



GLOBAL ENVIRONMENT FACILITY  
INVESTING IN OUR PLANET

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February 19, 2014

Dear Council Member:

UNDP as the Implementing Agency for the project entitled: ***China: Reduction of POPs and PTS Release by Environmentally Sound Management throughout the Life Cycle of Electrical and Electronic Equipment and Associated Wastes in Chin***, has submitted the attached proposed project document for CEO endorsement prior to final approval of the project document in accordance with UNDP procedures.

The Secretariat has reviewed the project document. It is consistent with the proposal approved by Council in June 2012 and the proposed project remains consistent with the Instrument and GEF policies and procedures. The attached explanation prepared by UNDP satisfactorily details how Council's comments and those of the STAP have been addressed. I am, therefore, endorsing the project document.

We have today posted the proposed project document on the GEF website at [www.TheGEF.org](http://www.TheGEF.org). If you do not have access to the Web, you may request the local field office of UNDP or the World Bank to download the document for you. Alternatively, you may request a copy of the document from the Secretariat. If you make such a request, please confirm for us your current mailing address.

Sincerely,

Naoko Ishii  
CEO and Chairperson

Attachment: GEFSEC Project Review Document  
Copy to: Country Operational Focal Point, GEF Agencies, STAP, Trustee



# REQUEST FOR CEO ENDORSEMENT

**PROJECT TYPE: Full-sized Project**

**TYPE OF TRUST FUND: GEF Trust Fund**

For more information about GEF, visit [TheGEF.org](http://TheGEF.org)

## PART I: PROJECT INFORMATION

Project Title: CBPF-MSL: Reduction of POPs and PTS release by environmentally sound management throughout the life cycle of electrical and electronic equipment and associated wastes in China			
Country(ies):	People's Republic of China	GEF Project ID: <sup>1</sup>	4862
GEF Agency(ies):	UNDP	GEF Agency Project ID:	5044
Other Executing Partner(s):	Ministry of Environmental Protection, Foreign Economic Cooperation Office	Submission Date:	10 December 2013
GEF Focal Area (s):	Persistent Organic Pollutants	Project Duration(Months)	48
Name of Parent Program (if applicable):		Agency Fee (\$):	1,165,000
➤ For SFM/REDD+ <input type="checkbox"/> ➤ For SGP <input type="checkbox"/>			

### A. FOCAL AREA STRATEGY FRAMEWORK<sup>2</sup>

Focal Area Objectives	Expected FA Outcomes	Expected FA Outputs	Trust Fund	Grant Amount (\$)	Cofinancing (\$)
CHEM-1	Outcome 1.3: POPs releases to the environment reduced.	Indicator 1.3.1 Amount of unintentionally produced POPs releases avoided or reduced from industrial and nonindustrial sectors; measured in grams TEQ against baseline as recorded through the POPs tracking tool.	GEF TF	8,435,000	34,100,000
CHEM-1	Outcome 1.4: POPs waste prevented, managed, and disposed of, and POPs contaminated sites managed in an environmentally sound manner.	Indicator 1.4 Amount of POPs related waste prevented, managed and disposed.	GEF TF	900,000	3,500,000
CHEM-1	Outcome 1.5: Country capacity built to effectively phase out and reduce releases of POPs.	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 in the POPs tracking tool	GEF TF	675,000	3,050,000
CHEM-3	Outcome 3.2: Contribute to the overall objective of the SAICM of achieving the sound management of chemicals throughout their life-cycle in ways that lead to the minimization of significant adverse effects on human health and the environment.	Indicator 3.2.1 Countries implement SAICM relevant activities that generate global environmental benefits and report to the International Conference on Chemicals Management.	GEF TF	1,090,000	4,150,000
Sub-Total				11,100,000	44,800,000

<sup>1</sup> Project ID number will be assigned by GEFSEC.

