



PROJECT IDENTIFICATION FORM (PIF)¹

PROJECT TYPE: Full-sized Project

TYPE OF TRUST FUND: GEF Trust Fund

PART I: PROJECT IDENTIFICATION

Project Title:	Reducing Releases of PBDEs and UOPs originating from unsound waste management and recycling practices and the manufacturing of plastics in Indonesia		
Country(ies):	INDONESIA	GEF Project ID: ²	5052
GEF Agency(ies):	UNDP (select) (select)	GEF Agency Project ID:	5073
Other Executing Partner(s):	Ministry of Industry	Submission Date:	1 August 2012
GEF Focal Area (s):	Persistent Organic Pollutants	Project Duration (Months)	48 months (4 years)
Name of parent program (if applicable): ➤ For SFM/REDD+ <input type="checkbox"/>		Agency Fee (\$):	379,050

A. FOCAL AREA STRATEGY FRAMEWORK³:

Focal Area Objectives	Expected FA Outcomes	Expected FA Outputs	Trust Fund	Indicative Grant Amount (\$)	Indicative Co-financing (\$)
(select) CHEM-1	Production and use of controlled POPs chemicals phased out. (GEF-5 Outcome 1.1)	Countries receiving GEF support to pilot new POPs reduction activities. (GEF-5 Output 1.1.2)	GEFTF	1,000,000	4,000,000
(select) CHEM-1	POPs releases to the environment reduced. (GEF-5 Outcome 1.3)	Amount of un-intentionally produced POPs releases avoided or reduced from industrial and non-industrial sectors; measured in grams TEQ against baseline as recorded through the POPs tracking tool (Output 1.3.1)	GEFTF	2,500,000	10,000,000
(select) CHEM-1	Country capacity built to effectively phase out and reduce releases of POPs (GEF-5 Outcome 1.5)	Progress in developing and implementing a legislative and regulatory framework for environmentally sound management of POPs, and for the sound management of chemicals in general, as recorded in the POPs tracking tool (GEF 5 Output 1.5.1)	GEFTF	300,000	1,200,000
(select) (select)			(select)		
(select) (select)			(select)		
(select) (select)			(select)		
(select) (select)			(select)		
(select) (select)			(select)		
(select) (select)			(select)		
(select) (select)	Others		(select)		
Sub-Total				3,800,000	15,200,000
Project Management Cost ⁴			GEFTF	190,000	760,000
Total Project Cost				3,990,000	15,960,000

¹ It is very important to consult the PIF preparation guidelines when completing this template.

² Project ID number will be assigned by GEFSEC.

³ Refer to the reference attached on the [Focal Area Results Framework](#) when filling up the table in item A.

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

B. PROJECT FRAMEWORK

Project Objective: Reduce releases of PBDEs and UOPs by improving overall life-cycle management of plastics and PBDEs-containing plastics through the introduction of alternatives to PBDEs in plastics manufacturing processes and the application of BAT/BEP in plastics recycling and disposal practices.						
Project Component	Grant Type	Expected Outcomes	Expected Outputs	Trust Fund	Indicative Grant Amount (\$)	Indicative Cofinancing (\$)
1. Strengthening the national policy and regulatory framework to reduce UOPs and PBDE releases from plastics manufacturing, plastics recycling and plastics disposal practices.	TA	1.1 Reduced PBDEs and UOPs releases resulting from unsound waste management practices through the adoption and implementation of standards/measures, policies, plans, laws, regulations and guidance.	1.1.1 National standards on max. PBDEs content developed, adopted and implemented. 1.1.2 Policy and regulatory framework for PBDEs-waste management developed, revised and improved and relevant components integrated into the existing SWM policy and regulatory framework. 1.1.3 Technical by-laws, regulations and guidance aiming to reduce UOPs/PBDEs releases from plastics manufacturing, recycling and disposal practices developed, adopted and implemented. 1.1.4 Regulatory and policy framework pertaining to the import of PBDEs and PBDEs containing products and wastes developed. 1.1.5 Barriers to BAT/BEP implementation removed through e.g. the institution of economic instruments and incentives.	GEFTF	950,000	3,800,000
2. Reduce or eliminate the importation and use of PBDEs (C-pentaBDEs and C-octaBDEs) from being applied in plastics manufacturing.	TA	2.1 PBDE releases to the environment reduced. 2.2 Use of PBDEs phased-out in two (2)* plastic production entities. 2.3 Sufficient national technical expertise built to face current and future challenges with respect to PBDEs in manufacturing and recycling.	2.1.1 Detailed inventory completed on PBDEs imported, handled and applied in plastics manufacturing (incl. an indicative stocktaking of PBDEs containing products). 2.2.1 Eliminated the use of PBDEs in two (2)* plastic production facilities through replacement with safer alternatives, by product redesign, or both. 2.3.1 Sufficient in-country PBDE capacity built on the selection and identification of suitable PBDEs alternatives (training, awareness building etc.) to support replication efforts.	GEFTF	1,850,000	7,400,000

3. Reduction of UPOPs and PBDEs releases from unsound plastics recycling.	TA	<p>3.1 Reduced releases of PBDEs as a result of improved handling, storage, recycling and disposal of PBDEs containing wastes and products through the introduction of BAT/BAP in the plastics recycling sector.</p> <p>3.2 Reduced releases of UPOPs as a result of improved raw material (recycled plastics) supply chains as well as the introduction of environmentally sound disposal practices at recycling entities.</p>	<p>3.1.1 (In) formal entities handling/ processing significant quantities of PBDEs containing plastics as well as PBDEs and UPOPs specific challenges these entities encounter, identified (as part of 1.1.1).</p> <p>3.1.2 Three (3)* large scale formal plastics recycling entities supported in implementing BEP/BAT adhering technologies for bulk plastic sorting, processing and recycling to reduce releases of UPOPs and PBDEs and increase production of improved quality recycable plastics.</p> <p>3.1.3 (same outputs as 3.1.2.) Five (5)* medium scale informal plastics recycling entities supported in implementing BEP/BAT.</p> <p>3.1.4. Supply chains for local markets further developed, recycling rates increased and maximum quantities of recycable plastics diverted from inadequate disposal.</p> <p>3.1.5 Capacity of eight (8)* medium and large scale recycling entities built in identifying PBDEs containing plastics, personal protection measures, safe working conditions and best approaches to reducing harmful releases of UPOPs and PBDEs.</p> <p>3.1.6 Regular re-collection systems set-up for PBDEs containing plastics and waste fractions as well as unrecycable plastics for adequate disposal at municipality level.</p>	GEFTF	600,000	2,400,000
4. Reducing releases of UPOPs and PBDEs from unsound plastic disposal practices	TA	4.1 PBDEs and UPOPs releases to the environment reduced through the implementation of appropriate disposal options for hazardous and unrecycable plastic waste fractions from both formal and	<p>4.1.1 Quantified baseline and national inventory on current and projected releases of UPOPs and PBDEs from inadequate plastics disposal in Indonesia completed.</p> <p>4.1.2 Assessment of existing as well as feasible PBDE disposal options (e.g. incineration, hazardous</p>	GEFTF	300,000	1,200,000

		informal recyclers and waste collectors.	landfill sites) completed and based on cost-assessments and EIAs, options for disposal identified. 4.1.3 Two (2)* municipalities/ local governments supported in designating disposal options for PBDEs-containing and unrecyclable plastic waste fractions' putting in place mitigation measures to avoid/reduce harmful releases to water, soil and air in these areas. 4.1.4 Appropriate collection schemes, feasible logistical arrangements, including proper waste acceptance and outbound material criteria, and solution for final disposal of unrecyclable plastic waste fractions (fitting both the needs of formal and informal recyclers/processors) developed and set-up. 4.1.5 Designated PBDEs acceptance/disposal "points" staff trained in identifying PBDEs containing plastics, personal protection measures, safe working conditions and best approaches to reducing harmful releases at disposal sites.			
5. Monitoring, learning, adaptive feedback, outreach, and evaluation	TA	5.1 Project's results sustained and replicated.	5.1.1 M&E and adaptive management applied to project in response to needs, MTE findings with lessons learned extracted. 5.1.2 Lessons learnt and BEP/BAT disseminated at national level.	GEFTF	100,000	400,000
	(select)			GEFTF		
	(select)			(select)		
	(select)			(select)		
	(select)			(select)		
	(select)			(select)		
Sub-Total					3,800,000	15,200,000
Project Management Cost ⁵				GEFTF	190,000	760,000
Total Project Costs					3,990,000	15,960,000

*The actual number of plastic manufactures, recycling entities and municipalities that will receive TA as part of this proposal will be finalized during the PPF phase of this project.

⁵ Same as footnote #3.

