TOR (see section VI - Project evaluation parameters). Assessment must be based on factual evidence collected and analyzed from different sources. The evaluators' assessment can be broken into the following sections:

- A. Project design
- B. Implementation performance
  - a. Relevance and ownership (report on the relevance of project towards countries and beneficiaries)
  - b. Effectiveness (the extent to which the development intervention's objectives and deliverables were achieved, or are expected to be achieved, taking into account their relative importance)
  - c. Efficiency (report on the overall cost-benefit of the project and partner countries' contribution to the achievement of project objectives)

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<sup>14</sup> Explicit and implicit assumptions in the logical framework of the project can provide insights into key-issues of concern (e.g., relevant legislation, enforcement capacities, government initiatives)

- d. Likelihood of sustainability of project outcomes (report on the risks and vulnerability of the project, considering the likely effects of sociopolitical and institutional changes in partner countries, and its impact on continuation of benefits after the GEF project ends, specifically the financial, sociopolitical, institutional framework and governance, and environmental risks)
  - e. Project coordination and management (Report on the project management conditions and achievements, and partner countries' commitment)
  - f. Assessment of monitoring and evaluation systems (report on M&E design, M&E plan implementation, and budgeting and funding for M&E activities)
  - g. Monitoring of long-term changes
- C. Gender mainstreaming

#### **IV. Conclusions, recommendations and lessons learned**

This chapter can be divided into three sections:

##### **A. Conclusions**

This section should include a storyline of the main evaluation conclusions related to the project's achievements and shortfalls. It is important to avoid providing a summary based on each and every evaluation criterion. The main conclusions should be cross-referenced to relevant sections of the evaluation report.

##### **B. Recommendations**

This section should be succinct and contain few key recommendations. They should be:

- Based on evaluation findings
- Realistic and feasible within a project context
- Indicating institution(s) responsible for implementation (addressed to a specific officer, group or entity who can act on it) and have a proposed timeline for implementation if possible
- Commensurate with the available capacities of project team and partners
- Taking resource requirements into account.

Recommendations should be structured by addressees:

- UNIDO
- Government and/or counterpart organizations
- Donor

##### **C. Lessons learned**

- Lessons learned must be of wider applicability beyond the evaluated project but must be based on findings and conclusions of the evaluation
- For each lesson, the context from which they are derived should be briefly stated

**Annexes** should include the evaluation TOR, list of interviewees, documents reviewed, a summary of project identification and financial data, including an updated table of expenditures to date, and other detailed quantitative information. Dissident views or management responses to the evaluation findings may later be appended in an annex.

### 7.3 Annex 2 - GEF Minimum requirements for M&E<sup>15</sup>

#### **Minimum requirement 1: Project design of M&E**

All projects will include a concrete and fully budgeted M&E plan by the time of work program entry for full-sized projects (FSP) and CEO approval for medium-sized projects (MSP). This M&E plan will contain as a minimum:

- SMART indicators for project implementation, or, if no indicators are identified, an alternative plan for monitoring that will deliver reliable and valid information to management;
- SMART indicators for results (outcomes and, if applicable, impacts), and, where appropriate, indicators identified at the corporate level;
- Baseline for the project, with a description of the problem to be addressed, with indicator data, or, if major baseline indicators are not identified, an alternative plan for addressing this within one year of implementation;
- Identification of reviews and evaluations that will be undertaken, such as mid-term reviews or evaluations of activities; and
- Organizational set-up and budgets for monitoring and evaluation.

#### **Minimum requirement 2: Application of project M&E**

Project monitoring and supervision will include implementation of the M&E plan, comprising:

- SMART indicators for implementation are actively used, or if not, a reasonable explanation is provided;
- SMART indicators for results are actively used, or if not, a reasonable explanation is provided;

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<sup>15</sup> [http://www.thegef.org/gef/sites/thegef.org/files/documents/ME\\_Policy\\_2010.pdf](http://www.thegef.org/gef/sites/thegef.org/files/documents/ME_Policy_2010.pdf)

- The baseline for the project is fully established and data compiled to review progress reviews, and evaluations are undertaken as planned; and
- The organizational set-up for M&E is operational and budgets are spent as planned.

## 7.4 Annex 3 – Required project identification and financial data

The evaluation report should provide information on project identification, time frame, actual expenditures, and co-financing in the following format, which is modeled after the project identification form (PIF).