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

Project Management Costs		GEF TF	550,000	2,200,000
<b>Total project costs</b>			11,650,000	47,000,000

## B. PROJECT FRAMEWORK

<b>Project Objective: Reduction and elimination of POPs and PTS releases associated with E-Waste processing through implementation of a life cycle WEEE management system based on extended producer responsibility, and application of BAT/BEP processing technology</b>						
<b>Project Component</b>	<b>Grant Type</b>	<b>Expected Outcomes</b>	<b>Expected Outputs</b>	<b>Trust Fund</b>	<b>Grant Amount (\$)</b>	<b>Confirmed Cofinancing (\$)</b>
1. Development and implementation of the national EPR system for WEEE	TA	<p>Outcome 1.1: Operational national EPR system covering priority POPs/PTS release sensitive E-Waste streams.</p> <p>Outcome 1.2: Adopted and implemented national technical standards and operational business documentation governing the management of WEEE in support of the EPR system.</p> <p>Outcome 1.3: Applied LCA/LCM procedures and labeling for product design and</p>	<p>1.1.1 National EPR Treatment Fund supporting environmentally sound WEEE collection, dismantling and processing operations is established and disbursing with coverage of POPs sensitive e-waste.</p> <p>1.1.2 International experience on EPR system management and control of WEEE material and financial flows in the WEEE management chain delivered through training and twinning arrangements particularly with respect to POPs sensitive e-waste stream components.</p> <p>1.1.3 Integrated information/data management system providing current information covering national, regional and local levels of the WEEE management chain operating in support of the EPR system.</p> <p>1.2.1 Technical standards defining targeted high POPs/PTS release sensitive WEEE (e-waste) streams, and applicable WEEE management chain technology performance, adopted and implemented.</p> <p>1.3.1 Guidance documentation for LCA/LCM and associated eco-labeling applied to product design and</p>	GEF TF	1,900,000	6,000,000

		<p>production.</p> <p>Outcome 1.4: Achieved public awareness and stakeholder consensus on the detailed design and implementation of the national EPR system.</p> <p>Outcome 1.5: Implementation of effective discrimination between second hand product and e-waste imports.</p>	<p>production for waste minimization and recovery &amp; recycling processing optimization in use.</p> <p>1.4.1 National stakeholder consultation program involving product producers, government implementing agencies, distributors, consumer representatives and NGOs at all levels on EPR system implementation through workshops, and input solicitation on disseminated documentation implemented.</p> <p>1.4.2 Public awareness initiatives respecting the EPR system in the form of information product dissemination delivered.</p> <p>1.5.1 Strengthened policy, regulations and enforcement covering the expanded controls on second hand product and e-waste imports</p> <p>1.5.2 Training and detection enhancement for improved discrimination between e-waste and second hand product imports consistent with Basel Convention requirements and guidance in place.</p> <p>1.5.3 Strengthened bi-lateral cooperation and coordination with major exporting countries implemented.</p>			
2. Demonstration and development of market based WEEE processing infrastructure	TA	<p>Outcome 2.1: Utilization and upgrading of the existing domestic WEEE collection system to efficiently and cost effectively supply registered/permited WEEE processing facilities particularly for POPs/PTS sensitive e-waste constituents.</p>	<p>2.1.1 Comprehensive characterization of current WEEE and specifically e-waste collection chain inclusive of developing and documenting the identified measures necessary to optimize the collection chain.</p> <p>2.1.2 Knowledge and experience exchange conducted on pilot interventions in the collection chain to optimize efficiency, particularly related to primary product separation for direction to recycling</p>	GEF TF	6,800,000	30,000,000