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

Sources of Cofinancing	Name of Cofinancier	Type of Cofinancing	Amount (\$)
National Government	Ministry of Industry (MOI)	In-kind	3,000,000
National Government	National Agency of Drug and Food Control (BPOM - Ministry of Health)	In-kind	1,765,000
National Government	Ministry of Environment (MOE) - US\$354,262 already secured, remaining part to be mobilized during PPG.	In-kind	2,000,000
Private Sector	Association of Downstream Plastics Industries (APHINDO)	Grant	1,000,000
Private Sector	Indonesia Woven Polyolefin Manufacturers Association (GIATPI)	Grant	800,000
National Government	Ministry of Health	Unknown at this stage	500,000
National Government	Directorate General of Customs & Excise (Customs, Ministry of Finance)	Unknown at this stage	500,000
Other Multilateral Agency (ies)	United Nations Development Programme (UNDP)	Grant	349,000
National Government	Ministry of Home Affairs (MOHA), Ministry of National Education, Ministry of Foreign Affairs (MOFA), Ministry of Trade (MOT), Ministry of Communication, Information (MOCI) and other national government	Unknown at this stage	3,000,000
Others	Association of industries, industries, non government organizations (NGOs), etc. that will be identified further during PPG	Unknown at this stage	3,046,000
Total Cofinancing			15,960,000

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

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

¹ In case of a single focal area, single country, single GEF Agency project, and single trust fund project, no need to provide information for this table

² Please indicate fees related to this project.

PART II: PROJECT JUSTIFICATION

A. DESCRIPTION OF THE CONSISTENCY OF THE PROJECT WITH:

A.1.1 the [GEF focal area/LDCF/SCCF](#) strategies:

The project is fully consistent with the GEF-5 Chemicals focal area strategy Objective 1: *Phase-out POPs and reduce POPs releases*. The project will contribute to the achievement of GEF's main indicators as follows:

Relevant GEF-5 Strategy Indicator	Project's contribution
Objective 1: Phase out POPs and reduce POPs releases	
<i>Outcome 1.1 Production and use of controlled POPs chemicals phased out</i>	
Indicator 1.1.1 Amount of POPs not produced or used following demonstration of alternative; measured in tons per year against baseline as recorded through the POPs tracking tool.	<p>Indicator 1.1.1: Project Components 2, 3 and 4 will contribute to a reduction of PBDEs releases to the global environment in three distinct ways: <i>Component 2</i> will reduce the application of PBDEs in the production of new plastics, by introducing alternatives to PBDEs in two (2)* plastics manufacturing facilities. <i>Component 3</i> will reduce PBDE emissions from PBDE containing plastics, by introducing BAT/BEP at eight (8)* recycling entities* involved in the separation/handling/recycling and disposal of PBDE containing plastics and waste fractions. <i>Component 4</i> will support two (2)* municipalities in developing approaches and solutions for final disposal of PBDEs containing waste fractions to reduce and minimize releases of PBDEs to the environment.</p> <p>The project is expected to reduce the use of PBDEs in plastics manufacturing by 7 tons/a while PBDEs releases from unsound separation/handling/recycling and disposal will result in a release reduction of 4 tons/a. The project's replicating effects in addition to contributions of similar initiatives (baseline project) it is estimated that PBDEs releases could be reduced by 15 tons/a.</p>
<i>Outcome 1.3: POPs releases to the environment reduced</i>	
Indicator 1.3 Amount of unintentionally produced POPs releases avoided or reduced from industrial and non-industrial sectors; measured in grams TEQ against baseline as recorded through the POPs tracking tool	<p>Indicator 1.3.1: Project Components 3 and 4 will contribute to a reduction of UPOPs releases to the global environment in two distinct ways: <i>Component 3</i> will introduce BAT/BEP at eight (8)* recycling entities to improve thermal recycling processes and reduce the open burning of (PBDE-containing) unrecyclable plastic waste fractions. <i>Component 4</i> will support two (2)* municipalities in developing approaches and solutions for final disposal of (PBDE-containing) unrecyclable plastic waste fractions to reduce and minimize releases of PBDEs to the environment.</p> <p>The adoption of increased plastic recycling rate and BEP/BAT at recycling entities and municipality level is expected to reduce UPOPs emissions by 30 g I-TEQ/a. The project's replicating effects in addition to contributions of similar initiatives (baseline project) it is estimated that UPOPs releases could be reduced by 60 g I-TEQ/a.</p>
<i>Outcome 1.5: Country capacity built to effectively phase out and reduce releases of POPs</i>	
Indicator 1.5.1 Progress in developing and implementing a legislative and regulatory framework for environmentally sound management of POPs, and for the sound management of chemicals in general, as recorded through the POPs tracking tool	<p>Indicator 1.5.1: Project <i>Component 1</i> will strengthen the national policy and regulatory framework to support the reduction of UPOPs and PBDEs releases from plastics manufacturing, recycling and disposal by developing, adopting and implementing: National standards on max. PBDEs; A policy and regulatory framework for PBDEs-waste management and integrate relevant component into the existing SWM policy and regulatory framework; Technical by-laws, regulations and guidance aiming to reduce UPOPs/PBDEs releases from plastics manufacturing, recycling and disposal practices; Regulatory and policy framework pertaining to the import of PBDEs and PBDEs containing products and wastes; and, Economic instruments and incentives to remove barriers to BAT/BEP adoption and implementation.</p>

*The actual number of plastic manufactures, recycling entities and municipalities that will receive TA as part of this proposal will be finalized during the PPF phase of this project.

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

NA

A.2. National strategies and plans or reports and assessments under relevant conventions, if applicable, i.e. NAPAS, NAPs, NBSAPs, national communications, TNAs, NIPs, PRSPs, NPFE, etc.:

Indonesia is committed to address the threats posed by Persistent Organic Pollutants (POPs) and ratified the Stockholm Convention in 2009. Indonesia published its “*National Implementation Plan (NIP) on the Elimination and Reduction of POPs*” on 29 July 2008. The NIP proposes urgent actions with respect to legislation, institutional capacity and human resources in order to meet Indonesia’s obligations under the Stockholm Convention focusing on three major categories: i) POPs Pesticides, ii) PCBs and Equipment; and iii) UPOPs. With respect to UPOPs the NIP highlights the following national priorities and requirements:

1. Develop accredited laboratories capable to analyze UPOPs.
2. Determine an accurate baseline and support the ongoing monitoring of UPOPs releases.
3. Apply BAT/BEP for source categories (Part II and III of Annex C).
4. Expedite and improve the Blue Sky Program.
5. Improve POPs related legislation.
6. Increase public awareness.

The National Action Plan proposes the following Measures to Reduce Releases from Unintentional Production (Article 5): 1. Preparing UPOPs regulations, including regulatory limit for air emission; 2. Quantitative measurement of PCDDs/Fs releases in industrial and populated areas to be used as baseline for effort in reducing releases; 3. Program for annual report on PCDDs/Fs release by public and private sectors potential to release UPOPs; 4. Expansion of Blue Sky Program in industrial and populated areas; 5. Implementation of BAT/BEP in various sectors, including preparation of BEP guidelines and provision of training on BEP; 6. Increasing public awareness and using alternative technology/processing to inhibit open burning (domestic waste, shifting cultivation, wood burning in households); 7. Using alternative materials, products and process or the modified ones; 8. Research related to power generating and transportation; 9. Education, training, and awareness raising; 10. Developing strategy for pollution prevention that will give recommended alternatives as equipment/facility to minimize pollutants; 11. Determination on mass concentration of PCDDs/Fs, HCB, and PCBs; 12. Monitoring and evaluation.

Considering the timing of the NIP submission, the “new” nine POPs were not yet included. However, the Ministry of Industry (MOI) felt that challenges with respect PBDEs currently being faced by the Indonesian plastics manufacturing industry, large and medium scale plastics recycling entities, as well as municipalities required urgent attention. Thus the GOI and UNDP organized two workshops “*Removal of barriers for Sustainable Management and Reduction of PBDEs, Dioxins and Furans*” (August 2010) and “*The Reduction of Releases of PBDEs and UPOPs from Unsound Waste Management and Recycling Practices and the Manufacturing of Plastics in Indonesia*” (December 2012). Workshop discussions and outcomes shaped the scope of this proposal.

Based on the priorities taken up in the NIP, the outcomes of the 2010 and 2011 stakeholder consultations as well as the Indonesia Green Economy Strategy, the activities proposed as part of this proposal are entirely in line with national POPs priorities, strategies and plans.

B. PROJECT OVERVIEW:

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

The proposed project aims to reduce releases of PBDEs and UPOPs into the global environment by reducing (and preferably eliminating) the use of PBDEs in Indonesia’s plastics manufacturing sector and by improving plastics recycling and disposal practices (with a particular focus on PBDE containing plastics).

The proposed project will aim to improve the life cycle management of (PBDE-containing) plastics and result in diverting plastics from becoming waste by creating a sustainable raw material chain for the plastics and plastics recycling industry, while identifying solutions for plastic waste fractions that currently are deemed unrecyclable or hazardous.

SUMMARY OF NIP RESULTS AND OBSERVATIONS RELEVANT TO UPOPS AND PBDES RELEASES

Unintentional POPs Releases (PCDDs/Fs): The U-POPs inventory for PCDD/Fs undertaken in preparation of the 2008 NIP applying the UNEP Chemical Standard Tool Kit, indicates that releases of PCDDs/Fs from 10 categories was estimated to be as high as 7.352 g TEQ (2000). Categorical analysis indicated the following breakdown from the highest to the lowest sources (in g TEQ and %): Production of chemicals and consumer goods (4,442 g-TEQ/a, 60.4%), Uncontrolled burning (1640 g-TEQ/a, 22.3%), Iron and non-iron industries (939 g-TEQ/a, 12.8%), and power generating units (153 g-TEQ/a, 2.1%). Meanwhile, five other categories contributed about 2.4%. It can be concluded that the current U-POPs inventory is outdated (2000) and does not adequately reflect recent developments.