### I. Dates

Milestone	Expected date	Actual date
Project CEO endorsement/approval date		
Project implementation start date (PAD issuance date)		
Original expected implementation end date (indicated in CEO endorsement/approval document)		
Revised expected implementation end date (if any)		
Terminal evaluation completion		
Planned tracking tool date		

### II. Project framework

Project component	Activity type	GEF financing (in USD)		Co-financing (in USD)	
		Approved	Actual	Promised	Actual
1.					
2.					
3.					
4.					
5.					

6. Project management					
<b>Total (in USD)</b>					

Activity types are:

- a) Experts, researches hired
- b) technical assistance, Workshop, Meetings or experts consultation scientific and technical analysis, experts researches hired
- c) Promised co-financing refers to the amount indicated on endorsement/approval.

Annexes

**III. Co-financing**

Source of co-financing (name of specific co-financiers)	Type of co-financier (e.g. government, GEF agency(ies), Bilateral and aid agency (ies), multilateral agency(ies), private sector, NGO/CSOs, other)	Type of co-financing	Project preparation – CEO endorsement/ approval stage (in USD)		Project implementation stage (in USD)		Total (in USD)	
			Expected	Actual	Expected	Actual	Expected	Actual
	...							
<b>Total co-financing</b> (in USD)								

Expected amounts are those submitted by the GEF agencies in the original project appraisal document. Co-financing types are grant, soft loan, hard loan, guarantee, in kind, or cash.

## Annex 4 – Job descriptions



## UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION

## TERMS OF REFERENCE FOR PERSONNEL UNDER INDIVIDUAL SERVICE AGREEMENT (ISA)

<b>Title:</b>	International evaluation consultant, team leader
<b>Main Duty Station and Location:</b>	Home-based
<b>Missions:</b>	Mission to Vietnam, Philippines
<b>Start of Contract (EOD):</b>	01 October 2018
<b>End of Contract (COB):</b>	31 December 2018
<b>Number of Working Days:</b>	30 working days till 31 December 2018

## 1. PROJECT CONTEXT

Project objective is to achieve sustainable release reduction of unintentionally produced POPs (UP-POPs) in the open burning sector through the introduction of BAT and BEP.

4 substantive outcomes, besides Monitoring and evaluation, have been developed to achieve the project objectives:

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

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

Outcome 3: BAT/BEP implemented in open burning sources

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

Detailed background information of the project can be found the terms of reference (TOR) for the mid-term evaluation.

## 2. DUTIES AND RESPONSIBILITIES

MAIN DUTIES	Concrete/ Measurable Outputs to be achieved	Working Days	Location
<p>1. Review project documentation and relevant country background information (national policies and strategies, UN strategies and general economic data); determine key data to collect in the field and adjust the key data collection instrument of 3A accordingly (if needed);</p> <p>Assess the adequacy of legislative and regulatory framework relevant to the project's activities and analyze other background info.</p>	<ul style="list-style-type: none"> <li>• Adjust table of evaluation questions, depending on country specific context;</li> <li>• Draft list of stakeholders to interview during the field missions;</li> <li>• Brief assessment of the adequacy of the country's legislative and regulatory framework.</li> </ul>	5 days	Home-based
<p>2. Briefing with the UNIDO project manager and other key stakeholders at UNIDO HQ. (This may be handled through email and skype conferences, depending on final costs)</p> <p>Preparation of the Inception Report</p>	<ul style="list-style-type: none"> <li>• Detailed evaluation schedule with tentative mission agenda (incl. list of stakeholders to interview and site visits); mission planning;</li> <li>• Division of evaluation tasks with the Technical Expert.</li> <li>• Inception Report</li> </ul>	4 days	Home-based
<p>3. Conduct field mission<sup>16</sup> to Vietnam and Philippines in October 2018.</p>	<ul style="list-style-type: none"> <li>• Conduct meetings with relevant project stakeholders, beneficiaries, the GEF Operational Focal Point (OFP), etc. for the collection of data and clarifications;</li> <li>• Agreement with the Technical Expert on the structure and content of the evaluation report and the distribution of writing tasks;</li> <li>• Evaluation presentation of the evaluation's initial findings prepared, draft conclusions and recommendations to</li> </ul>	3 days Vietnam; 3 days Philippines.	Vietnam, Philippines

<sup>16</sup> The exact mission dates will be decided in agreement with the Consultant, UNIDO HQ, and the country counterparts.