		<p>Outcome 2.2: Operation of a comprehensive national network of registered WEEE processing facilities to dismantle and process POPs/PTS release sensitive materials in an environmentally sound manner utilizing demonstrated BAT/BEP technologies.</p>	<p>facilities undertaken.</p> <p>2.2.1 Registration of WEEE processing operations including those handling POPs/PTS sensitive e-waste implemented and required upgrading/expansion opportunities identified.</p> <p>2.2.2 Technology selection and operational technical guidelines appropriate to various scale levels of WEEE processing developed.</p> <p>2.2.3 BAT/BEP technology demonstration initiatives investments targeting on POPs/PTS release sensitive e-waste materials undertaken. - on dismantling process at 3 enterprises; - on plastic, cable and epoxy resin processing at one enterprise; - On Waste Printed Circuit Board at 2 enterprises; - on CRT.</p> <p>2.2.4 Support for existing and new formal dismantling and processing operations based on incremental requirements matched to market growth such that a network of major regional facilities is operational.</p> <p>2.2.5 At least one center supported for processing of high value materials (i.e. printed circuit boards) to recover precious metals at qualified non-ferrous metals smelter(s).</p> <p>2.2.6 Policy, technology, management support provided to promote demonstration activities</p>			
3. Upgrading of informal WEEE processing and its integration into the EPR System	TA	<p>Outcome 3.1: Characterization of overall national scale, scope and impacts associated with the informal WEEE processing inclusive of identification of</p>	<p>3.1.1 National informal WEEE sector characterization study of the informal WEEE processing sector, particularly that handling POPs/PTS sensitive e-waste, undertaken.</p>	GEF TF	1,900,000	7,800,000

		high priority regions and centers.	3.1.2 Guidance and procedural documentation for undertaking environmental and health impact evaluations of potentially impacted areas and locations at the local level prepared and disseminated.			
		Outcome 3.2: Provision of policy, regulatory enforcement and awareness support provided through MEP to the local level related to supervision of the informal WEEE sector.	3.2.1 Model regulations and guidance materials on the supervision of WEEE processing at the local level developed and disseminated.  3.2.2 Awareness and assessment programs on the control and impacts of informal WEEE processing for local officials, operators and the public developed and delivered.			
		Outcome 3.3: Demonstration of collective infrastructure supporting informal WEEE processors and providing environmentally sound dismantling operations related to POPs/PTS sensitive release developed and integrated with the national EPR system recycling network for further processing.	3.3.1 Collectives formed from informal dismantling/processing operations established, inclusive of common support infrastructure and links to environmentally sound processors/residual disposal facilities. Municipale level collection chains/systems designed and implemented with 3 enterprises.			
4. Project Monitoring and Evaluation	TA	Outcome 4.1: Monitoring and evaluation; knowledge sharing and information dissemination.	4.1.1 Monitoring, evaluation and impact assessment.  4.1.2 Knowledge sharing and post project action plan.	GEF TF	500,000	1,000,000
Subtotal					11,100,000	44,800,000
Project Management Cost (PMC) <sup>3</sup>				GEF TF	550,000	2,200,000
<b>Total project costs</b>					<b>11,650,000</b>	<b>47,000,000</b>

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

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

Please include letters confirming cofinancing for the project with this form

Sources of Co-financing	Name of Co-financier (source)	Type of Cofinancing	Cofinancing Amount (\$)
Government	MEP, EPB of Hubei Province, Jiangsu Province and Tianjin Municipality	Grant	3,800,000
Private Sector	Recycling and Dismantling Enterprises	Grant	16,805,000
Others	Institutions	Grant	535,000
Government	MEP, EPB of Hubei Province, Jiangsu Province and Tianjin Municipality	In-kind	8,616,000
Private Sector	Recycling and Dismantling Enterprises	In-kind	16,045,000
GEF Agency	UNDP	In-kind	100,000
Bilateral Aid Agency (ies)	USEPA	In-kind	59,000
Others	Institutions	In-kind	1,040,000
<b>Total Co-financing</b>			<b>47,000,000</b>

**D. TRUST FUND RESOURCES REQUESTED BY AGENCY, FOCAL AREA AND COUNTRY<sup>1</sup>**

GEF Agency	Type of Trust Fund	Focal Area	Country Name/ Global	(in \$)		
				Grant Amount (a)	Agency Fee (b) <sup>2</sup>	Total c=a+b
<b>Total Grant Resources</b>						

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

<sup>2</sup> Indicate fees related to this project.