When considering that i) the plastic fraction of solid waste is between 10-15 % of all municipal waste in major Indonesian cities ii) removal of the plastic fractions will contribute towards larger segregation of waste with higher composting etc rates, the contribution of removing the plastic fraction from municipal waste could contribute upto 20 % reduction of mass of waste being burned and emitting UPOPs from municipal waste burning.

Releases of PBDEs (C-PentaBDE & C-OctaBDE): Since the 2008 amendments, the Stockholm Convention lists the most toxic and bio-accumulative of the polybromodiphenyl ethers (PBDEs): C-PentaBDE (used almost exclusively in the manufacture of flexible polyurethane (PUR) foam for furniture and upholstery in homes and vehicles, packaging, and non-foamed PUR in casings and electronic equipment (EE)) and C-OctaBDE (typically used in the housings of office and other equipment containing electronics). PBDEs are flame retardants of the additive type, i.e. they are physically combined with the material being treated but not chemically bonded to it so they can diffuse out of the treated material.

Considering the timing of the NIP submission, assessments with respect to the threats posed by PBDEs were not included. However, the considerable size of the plastics- manufacturing sector (exported: 8,347,319 tons/a; consumed: 7,304,901 tons/a) and the plastics recycling sector (~60 formal recycling facilities), a growing e-waste recycling sector; challenges with respect to plastics disposal in waterways (400,000 tons/a) and open burning of municipal waste (50%), spurred the Government of Indonesia to organize national stakeholder consultations and undertake preliminary desk reviews to begin to assess the threats posed by PBDEs (2010 and 2011).

At the same time, associations of industries had been considering the importance of POPs and UPOPs safeguard, due to increasing concerns among public and several NGOs/ CSOs on the danger of hazardous and toxic substances in the environment as well as recent assessments conducted by researchers/universities on potential impacts of hazardous and toxic substances in the environment (air, water and land/soil) and health.

As recycled plastic fractions locally generated or imported are mixed in overall recycling, the PBDEs will, uncontrolled, contaminate the whole plastic manufacturing chain. In this regard it is of utmost importance to address the plastic manufacturing sector in addition to specific sectors (e-waste, foam) that may have been the major users of PBDEs.

The preliminary assessment indicated many shortfalls, among which insufficient capacity of Government institutions, the National Statistics Agency and customs to monitor and register the production, trade, use and releases of PBDEs; barriers to the adoption of BEP/BAT in the plastics manufacturing and recycling sector resulting in EU non-compliance with respect to PBDEs levels in export products; insufficient capacity of national laboratories to test and monitor levels of PBDEs in different media; absence of legislation and regulations pertaining to the disposal, treatment and recycling of PBDE containing waste, etc.

Institutional/ Regulatory Capacity and Framework related to PBDEs and UPOPs: Indonesia has a generally well developed legal/regulatory framework pertaining to the management and control of hazardous and toxic materials (B3) and their wastes (LB3). Indonesian Law No. 23/1997 regarding Environment Management authorizes the Ministry of Environment (MOE) to manage the environment at the central and regional levels, including the development of policies pertaining to natural resource use, controlling activities that cause social implication, including the management and control of hazardous and toxic materials (B3) and wastes (LB3). To implement the law, GR (Government Regulation) No. 74/2001 regarding the management of B3 has been enacted, regulating the ban of 10 POPs (aldrin, dieldrin, chlordane, DDT, heptachlor, heptachlor epoxide, endrin, toxaphene, HCBs and PCBs).

In terms of monitoring, Ministry of Environment has been conducting periodic monitoring on the quality of environment due to possible contamination of POPs substances. In addition, National Agency of Drug and Food Control has been actively monitoring and controlling foods from the contamination of “unwanted substances”, including POPs and UPOPs.

- PCDDs/Fs: Certain releases of PCDDs/Fs have been regulated through Ministerial regulation Kepmen No 13/1995, applying to rotary kilns when used as incinerators. In reality, however, not all incinerators are monitored due to the high cost for monitoring and analysis. Legislation on the prevention, control, monitoring

and reduction of UOPs, including regulatory limits for PCDDs/Fs (food and other products, air, water, soil, and in residues) needs urgent development. Industries are required to monitor UOPs releases during applications processes for operational permits, however once permits have been granted no regular monitoring is required.

- *PBDEs*: No national regulation or policy concerning the usage, trade and monitoring of PBDEs are in place.
- *Municipal and Industrial Solid Waste Management*: The GOI has been very committed to solid waste management during the past few years and has set targets for 2014 and 2019 to significantly reduce waste volumes, increase recycling and overall improve SWM country wide. Relevant policies and regulations are listed below under “3 - Baseline Policy Instruments and legislation pertaining to MSWM.”

BASELINE PROJECT:

1. Manufacturing: Reducing/eliminating the application of PBDEs in Indonesia's plastics manufacturing industry

Considering the timing of the 2008 NIP submission (see also A.2), assessments with respect to the threats posed by PBDEs in Indonesia were not included. However, several factors have encouraged the Indonesian government to initiate action to reduce and preferably eliminate the use of PBDEs in the plastics manufacturing sector. Among these factors is the considerable size of the Indonesian plastics-manufacturing sector producing both for domestic and international markets (~ 3.8 million tons of plastic products/a).

The manufacturing of PBDEs containing plastics has several implications. Firstly, PBDE-containing plastics and products will throughout their life-cycle (production, use, recycling and disposal) release PBDEs and negatively impact human health and the environment, at local and global levels. As indicated by *Sudaryanto (Human Exposure to PBDEs: A Case Study in Indonesia and Other Asian Countries)* the general population in Indonesia has been widely exposed to PBDEs - comparable to levels observed in Europe with dumping sites and urban areas identified as the most important point sources of PBDEs releases to the environment (M.Ilyas et al., *PBDEs in Soils from Various Locations in Surabaya City*).

In many developed countries, the production and application of PBDEs is already prohibited or strictly regulated, and restrictions of the use of certain PBDEs in products and electronic equipment have been put in place. However, Indonesia currently doesn't have any PBDEs related regulations or standards in place, national capacity and knowledge with respect to PBDE phase-out is limited and incentives to introduce alternatives to PBDEs are not available.

As a consequence, threats posed by PBDEs to human health and the environment are not being reduced. While at the same time Indonesian products intended for international export markets more frequently have to meet PBDE-free or low level PBDE standards, such as those put in place by the EU. Indonesian manufacturers that are unable to meet such standards are reporting that they face smaller export markets as their products are being rejected based on PBDEs levels exceeding set standards, resulting in economic consequences.

In order to minimize PBDE releases, reduce human and environmental health implications and meet international trade requirements, the GoI would prefer to reduce or preferably eliminate the use of PBDEs in Indonesia's plastics manufacturing sector and replace PBDEs by adequate and safer alternatives.

Baseline Project Activities on PBDEs phase-out from the plastics manufacturing sector

Several initiatives supported at national level are contributing to the creation of an enabling environment for the introduction of PBDE alternatives:

- o *Economy Strategy*: As part of its sustainable development plan (2005-2025), the GOI [is carrying out](#) a green economy strategy which is supported by programmes on efficiency and renewable energy usage, clean technology support and waste management, among else. Specific policies include subsidies for industries as well as incentives to promote environmental friendly products.
- o “*Blue Sky Program*” (since 1996), a GOI clean air program to control air pollutants in urban areas.
- o [Continuation of supporting BAT/BEP innovation under MOI Green Industry Award](#) (since 2009). In 2010, 9 industries were awarded out of 68 evaluated. [This is under the Government Regulation No.28/2008 on the National Industry Guidelines, for industries to consider 4R \(reduce, reuse, recycle and recovery\), and sound management of toxic and hazardous substances including POPs.](#)
- o With support of WHO and the SAICM QSP TF (2011), Indonesia and Thailand are strengthening their national capacities for the sound management of priority industrial carcinogens.

- o [Continuation](#) to promote awareness challenges [and policy development](#) related to PBDEs, [as follow-up to](#) the MOI organized two awareness raising workshops: Removal of Barriers for Sustainable Management and Reduction of PBDEs and PBDDs/PBDFs (UNDP, August 2010) and Reduction of Releases of PBDEs and UOPs from unsound waste management and recycling practices and the manufacturing of plastics in Indonesia (UNDP, December 2011).
- o [Financial Incentives](#): The GoI supports the private sector by providing investments for Corporate Social Responsibility Programmes, such as equipment investments.
- o [Implementation, further development of guidance and enforcement Decree of Minister of Industry and Trade No.274/MPP/Kep/6/99 on the Restriction and Monitoring on the Import, Distribution and Production of Dioxin Contaminated Goods](#)

2. Recycling: *Reducing releases of UOPs and PBDEs from unsound recycling processes*

The plastics recycling sector in Indonesia can be considered significant. The informal plastics recycling sector supplies about 60 formal plastics manufacturers (The Jakarta Post, Sept 2009). In 1996, the Indonesian Scavengers Association indicated that in Jakarta alone there are more than 150 facilities that supply recyclable materials to different industries, in certain cases these clean, sort and preliminary process plastics, before reselling to buyers in Indonesia and abroad.