MAIN DUTIES	Concrete/ Measurable Outputs to be achieved	Working Days	Location
	stakeholders in the country, including the GEF OFP, at the end of the mission.		
4. Present overall findings and recommendations to the stakeholders at UNIDO HQ via Skype/teleconference	<ul style="list-style-type: none"> <li>After field mission(s): Presentation slides, feedback from stakeholders obtained and discussed</li> </ul>	1 days	Home-based
5. Prepare the evaluation report, together with the Technical Expert, according to the TOR; Coordinate the inputs from the Technical Expert and combine with her/his own inputs into the draft evaluation report. Share the evaluation report with UNIDO HQ and national stakeholders for feedback and comments.	<ul style="list-style-type: none"> <li>Draft evaluation report.</li> </ul>	10 days	Home-based
6. Revise the draft project evaluation report based on comments from UNIDO PM and stakeholders and edit the language and form of the final version according to UNIDO standards.	<ul style="list-style-type: none"> <li>Final evaluation report.</li> </ul>	4 days	Home-based
	<b>TOTAL</b>	<b>30</b>	

#### 1.1.1.1.2 MINIMUM ORGANIZATIONAL REQUIREMENTS

##### Education:

Advanced degree in environment, energy, engineering, development studies or related areas

##### Technical and functional experience:

- Minimum of 5 years' experience in environmental/energy project management and/or evaluation (of development projects)
- Knowledge about GEF operational programs and strategies and about relevant GEF policies such as those on project life cycle, M&E, incremental costs, and fiduciary standards
- Experience in the evaluation of GEF projects and knowledge of UNIDO activities an asset
- Knowledge about multilateral technical cooperation and the UN, international development priorities and frameworks
- Working experience in developing countries

**Languages:**

Fluency in written and spoken English is required.

**Reporting and deliverables**

- Presentation of initial findings at the end of the country mission(s) to key national stakeholders;
- Presentation and discussion of preliminary findings at UNIDO HQ
- Draft report;
- Final report

All reports and related documents must be in English and presented in electronic format.

**Absence of conflict of interest:**

According to UNIDO rules, the consultant must not have been involved in the design and/or implementation, supervision and coordination of and/or have benefited from the programme/project (or theme) under evaluation. The consultant will be requested to sign a declaration that none of the above situations exists and that the consultants will not seek assignments with the manager/s in charge of the project before the completion of her/his contract with the UNIDO Independent Evaluation Division.



## UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION

### TERMS OF REFERENCE FOR PERSONNEL UNDER INDIVIDUAL SERVICE AGREEMENT (ISA)

<b>Title:</b>	International technical expert
<b>Main Duty Station and Location:</b>	Home-based
<b>Missions:</b>	Missions to Vietnam and Philippines
<b>Start of Contract (EOD):</b>	01 October 2018
<b>End of Contract (COB):</b>	31 December 2018
<b>Number of Working Days:</b>	15 working days till 31 December 2018

#### PROJECT CONTEXT

Project objective is to achieve sustainable release reduction of unintentionally produced POPs (UP-POPs) in the open burning sector through the introduction of BAT and BEP.

4 substantive outcomes, besides Monitoring and evaluation, have been developed to achieve the project objectives:

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

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

Outcome 3: BAT/BEP implemented in open burning sources

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

Detailed background information of the project can be found the terms of reference (TOR) for the mid-term evaluation.

## DUTIES AND RESPONSIBILITIES

The international technical expert will contribute to the evaluation according to the terms of reference (TOR) together with the team leader (international evaluation consultant). S/he will perform the following tasks:

MAIN DUTIES	Concrete/ Measurable Outputs to be achieved	Working Days	Location
<p>Review and analyse project documentation.</p> <p>Research on available BAT to reduce UP-POPs releases at the demonstration sites.</p> <p>Research on alternatives.</p> <p>Assess the adequacy of legislative and regulatory framework relevant to the project's activities and analyze other background info.</p>	<ul style="list-style-type: none"> <li>List of available Alternatives and evaluation questions based on them</li> <li>Inputs to the inception report</li> <li>Coordination with the team leader</li> </ul>	2 days	Home-based
<p>Coordinate and conduct the field mission with the team leader in cooperation with the PMU, where required.</p> <p>Consult with the team leader on the structure and content of the evaluation report and inputs to the evaluation report.</p>	<p>Together with the team leader:</p> <ul style="list-style-type: none"> <li>Conduct meetings with relevant project stakeholders, beneficiaries, the GEF Operational Focal Point (OFP), etc. for the collection of data and clarifications;</li> <li>Presentation of the evaluation's initial findings prepared, draft conclusions and recommendations to stakeholders in the country at the end of the mission.</li> </ul>	3 Vietnam, 3 days Philippines	Vietnam, Philippines
<p>5. Prepare inputs and analysis to the evaluation report according to the TOR and as agreed with the team leader.</p>	<p>Inputs to the ETL on:</p> <ul style="list-style-type: none"> <li>Draft evaluation report.</li> </ul>	8 days	Home-based
<p>6. Revise the draft project evaluation report, together with the team leader,</p>	<p>Inputs to the ETL on:</p> <ul style="list-style-type: none"> <li>Final evaluation report.</li> </ul>	2 days	Home-based