To further increase the recycling of plastic and reduce pressure on landfills, the Indonesian Government has adopted national targets which aim to achieve the recycling of 75% of plastics by 2014 and 85% of plastics by 2019. While Government policies also target 70% of plastic products to be produced domestically. As such the GoI is trying to “Close the plastics loop” – recycling more – producing locally (both products and raw materials).

Of the 3.8 million tons of plastic products manufactured each year in Indonesia, currently 2.1 million tons of raw material virgin polymer pellets are produced locally. The additional amount of raw material is either imported or made up from recycled plastics. The balance between the two shifts continuously and relies to a large extent on the foreign exchange rate and global oil prices. To overcome competition by the international market, recyclers need to supply recycled materials that are purer in quality, are supplied in sufficient large quantities to ensure a constant and reliable supply chain and be able to offer them for internationally competitive pricing. Generally, the better plastic waste is sorted at the source and the better processes are applied in producing pellets, the higher the quality of the product.

To achieve the recycling targets put in place by the government and the growth of a more competitive domestic recycling industry will require improved raw material supply chains, better separation of waste streams, improved product dismantling as well as enhanced processing (through BEP/BAT implementation).

In addition to creating income generating activities such approaches would have important environmental benefits as currently the ways in which these plastics are being separated, processed and waste fractions are being disposed of results in unintentional releases of PBDEs and UOPs, in particular during product dismantling, thermal reprocessing and disposal.

Dismantling: Certain recycling entities, in specific those handling and processing PBDEs containing flexible polyurethane (PUR) foams and e-waste**, face challenges in separating PBDE-containing articles from PBDE-free articles as most plastics are not labeled displaying their content. The subsequent dismantling and shredding of PBDE containing foams and plastics in uncontrolled environments without proper protection gear exposes recyclers and the environment to harmful PBDEs releases.

***Although e-waste recyclers typically do not target the recycling of plastics, the e-waste sector does handle a considerable amount of PBDEs containing plastics (TV and computer casings as well as circuit boards). Even though restrictions are in place in many countries for new electronic equipment, PBDEs levels are still high in current e-waste streams. PBDE and UOPs related challenges being faced by e-waste recyclers are similar to some of those faced by plastics recyclers: separating PBDEs-containing components from PBDEs-free components, PBDE releases during dismantling activities and inadequate disposal of PBDEs containing waste fractions. It is important to note that e-waste recycling also faces important challenges with respect to heavy metals and other POPs (other than PBDEs), however considering the focus of this particular proposal on PBDE containing plastic waste fractions, a separate proposal might be developed focussing on other hazardous e-waste fractions.*

Thermal reprocessing: Large scale recyclers often pre-process plastics (e.g. production of pellets) to facilitate transport of the recycled material to the plastics manufacturer. Often such processes are thermal during which PBDEs and UPOPs are being released.

Disposal: Inadequate disposal of PBDEs containing waste fractions as well as PBDE-free plastics not suitable (yet) for recycling can result in significant releases of UPOPs and PBDEs. Depending on the disposal methods practiced by recycling entities (e.g. open burning, disposal in waterways, disposal at illegal dumps, etc.) this can result in UPOPs releases from burning (Danish EPA, 1999, EU 2000) or the leaching of PBDEs into water and soil.

In order to reduce UPOPs and PBDEs releases from plastics recycling processes, it would be important to support large and medium-scale recycling entities in putting in place improved processes/approaches to identify PBDEs containing plastics and recyclable plastics; separate PBDEs containing fractions from PBDEs-free fractions under appropriate and safe conditions; reduce or eliminate the recycling of PBDE containing plastics while increasing the recycling rate of PBDE-free plastics; and, finally put in place BEP/BAT approaches to the disposal of PBDEs containing waste fractions as well as unrecyclable plastic wastes in an environmentally sound manner in close collaboration with municipalities and local government entities responsible for solid waste management.

Baseline Project Activities on plastics recycling (in addition to the activities mentioned under 1):

- In 2007, GOI has started and is continuously implementing and widening a Reuse, Reduce, Recycle (3R) program at communal scale which has been initiated in 33 provinces to support waste segregation (paper, plastic, glass, metal), composting and recycling. Targets of interest to the proposed project: 2014 - recycle 75% of plastics, utilize 30% of currently unrecyclable plastics, compost 20-30% of organic MSW; recycle 30% of metal, glass and paper with the ultimate objective to achieve a 20-30% reduction in waste volumes.
- ~~A “National Preliminary Inventory Study on e-Waste (2010)” was conducted with the objective to shape a holistic e-waste inventory and support the development of an e-waste strategy and framework. The inventory focused on the identification of refurbishing facilities, e-waste recycle facilities and illegal influx of used electronics.~~
- Private sector investments and development of processes for PBDE identification and management as well as UPOPs release reduction at recycling plants
- Formulation a regulation and policy on electronic waste treatment and disposal. The e-waste regulation will focus on distinguishing between e-waste and second-hand equipment as well as management approaches through i) Extended Producer Responsibility; ii) government participation (national & provincial) iii) economic instruments (incentives and disincentives); and the 3R program.
- Implementation, further development of guidance and enforcement Decree of Ministerial Trade Number: 63/M-DAG/PER/12/2009 Importation of used product for reconditioning, remanufacturing or re-use (Importir Produsent).
- Implementation, further development of guidance and enforcement Decree of Ministerial Trade Number: 39/M-DAG/PER/9/2009 Importation of Non Hazardous Waste (Scrap Waste).

3. Disposal: Reducing releases of UPOPs and PBDEs from unsound plastic disposal practices

Releases of UPOPs and PBDEs from unsound plastics disposal practices in Indonesia predominantly originate from uncontrolled burning and inadequate disposal of (PBDEs-containing) plastics.

First and foremost, the uncontrolled burning of municipal wastes containing plastics (either at landfill sites, household level and illegal dumps) results in significant UPOPs releases (1640 g-TEQ/a). It is estimated that approximately 47% of wastes is disposed of in this manner (BPS, Statistical Bureau, 2004).

Secondly, it has been estimated that in Indonesia approximately 8% (BPS, Statistical Bureau, 2004) of municipal waste is dumped into waterways. Based on average plastic content in such wastes and yearly waste generation rates, calculations indicate that ~ 400,000 tons of plastic waste enters Indonesia's waterways each year. Besides the numerous environment and health consequences this common practice has including the contribution to the issue of accumulation of marine debris in oceans, the leaching of PBDEs into water from plastics containing such hazardous toxins, is of particular relevance to the scope of this proposal.

Thirdly, certain plastic waste fractions, particularly those containing PBDEs as well as plastics for which currently no recycling options exist, do need proper handling, storage and disposal. In addition to practices of open burning and dumping in waterways (discussed above) the illegal dumping of such plastics or dumping at landfills not meeting sanitary requirements results in the leaching of PBDEs into water and soil. Appropriate solutions (mid and long-term) have to be identified and implemented to enable local governments and municipalities to offer appropriate cost-effective solutions for those particular plastic waste fractions to their clients, whether those are individual households, industries, recycling entities, or others.

Baseline Project Activities Reducing releases of UPOPs and PBDEs from unsound plastic disposal practices (in addition to the baseline activities mentioned under 1 and 2):

- o Further widening the Reuse, Reduce, Recycle (3R) program (since 2007): Reduction of uncontrolled burning of waste through improvement MSW disposal sites in 240 cities; and develop landfill gas projects in 24 major cities. 2014 targets with respect to hazardous waste are to recycle 15 million tons of hazardous waste and increase the rate of hazardous waste 3R by 20% per year.
- o Investments in BAT/BEP compliant final disposal for PBDE containing separated waste fractions by regional, municipal and private waste processors.
- o Several large cities have ongoing initiatives which support methane gas recovery for energy generation or reduce methane generation through aerobic composting. Indirectly such measures reduce the open burning of wastes at landfill sites and thus indirectly reduce UPOPs emissions: Temesi Gianyar (Bali); Bantar Gebang (Jakarta); Suwung Sarbagita: Sunter and Cakung (Jakarta); Jabotabek; Bekasi.

Baseline Policy Instruments and legislation pertaining to MSWM

- o Government Regulation No.18/1999 to manage the waste of hazardous and toxic substance including POPs
- o Foundational policy for 3R program (Act no. 18, 2008) on Solid Waste Management
- o Environmental Protection and Management (Act No. 32, 2009)
- o Government Regulation (no. 18, 2009) on the Management of Hazardous Waste
- o MOE Decree (No. 1, 2009) on ADIPURA, award offered to city mayors for clean cities
- o Ministerial Regulation of Public Works (no. 21, 2006) on National Policy and Strategy for SWM
- o Minister of Environment's decree (No. 05/2012) to regulate environmental impact analysis, including the importance of appropriate incineration/ burning activities to control potential release of UPOPs.

PROPOSED ACTIVITIES:

Project Component 1. Strengthening the national policies and regulatory framework

Plastic manufacturing: the GoI will support the creation of an enabling environment for industry to phase-out PBDEs and adopt safer alternatives by supporting the introduction of max. PBDEs content standards and revising the regulatory and policy framework pertaining to the import of PBDEs.

Plastic recycling: the GoI will support the creation of an enabling environment for the formal and informal recycling industry to adopt BAT/BEP in plastics recycling by improving the policy and regulatory framework for PBDEs-waste management, implementing technical by-laws, regulations and guidance aiming to reduce UPOPs/PBDEs releases from disposal practices and plastics recycling and removing barriers to the implementation of BAT/BEP through e.g. the institution of economic instruments and incentives.

Plastic disposal: the GoI will support an assessment of existing as well as feasible PBDE disposal options (e.g. incineration, hazardous landfill sites) and support the selection, based on cost-assessments and EIAs, of options for disposal. In addition it will support the implementation of technical by-laws, regulations and guidance aiming to reduce UPOPs/PBDEs releases from solid waste management disposal practices as well as revise the regulatory and policy framework pertaining to the import of PBDEs containing wastes.

- 1.1 Develop, adopt and implement national standards on max. PBDEs content in articles for both the domestic and international markets.
- 1.2 Develop, revise and improve the policy and regulatory framework for PBDEs-waste management and integrate/mainstream relevant components into the existing national SWM policy and regulatory framework to ensure a holistic and consistent approach at national and municipal level.
- 1.3 Develop, adopt and implement technical by-laws, regulations and guidance aiming to reduce UPOPs/PBDEs releases from solid waste management disposal practices, plastics recycling and manufacturing.
- 1.4 Revise the regulatory and policy framework pertaining to the import of PBDEs and PBDE containing products and wastes, transposing Stockholm Convention requirements into national legislation.
- 1.5 Remove barriers to the implementation of BAT/BEP through e.g. the institution of economic instruments and incentives to facilitate replication of project results among plastics manufacturers and recyclers.

Project Component 2. Reduce or eliminate the importation and use of PBDEs in plastics manufacturing

In partnership with APHINDO (association of downstream plastics industries) the private sector – in particular the two (2) plastics manufacturers, will provide the necessary financial resources/information to inform the PBDE inventory, review the production process to inform the selection of safer alternatives or product redesign as well

as provide in-kind and cash contributions to put in place BEP and other preparations at company level to adopt PBDE alternatives and accept BAT technologies.

- 2.1 Complete a detailed inventory on PBDEs quantities imported, handled and applied in Indonesia's plastics manufacturing sector, including an indicative inventory of PBDEs containing products (imported, produced, recycled and exported) to help inform recycling and disposal options under B. and C.
- 2.2 Support two (2) plastics manufacturing facilities in the phase-out of PBDEs by replacing the use of PBDEs with safer alternatives, through product redesign or a combination of the two.
- 2.3 Build in-country capacity on the selection and identification of suitable PBDEs alternatives (training, awareness building etc.) to support the project's replication efforts and help address the country's future PBDEs related challenges encountered in the manufacturing sector.

Project Component 3. Reduciton of UOPs and PBDEs released form unsound plastic recycling

The formal and informal plastics recycling entities – in particular the eight (8) large and medium scale recyclers, will provide the necessary financial resources (in-kind in the case of formal recyclers)/information to inform the PBDE inventory and allow for necessary preparations at company level to introduce BEP/BAT adhering technologies for bulk plastic sorting, processing and recycling. In addition, recycling entities will play a key role in informing project approaches to improve supply chains and PBDE waste re-collection systems. Finally, recycling entities will provide the necessary support to enforce safe working conditions and implement BEP/BAT to reduce releases of UOPs/PBDEs at facility level.

- 3.1 As part of the inventory conducted under A.1, Indonesia's main plastics recycling entities*** handling/processing significant quantities of PBDEs containing plastics will be identified as well as the PBDEs and UOPs specific challenges these entities encounter.
- 3.2 & 3.3 Support three (3)*** large formal scale plastics recycling entities and five (5)*** medium scale informal recycling entities in the introduction of BEP/BAT adhering technologies for bulk plastic sorting, processing and recycling (emphasis would be placed on separating plastic fractions containing PBDEs) to reduce releases of UOPs and PBDEs and increase production of improved quality and quantity recycable plastics. The selection of BEP/BAT technologies will be based on a cost-assessment of different processing scenarios, development of technology specifications and competitive int. procurement.
- 3.4 In close consultation with in-formal and formal recycling networks, selected municipalities and plastics manufacturers using recycled plastics as inputs - further develop supply chains for local markets, increase recycling rates and divert maximum quantities of recycable plastics from inadequate disposal.
- 3.5 Build the capacity of eight (8)*** large and medium scale recycling entities in identifying PBDEs containing plastics (applying image-based guidance developed by the project on the collection and sorting of PBDEs), personal protection measures, safe working conditions and best approaches to reducing harmful releases of UOPs and PBDEs.
- 3.6 Set-up regular re-collection systems (possibly through advance payment schemes) for PBDEs containing plastics and waste fractions as well as unrecycable plastics for adequate disposal at municipality level (see also C. 3).

*** including a limited number of large e-waste recycling entities, handling considerable quantities of PBDEs contatining plastics and waste fractions.

Project Component 4. Reducing releases of UOPs and PBDEs form unsound plastic disposal plastic practices

Local Government/Local Municipalities will support the baseline/inventory on current and projected releases of UOPs and PBDEs in their respective municipalities as well as support an assessment of existing and/or feasible PBDE disposal options within their juristictions in order to select PBDE disposal options. In close consultation with plastics recycling entities municipalities will support the implementation of appropriate collection schemes, feasible logistical arrangements, including proper waste acceptance and outbound material criteria. This will in addition to direct UOPs reduction also contribute to reduction of plastic waste entering water bodies and further towards contributing to themarine debris issue. Finally, municipalities will work with staff working at disposal point on safe working conditions/personal protection and BEP implementation.

- 4.1 Conduct a quantified baseline and national inventory on current and projected releases of UOPs and PBDEs from inadequate plastics disposal in Indonesia.

- 4.2 Undertake an assessment of existing as well as feasible PBDE disposal options (e.g. incineration, hazardous landfill sites) and select, based on cost-assessments and EIAs, options for disposal.
- 4.3 Support two (2)*selected municipalities/local governments in identifying and designating disposal options for PBDEs-containing and unrecyclable plastic waste fractions' and put in place mitigation measures to avoid/reduce harmful releases to water, soil and air in these areas.
- 4.4 In close consultation between large and medium scale plastics recycling entities (incl. large scale e-waste recyclers) and selected municipalities decide on and implement appropriate collection schemes, feasible logistical arrangements, including proper waste acceptance and outbound material criteria, and solutions for final disposal of unrecyclable plastic waste fractions.
- 4.5 Support designated PBDE acceptance "points" in identifying PBDEs containing plastics (applying image-based guidance developed by the project on the collection and sorting of PBDEs), personal protection measures, safe working conditions and best approaches to reducing harmful releases.

B. 2. Incremental /Additional cost reasoning: describe the incremental (GEF Trust Fund) or additional (LDCF/SCCF) activities requested for GEF/LDCF/SCCF financing and the associated global environmental benefits (GEF Trust Fund) or associated adaptation benefits (LDCF/SCCF) to be delivered by the project:

Reasoning on why such incremental/additional activities are appropriate/necessary to address the identified causes, issues & Explanations on why such activities are complementary (incremental /additional reasoning)

The timing of this proposal is critical: the plastics manufacturing sector will receive support in phasing-out PBDEs in order to prevent new PBDEs from entering the plastics' life cycle, while BAT/BEP approaches to waste sorting and disposal are implemented to eliminate PBDEs from existing plastics waste streams. As such the project will be able to demonstrate for domestic replication purposes a holistic approach to PBDE elimination.

Regarding the reduction and elimination of PBDEs from Indonesia's plastics manufacturing sector, too little activities at industry level have to date been undertaken to start PBDE phase-out. Although the GOI is very clear about the fact that PBDEs are of great concern in Indonesia, it has also indicated that challenges arising from insufficient capacity in this area (financial, human, technical, regulatory, industry, etc) are such that manufacturers will likely continue producing plastics in a business-as-usual scenario.

With respect to the processing and recycling of plastics, the MOI and MOE are very eager to build necessary capacity and create awareness on plastics recycling issues and introduce BAT/BEP for increased and sound processing/recycling of these waste streams. However, the introduction of BAT/BEP in the processing of these waste streams is an entirely new area in Indonesia (particularly with respect to PBDEs containing plastics), and technical support is in high demand. In a Business-As-Usual scenario, policies and regulations pertaining to plastics recycling might be put in place, however actual "business practices" in processing these waste streams might not necessarily change – of particular concern are the appropriate disposal of PBDEs containing waste fractions and unrecyclable plastics.