MAIN DUTIES	Concrete/ Measurable Outputs to be achieved	Working Days	Location
based on comments from UNIDO PM and stakeholders.			
	<b>TOTAL</b>	<b>15</b>	

### 1.1.1.1.3 MINIMUM ORGANIZATIONAL REQUIREMENTS

#### Education:

Advanced degree in environment, energy, engineering or related areas.

#### Technical and functional experience:

- Minimum of 10 years' experience in environmental/energy projects and specifically knowledge and experience in BAT/BEP/UP-POPs
- Knowledge about GEF operational programs and strategies and about relevant GEF policies
- Knowledge of UNIDO activities an asset
- Knowledge about multilateral technical cooperation and the UN, international development priorities and frameworks
- Working experience in developing countries

#### Languages:

Fluency in written and spoken English is required.

#### Absence of conflict of interest:

According to UNIDO rules, the consultant must not have been involved in the design and/or implementation, supervision and coordination of and/or have benefited from the programme/project (or theme) under evaluation. The consultant will be requested to sign a declaration that none of the above situations exists and that the consultants will not seek assignments with the manager/s in charge of the project before the completion of her/his contract with the UNIDO Independent Evaluation Division.

## 7.5 Annex 4 – Project results framework

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

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

<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-POP<sub>s</sub> release inventory.</p> <p>Number of laboratories and technicians/researcher (male/female) in the region trained in conducting monitoring and analyses of U-POP<sub>s</sub>.</p>	<p>Currently only few regional laboratories (Vietnam, Thailand, Philippines) have the capability to carry out full monitoring of U-POP<sub>s</sub>.</p> <p>U-POP inventory update is often based on different calculation methods.</p>	<p>Standardized methodologies adopted for the continuous update of U-POP<sub>s</sub> release inventory.</p> <p>Capacity of at least 3 main laboratories in the region strengthened to enable U-POP<sub>s</sub> analyses/monitoring.</p> <p>2-3 technicians trained for U-POP<sub>s</sub> analyses/monitoring in at least 3 laboratories. At least 1 researcher per country trained in evaluating and reporting on UP-POP<sub>s</sub> data</p> <p>At least 1 institution identified in the region to carry out trainings on U-POP<sub>s</sub> monitoring.</p>	<p>Certificates obtained for U-POP<sub>s</sub> 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>

<p><b>OUTCOME 3: BAT/BEP IMPLEMENTED IN OPEN BURNING SOURCES</b></p>	<p>Quantity of U-POP<sub>s</sub> and other relevant contaminants reduced at the demonstration sites.</p> <p>Quantity of CO<sub>2</sub> 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/BEP<sub>s</sub>, 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 CO<sub>2</sub> emissions, climate change mitigation/adaptation possibilities/needs has never been conducted at the sites.</p>	<p>At least 90% U-POP<sub>s</sub> reduction due to BAT/BEP implementation and proper waste segregation/ recycling at the demonstration sites.</p> <p>At least 20% CO<sub>2</sub> 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-POP<sub>s</sub> 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><b>Output 3.1: Updated comprehensive assessment of the effects of current practices and impact indicators at the selected demonstration sites.</b></p>	<p>Number of U-POP<sub>s</sub> analysis undertaken</p> <p>Quantity of CO<sub>2</sub> 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-POP<sub>s</sub> and related contaminants at each demonstration site aimed to assess the effects of current practices.</p> <p>At least 20% CO<sub>2</sub> 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>

<p><b>Output 3.2:</b> 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% CO<sub>2</sub> 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><b>OUTCOME 4:</b> 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 value-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>

	courses that includes U-POPs/open burning topics				
<b>Output 4.1:</b> Awareness raising campaigns aimed to emphasize health and environment hazards of open burning practices, carried out on targeted relevant stakeholders.	<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>
<b>Output 4.2:</b> Educational programs aimed at introducing and promoting alternatives to open burning practices, carried out on targeted groups at several levels.	<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/BEP 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>