Concerning the final disposal of plastics and in particular PBDE containing plastics, the GOI is committed to improving municipal- and hazardous- waste management across the country. Several programmes and projects at national level (e.g. Blue Sky programme, 3R programme, and city initiatives on methane gas recovery for energy generation or reducing methane generation) are aiming to reduce improper disposal, reduce waste volumes applying the 3R approach and improve health standards. However too little focus is placed on the release of UPOPs and PBDEs resulting from the open burning of plastic-containing wastes, inadequate dumping and disposal in waterways. In a business-as-usual scenario, the growth of waste volumes will likely be curbed as a result of the 3R programme and result in a slight relative reduction of UPOPs and PBDEs releases. However initiatives to significantly reduce UPOPs and PBDEs emissions through the introduction of adequate final disposal practices/solutions for unrecyclable and PBDEs containing plastics at municipal level (as well as recycling facility level) are necessary to move towards financially sustainable waste solutions.

Consequently the proposed project activities are fully incremental from a POPs point of view, considering that without GEF funding, the application of PBDE in Indonesia's plastics manufacturing will continue, BAT/BEP will not be introduced in the plastics recycling sector, sound final disposal solutions for PBDEs will not be identified/implemented and no enabling environment to support future activities in PBDE phase-out/elimination will be put in place in the foreseeable future.

Demonstration on the cost-effectiveness, including through an assessment of the cost-effectiveness of the project design approach as compared to alternative approaches to achieve similar benefits.

The amount of POPs (UPOPs, PBDEs, etc) which will be avoided as a result of the proposed project will be estimated a part of the project's PPG phase, during project implementation, while a final cost-effectiveness will be reported on upon completion of the project.

Explanations of how the activities of the GEF/LDCF/SCCF projects will be replicated and catalized in the future; how will the positive effects of the project be maximized.

~~The replication of the positive effects of the project, the dissemination of lessons learned/best practices as well as the sustainable capacity building of the key stakeholders involved in the project will be further elaborated upon during the PPG phase of the project. However~~ (see also B.5) Certain key stakeholders (Government ministries; local governments; national associations and institutions; NGOs and CSOs; workers unions/representative groups, among others) will continue to play a critical role after the project has come to an end. With the capacity developed through the project, those key stakeholders will undertake steps to continue ongoing implementation and monitoring of sound waste management and recycling practices and the manufacturing of plastics. This would contribute to institutional sustainability and networking As the GoI indicated, currently the capacity to manage PBDEs (in all aspects of their life-cycle) is minimum and entities (whether formal or informal) find it challenging to identify the necessary technical support, capacity and information needed to either move away from the application of PBDEs or properly handle PBDE containing projects/articles. As such, the project will pay particular attention to capacity building, knowledge transfer, demonstration of BAT/BEP practices in formal and informal entities, gradual and systematic training-of-trainers in key institutions, and knowledge management (documentation of results and lessons-learned and dissemination) to ensure that each of the entities involved in the project will be able to continue to convey the knowledge and technical expertise they acquired throughout project implementation and apply it to support entities and individual in the future that were not able to benefit directly from this project. Therefore the positive effects of the project, the dissemination of lessons-learned/best practices as well as the sustainable capacity building of the key stakeholders involved in the project, will be replicated in the country.

Phase-out of PBDEs from the plastics manufacturing sector: it is important to note that PBDEs using plastics producers are facing challenges in exporting certain of their products. Considering the costs for alternatives (see B.3), it can be assumed that economic barriers to discontinue the use of PBDEs are low and manufacturers will be able to follow the example of the "project model" producers (using local expertise built under this project) to re-enter markets which shifted to low-content PBDEs products. In addition, Project Component 1 will catalize the replication of project activities through the creation of an enabling environment and removal of barriers to the adoption of BAT/BEP for plastics manufacturers and plastic recyclers, while putting in place national standards, and regulations on max. PBDEs levels, instituting economic instruments and incentives, among else.

Plastics recycling and disposal related project activities: the scope and timing for replication of BAT and BEP would be optimal keeping in mind the 2014 and 2019 targets set by the GOI. The project will be working with two (2) municipalities and eight (8) recycling entities, which will act as "model" municipalities and "model" recyclers for others to replicate best practices and lessons-learned to meet GOI targets. Project Component 1 will also catalize the replication of project activities and maximize the positive effects of the project through the creation of an enabling environment and removal of barriers to the adoption of BAT/BEP for the recycling and disposal of unrecyclable plastics. In addition, this project component will also support the establishment of a regulatory and policy framework (pertaining to import/export, processing, storage, for PBDE containing waste fractions as well as unrecyclable plastics etc.).

Elaboration on why the funding level of each activity is considered to be appropriate

The funding level of activities targeting PBDEs phase-out, as included in this proposal, build upon experiences, cost-effectiveness and budget expenditures as documented and reported in the implementation of UNDP supported ODS phase-out projects in the (plastics) foam manufacturing sector. Since 1992, UNDP has been supporting an extensive Montreal Protocol project portfolio (> 600 million US\$) which also included projects providing technical assistance to foam production processes applying (brominated) flame-retardants. The funding level of activities related to plastics recycling and reduction of UPOPs releases from inadequate waste disposal practices have been extracted from UNDP experiences in Argentina (GoA), Honduras (GEF), Nigeria (GEF) and the UNDP/WHO/GEF Global Medical Waste project (see also B.6). Funding levels for project activities related to PBDEs contained in plastics and articles build upon experiences from the Computing Equipment (PACE) working group (see also C.).

Based on cost-estimates as well as actual expenditures observed as part of the previous mentioned projects, and taking into consideration Indonesia's plastics production and recycling volumes, the proposed project components are comparative and their funding level proportional to the level of operation, considering local conditions.

Estimation of the global environmental/adaptation benefits of the project, including applied assumptions and methodologies.

The proposed project's global environmental benefits are concrete and measureable. Through implementation of BEP and BAT in plastics manufacturing, plastics recycling and plastics disposal, emission reductions to be achieved by the project are estimated as follows (detailed estimates for this part of the project will be developed during the PPG stage):

PBDEs:

- The phase-out of PBDEs from production processes at two (2) plastics manufacturing facilities is expected to reduce the use of PBDEs in plastics manufacturing by 7 tons/a.
- PBDEs releases from inadequate plastics recycling and processing practices as well as the unsound disposal of PBDE containing plastics in waterways and landfills not meeting sanitary requirements will be reduced by 4 tons/a through BEP/BAT introduction at two (2)*municipalities and eight (8) recycling entities.

UPOPs:

- The further development of supply chains for local plastics markets, increased plastic recycling rates and diversion of maximum quantities of recyclable plastics from inadequate disposal to recycling entities, is estimated to result in UPOPs release reduction of at least 15 g-TEQ/a. In addition the increased recovery and recycling will decrease the amount of plastics washed to sea and contributing to accumulation of marine debris.
- UPOPs releases from inadequate plastics processing and in particular inadequate disposal will be reduced by 15 g-TEQ/a through BEP/BAT introduction at two (2) municipalities and at eight (8) recycling entities.

National capacity built as part of this project (selection and identification of suitable PBDEs alternatives, introduction and implementation of BEP/BAT for manufacturing, recycling and final disposal practices, training, awareness building etc.) will enable the replication of project outcomes, which in turn could achieve an additional phase-out of 15 MT/a of PBDEs as well as reduce UPOPs releases by an additional 60 g-TEQ/a.

B.3. Describe the socioeconomic benefits to be delivered by the Project at the national and local levels, including consideration of gender dimensions, and how these will support the achievement of global environment benefits (GEF Trust Fund) or adaptation benefits (LDCF/SCCF). As a background information, read [Mainstreaming Gender at the GEF](#):

Through the outcomes of the project's interventions, plastics recyclers will be able to produce recycled materials that are purer in quality, are supplied in sufficiently large quantities to ensure a constant and reliable supply chain to plastics manufacturers and be able to offer them for internationally competitive pricing to the same. Not only creating additional income generating activities and jobs in the recycling sector, but also diverting waste from landfills and thus lowering the costs currently born by municipalities and tax-payers.

With respect to the phase-out of PBDEs in the plastics manufacturing sector, the incremental costs to replace PBDEs with alternatives or the redesign of products to eliminate the need for hazardous flame retardants would have to be considered for each of the facilities the project will be working with. A clear economic benefit resulting from the phase-out of PBDEs would be increased access to international markets and product competitiveness.

The introduction of BAT/BEP in plastics manufacturing, recycling and disposal as well as the phase-out of PBDEs in the plastics manufacturing sector will directly reduce releases of POPs (UPOPs & PBDEs), protect environmental and human health, and result in social and economic benefits such a reduced burden of disease and reduced health care and environmental remediation costs.

Gender considerations: The proposed project has multiple gender dimensions. Depending on the components of the project, gender ratio's as well as influence on their working environment might be very different depending on the sector. The PPG phase will assess and incorporate in the project gender aspects related to these sectors; ensure the participation, representation and buy-in of vulnerable worker and community populations in the project's formulation; and, mainstream gender into all activities to be undertaken as part of the full-size project as per the

“UNDP Technical Guide on mainstreaming SMC” and the UNDP guidance note on “The why and how of mainstreaming gender in chemicals management”.

B.4 Indicate risks, including climate change risks that might prevent the project objectives from being achieved, and if possible, propose measures that address these risks to be further developed during the project design:

Risk	Risk Level	Mitigating Actions
1. Ineffective coordination: <ul style="list-style-type: none"> Unclear with respect to the roles and responsibilities of the Government Ministries involved in aspects of waste management, plastics manufacturing and plastics recycling, resulting in lack of leadership or slow implementation of project components. Poor project ownership or commitment to the project’s implementation by any of the project’s stakeholders causing a barrier during data collection, but also negatively impacting project implementation and its success. 	Low	<ul style="list-style-type: none"> All project stakeholders will be fully involved and engaged throughout the project’s proposal planning phase, their buy-in with respect to project objectives, outcomes and activities as well as responsibilities of different stakeholders will be incorporated in the project document/proposal. A clear and realistic framework will be prepared (including ToR and responsibilities) prior to implementation of activities and in addition MoUs will be drawn up and signed between the project and its main beneficiaries (see also risk 3). Awareness raising will be conducted in such a manner that the focus will be on the economic and social advantages of project implementation as well as the use of BAT/BEP, ensuring the commitment to project implementation of all stakeholders.
2. Slow implementation of barrier reducing measures such as the further development and adoption of revised strategies, policies and regulations pertaining to the use of PBDEs in industry, safe and environmentally sound practices in plastics recycling and disposal. To a certain extent the project’s success will depend on the timing of the development and adoption of such measures.	Low to Moderate	<ul style="list-style-type: none"> Waste management is a public and government priority and as such the risk is deemed very low. However, particularly with respect to the informal plastics recycling sector the risks are deemed moderate, as incentives in the informal sector often are financial and to a lesser extent health related. The proposed project supports GOI in the strengthening of the nat. policy and regulatory framework pertaining to these sectors, thus the project itself can influence the timing of the creation of an enabling environment.
3. Lack of willingness: among plastics manufacturers, plastic recyclers, as well as entities involved in MSW management to practice and implement sound environmental practices to reduce releases of PBDEs and UPOPs.	Moderate	<ul style="list-style-type: none"> The project envisages developing and signing MoUs with project partners such as the selected municipalities, the plastics manufacturers as well as larger formally operating private sector project partners (e.g. in plastics recycling), clarifying roles and responsibilities during the project’s implementation and beyond, based on a best practice from the UNDP/WHO Global Medical Waste project. Training and awareness building among staff working in these facilities will help generate their interest from a health perspective. Capacity building of state and enforcement entities will help improve compliance ratios of plastics manufacturers and plastics recyclers.
<u>4. The transportation of large amounts of segregated material and waste to recyclers in addition to landfill and dump sites, may result in additional unnecessary GHG emissions. Also technologies and practices established for recycled materials may have high GHG emissions</u>	Low	<ul style="list-style-type: none"> <u>The project for each of its components, will assess climate impact and potential mitigation options in order to determine most suitable BEP/BAT approaches for project implementation tailored to national and local challenges and needs. The project will take into consideration: GHG emissions related to transport, manufacturing, treatment, recycling, landfilling and materials recovery as well as potential GHG offsets resulting from energy generation related to disposal, landfilling as well as materials recovery. In addition, the project will also take into consideration climate implications associated with the manufacture of receptacles, vehicles and treatment facilities, as well as the transfer of residual waste materials from intermediate storage and treatment facilities to landfill.</u>
Overall Risk Rating	Low	

B.5. Identify key stakeholders involved in the project including the private sector, civil society organizations, local and indigenous communities, and their respective roles, as applicable:

A full assessment of all relevant stakeholders that are to be involved in the project's development and implementation will be undertaken as part of the PPG phase of the proposed project. With the project's main stakeholders and TA recipients – Memoranda of Understanding (MoU) will be signed stipulating roles and responsibilities throughout the duration of the project. However at this stage the project proposal considers key stakeholders to be (list not exhaustive):

1. **Government Ministries** such as the Ministry of Industry (MOI), Ministry of Environment (MOE), Ministry of Energy and Mineral Resources (ESDM), Ministry of Health (MOH), Ministry of Finance (Directorate General of Customs and Excise - Customs) as well as other ministries involved with aspects of POPs-, chemicals- and waste- management or whose activities have a significant impact on the sound management of chemicals and wastes (agriculture, education, health, information and communication, women affairs, education, defense, etc.). **Role:** The Ministry of Industry will be responsible for overall project implementation, while several ministries (MOI, MOE, MOH and MOF) will be involved in the development of national standards on PBDEs content in articles; Development, revision and improvement of the national policy and regulatory framework for PBDE (waste) management; Development, adoption and implementation of technical by-laws to i) Reduce releases of UPOPs/PBDEs from unsound waste management practices and ii) Regulate the import of PBDEs and PBDE containing products and wastes; and, putting in place incentives for BAT/BEP implementation. They will continue implementation and monitoring of sound waste management and recycling practices and the manufacturing of plastics, working closely with other relevant stakeholders and industries.
2. **Local Governments** such as the selected municipalities are important players for local initiatives to reduce UPOPs and PBDEs releases and find appropriate and economically viable solutions for the final disposal of unrecyclable plastic wastes. **Role:** The two (2)* local “model” municipalities will – with TA from the project - identify and designate disposal areas for PBDEs containing wastes; put in place mitigation measures and best approaches to reduce/avoid harmful releases; collaborate with recycling entities in the selection and implementation of appropriate collection schemes; and train workers in personal protection measures and safe working conditions, among else. They will disseminate and share lesson learnt and best practices with other entities/provinces.
3. **Private sector** the formal and informal companies and enterprises involved in plastics manufacturing, plastics recycling, collection, reuse, etc. as well as companies involved in PBDE importation and distribution. **Role:** With TA provided by the project, two (2) plastics manufacturers will phase-out the use of PBDEs, through replacement by safer alternatives or product redesign, and provide lessons-learned information that will be used for the project's replication efforts at national level. The three (3) large-scale formal and five (5) medium scale informal plastics recyclers will implement BEP/BAT adhering technologies for plastics sorting, processing and recycling; work with municipalities to decide upon appropriate collection schemes of plastics (PBDE containing) waste fractions, support the project in further developing supply chains and increase recycling rates and train workers in personal protection measures and safe working conditions, among else. They will ensure continuous implementation of BAT/BEP and reduction of the use and releases of PBDEs and UPOPs.
4. **National Associations and Institutions:** such as the National Agency of Drug and Food Control (Badan Pengawas Obat dan Makanan/BPOM); the Agency for the Assessment and Application of Technology (BPPT); the Indonesian Association of Aromatic, Olefin and Plastics Industries (INAPLAS); the Association of Downstream Plastics Industries (APHINDO); the Association/ Union of Diverse Indonesian Plastics Weaving Industries (GIATPI); the Association of the Indonesian Inorganic Basic Chemicals (AKIDA); the National Committee of Responsible Care Indonesia (KN-RCI), etc. as well as other associations and institutions supporting activities or companies involved in plastics manufacturing and recycling, waste collection, reuse, etc. as well as companies involved in the importation and distribution of PDBEs. **Role:** National associations and institutions will play a critical role during the baseline and national inventory, based on their knowledge of the sector and the activities of their members. They will also play an important role in identifying suitable recipients (e.g. manufacturers and recyclers) for the project's TA as well as facilitate training of trainers to ensure long sustainability and knowledge management on PBDE phase-out and management; towards the end of the project they will support the dissemination of the project's lessons-learned as well as the project's replication efforts.
5. **NGOs and CSOs:** Such as Rencana Tata Ruang Wilayah Propinsi (RT/RWP), Pembinaan Kesejahteraan Keluarga (Family Welfare Movement) (PKK), Karang Taruna, in addition environmental organizations, women's organizations, recycling networks, and groups representing the rights of waste pickers and poor communities, such as the Indonesian Scavengers Association. **Role:** NGOs and CSOs will play a particular important role in awareness raising activities targeted towards the informal sector, workers

unions/representative groups (see below) as well as in the dissemination of lessons-learned and dissemination of best practices at national level during and after the project implementation.

6. **Workers unions/representative groups:** Representing employees in the plastics manufacturing and plastics recycling and waste management sectors. **Role:** Union and representative groups will be engaged in the project to support the training of workers in personal protection measures and safe working conditions; dissemination of the project's lessons-learned in particular those related to workers and informing the project's development (in particular during the PPGs phase) of particular harmful conditions workers are facing as well as any gender considering that would have to be taken into account.

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

The following initiatives are expected to provide useful information, lessons learned, or a good policy/regulatory foundation for the components to be carried out under the proposed project. The proposed project will be coordinated and consulted regularly through Ministry of Industry Coordination—with ~~other~~the executing agencies/entities listed above, and GEF agencies will be to ensure complementarities and synergies among activities as well as to ensure the sustainability of the project outcomes. Activities under this project will be integrated with other ongoing Chemicals/POPs management projects at various stages of implementation of those projects, and wherever feasible, possible joint activities (e.g., training and information outreach programs, good practice tools etc.) may be proposed. In addition, recently approved Indonesia NIP update project (UNIDO/GEF) includes the policy review and inventory of PBDEs, thus it will provide more concrete data and information on PBDEs which this proposed project can build upon.

~~As part of the PPG phase, a description of ongoing and planned activities that are beneficial/complementary to this project will be elaborated~~—(initiatives listed below are in addition to those listed under A, B and C - section B.1):

UNDP's related initiatives

- UNDP/UNOPS/GoA: "Argentina Recycle" (GoA ~ 160 million US\$)
- UNDP/MLF: "HCFC Phase-out Management Plans in the (Plastics)Foam Sector" entire HCFC UNDP portfolio ~ 150 million US\$.
- UNDP/GEF (POPs): "Nigeria: Less burnt for a clean Earth, Minimization of dioxin emissions from open burning sources." (GEF Grant: 4,150,000 US\$)
- UNDP/WHO/GEF (POPs): "Demonstrating and Promoting Best Techniques and Practices for Reducing Health-Care Waste to Avoid Environmental Releases of Dioxins and Mercury in Argentina, India, Latvia, Lebanon, Philippines, Senegal, Tanzania and Viet Nam" (GEF Grant: 10,326,455 US\$)
- UNDP/GEF (POPs) "Strengthening National Management Capacities and Reducing Releases of POPs in Honduras". (GEF Grant: 2,650,000 US\$)
- UNDP/GEF (POPs) "Reduction of POPs and PTS Release by Environmentally Sound Management throughout the Life Cycle of Electrical and Electronic Equipment and Associated Wastes in China" (GEF Grant: 11,650,000 US\$)

Related national activities/experiences.

- UNIDO/GEF (POPs): "EA to Facilitate Early Action on the Implementation of the Stockholm Convention on POPs in Indonesia" (GEF Grant: 499,800 US\$)
- The Blacksmith Institute/Indonesia: "Multi-Sectoral Group Action Plan for Integrated Hazardous Waste Management – Lead Waste Recycling and Chemical Management" (SAICM: 250,000 US\$)
- World Bank/Dinas Kebersihan/UNDP/Multi Donor Fund for Aceh and Nias: "Waste Management for Aceh and Nias" (14.5 Million US\$)
- UNIDO/GEF: "Introduction of BAT/BEP Strategies to Industrial Source Categories of Stockholm Convention Annex C of Article 5 in ESEA Region."
- UNIDO/GEF: "Demonstration of BAT and BEP in Fossil Fuel-fired Utility and Industrial Boilers in Response to the Stockholm Convention on POPs."
- WHO/Indonesia: "Technical Support to Strengthening National Capacities for Sound Management of Priority Industrial Carcinogens in Indonesia and Thailand." (SAICM: 219,456 US\$)

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

UNDP's comparative experience with respect to municipal waste management and recycling

Worldwide, in 2009 alone, 22 UNDP Country Offices were engaged in projects and initiatives related to MSWM. The most significant initiative among these is the 160 million US\$ “Recycle Argentina” project supported by UNDP/UNOPS. Over a 4-year timespan the project will benefit more than 4,000,000 people; construct nine solid waste treatment plants; strengthen institutional capacities on solid waste management and recycling in more than 40 municipalities; develop educational and communication components; develop the legal framework; undertake technology acquisition, etc. Since 2009, UNDP has also been implementing a global initiative on pro-poor Public Private Partnerships in Integrated Sustainable Waste Management (PPP-ISWM).

UNDP’s comparative experience with respect to POPs & UOPs reductions from inadequate waste disposal

As noted in Annex L of the document “Comparative advantages of the GEF agencies”, UNDP has a comparative advantage in the area of POPs, specifically with respect to Capacity Building and provision of Technical Assistance. The proposed project will benefit from UNDP’s experience in integrated policy development, human resources development, institutional strengthening, and non-governmental and community participation.

UNDP’s comparative experience with respect to the phase-out of PBDEs from the plastic manufacturing sector

The project’s PBDEs phase-out components will benefit from UNDP’s extensive experience and expertise in assisting the PUR foam manufacturing sector in the phase-out of Ozone Depleting Substances (ODS), through the identification of appropriate and cost effective alternative substances; validation and demonstration of alternative technologies (low carbon); policy and regulatory interventions; institutional capacity building and the development of national financial mechanisms to access, combine and sequence different sources of environmental financing (MLF, GEF, GOV, among else) to achieve MEA compliance and address climate co-benefits. Since 1992, UNDP has implemented 2085 projects in 110 countries, with a project portfolio with cumulative total value of over US\$ 600 million.

UNDP’s comparative experience with respect to the management of PBDEs contained in plastics and wastes

The proposed project components related to the management of PBDEs contained in existing plastics/products will benefit from the pilot activities which UNDP is supporting on management of Waste originating from Electric and Electronic Waste as e-waste plastic waste fractions contain significant levels of PBDEs.

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

In-kind technical support and assistance from UNDP were provided for initial scoping meetings with Government counterparts and project stakeholders which took place in the preparation for the formulation of this PIF.

During the project implementation stage, UNDP will contribute to the project 349,000 US\$ (grant) that will be provided from UNDP Indonesia internal resource. As in-kind co-financing, technical support and assistance will be provided by UNDP Indonesia and Montreal Protocol and Chemicals unit at UNDP headquarters. In addition, the Resident Representative functions and Country Office human resources and facilities, as well as the ongoing work related to chemicals and waste at the Country Office, will contribute to the successful project implementation.

C.2 How does the project fit into the GEF agency’s program (reflected in documents such as UNDAF, CAS, etc.) and staff capacity in the country to follow up project implementation:

The proposed project fits well into the GoI/UNDP Country Programme Action Plan 2011-2015:

Environment, Energy and Climate change - Supporting National Medium-term Development Plan Priorities 8 and 9 (UNPDF Outcome 5):

“Activities designed to promote sustainable natural resource management will focus on strengthening national and sub-national capacities to effectively manage natural resources and address environmental pollution. Strategies and guidelines will be developed to protect the environment, focusing on the reduction of persistent organic pollutants (POPs). Subsequently, attention will be given to the development of a National Implementation Plan (NIP) on POPs reduction along with a complementary monitoring system. UNDP will also support the Government in ensuring adherence to relevant international conventions ratified by Indonesia”.

Programme Component: Environment and Climate Change

Outcome 2.1: Responsible national institutions and relevant stakeholders are more effective in managing environmental resources and addressing environmental pollution.

Indicator (related to POPs): % emission reduction of POP compared to national baseline

Baseline (related to POPs): Level of POP emission in environment (water, sediment, biota)

Target (related to POPs): All kinds of intentionally produced POPs are banned in Indonesia

Output 2.1.3: Strategy and guidelines developed for the protection of the environment, focusing on POPs reduction.

The proposed project also fits well into the United Nations Partnership Development Framework 2011-2015 (UNPDF) also referred to as the UN Development Assistant Framework (UNDAF) 2011-2015: Outcome 5: Climate Change and Environment “*Strengthened CC mitigation and adaptation and environmental sustainability measures in targeted vulnerable provinces, sectors and communities*”.

Outputs:

- Policy/legal/institutional framework strengthened for implementation of major MEAs and maintaining key ecosystems, biological diversity, and sustainable management of natural resources. Indicator: Tracking information systems available on: Reduction and elimination on POPs (Stockholm Convention on POPs). Baseline: Not available yet. Target: Tracking system available.
- Capacities of government systems improved to prevent and combat environmental crimes and illegal pollution.
- Strengthen capacity for national network on implementation of resource efficient clean production (RECP) systems, including employment aspects. Indicator: Number of companies and public institutions in selected areas using cleaner technology system. Baseline: 0 companies and public institutions. Target: 500 companies and public institutions.

In-Country Staff Capacity:

UNDP's Country Office in Indonesia, in particular its Environment Unit, consisting of 9 professionals, has extensive experience in the implementation of GEF funded projects, such as those related to Climate-Change, Sustainable Energy, and Sustainable Natural Resource Management as well as multi-focal areas projects. The UNDP Country Office has also extensive experience in the development, implementation and monitoring of Montreal Protocol projects funded by the Multilateral Fund (MLF). UNDP is the Lead Agency in Indonesia for HCFC Phase-out Management Plan (HPMP) and coordinates HPMP implementation with the World Bank and UNIDO.

In addition, the Indonesia UNDP Country Office has been involved in the implementation of the project “*Waste Management for Aceh and Nias (2005-2012)*” in partnership with the World Bank, Dinas Kebersihan and the Multi Donor Fund for Aceh and Nias.


Considering in-country presence, its long-standing experience in GEF and MLF chemicals- and waste- related project implementation, the UNDP Indonesia's Environment Unit is very well placed to follow-up on project implementation and progress on a day-to-day basis.

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

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

NAME	POSITION	MINISTRY	DATE (MM/dd/yyyy)
Mr. Dana A. Kartakusuma	Assistant Minister, Economy and Sustainable Development	MINISTRY OF ENVIRONMENT	9 MARCH 12

- B. GEF AGENCY(IES) CERTIFICATION**

This request has been prepared in accordance with GEF/LDCF/SCCF policies and procedures and meets the GEF/LDCF/SCCF criteria for project identification and preparation.					
Agency Coordinator, Agency name	Signature	DATE (MM/dd/yyyy)	Project Contact Person	Telephone	Email Address
Adriana Dinu, Deputy Executive Coordinator UNDP/GEF		8/1/2012	Suely Carvalho, GEF Principal Technical Advisor for POPs/Ozone UNDP/MPU/Chemicals	212-906-6687	Suely.carvalho@undp.org