**F. CONSULTANTS WORKING FOR TECHNICAL ASSISTANCE COMPONENTS:**

Component	Grant Amount (\$)	Cofinancing (\$)	Project Total (\$)
International Consultants	80,000	80,000	160,000
National/Local Consultants	135,000	15,000	150,000

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

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

**PART II: PROJECT JUSTIFICATION****A. DESCRIBE ANY CHANGES IN ALIGNMENT WITH THE PROJECT DESIGN OF THE ORIGINAL PIF<sup>4</sup>**

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

No change

A.2. GEF focal area and/or fund(s) strategies, eligibility criteria and priorities: No change

A.3. The GEF Agency's comparative advantage: No change

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

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

The baseline project has not changed since the PIF approval. While there is no major changes reflected in the project document or in the different project components, nonetheless, the activities in the project document contains minor adjustments and the corresponding changes in the project budget within each project component, with more efficient budget allocation both in the GEF and the co-financing budgets, to reflect the strengths and needs of the project activities that will better achieve project outcomes and project objectives, as identified during the PPG phase is to identify the possibility of e-waste business on carbon emission reduction trading,

As energy consumption in removing precious metals from e-waste is much less than extracting the same metals from mining, the project will also explore the potential of carbon emission reduction by developing methodologies for e-waste management in the formal sector. The project will coordinate relevant stakeholders in public and private sector to create an enabling policy and market environment for the formal sector to sell the carbon emission reduction to electronic and electronic product producers for carbon emission reduction. Partnership between the government and carbon trading market in China and other countries will be strengthened so that the methodology and the carbon credit can be accepted globally. The main outputs will include:

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

There is no fundamental change. The PPG phase allowed the definition of the global environmental benefits to be delivered with more precision.

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

No change. It is emphasized that the most significant risk is the sustained informal operation due to continued availability of illegal WEEE imports and the continuous delivery of e-waste by the domestic informal collectors with continued environmental impacts and potentials to undermine the economic basis for the formal domestic WEEE management system. The MEP indicated that the illegal import of e-waste is being restrained as a result of policies and close cooperation between the MEP and customs and quality inspection departments to enhance the effectiveness of both the monitoring of and crackdowns on illegal e-waste import. In addition to strengthened policy and enforcement efforts, the project undertakes proactive approach to integrate the informal sector into a properly managed and funded WEEE management system. One specific aspect that a formal EPR based system will offer in the project is to ensure that sufficient financial incentive exists for the collection and pretreatment (dismantling) of all WEEE regardless of value which without the financial incentives at this level does not happen in an informal system. The demonstration activities of municipality level collection chains/systems will certainly facilitate the diversion of e-waste being delivered towards the formal and qualified processing enterprises, and bring the current informal sector into the formal recycling system, the informal sector can moved up the value chain bringing their income levels up from current low levels.

- A.7. Coordination with other relevant GEF financed initiatives: N/A



## **B. ADDITIONAL INFORMATION NOT ADDRESSED AT PIF STAGE:**

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

In China, in addition to governmental agencies, there are various key stakeholders who are involved in waste electrical and electronic equipment (WEEE) issues. The key stakeholders include civil society organizations, institutions, agencies, researchers, private sector, industrial groups, local and indigenous communities. The respective roles of key stakeholders and their areas of expertise are described below.

At the national level, six governmental agencies play the key roles in legislation, management, monitoring and communication of e-waste issues, namely, the National Development and Reform Committee (NDRC), Ministry of Environmental Protection (MEP), Ministry of Industry and Information Technology (MIIT), Ministry of Commerce (MOC), Ministry of Finance (MOF) and General Administration of Customs (GAC).

The main stakeholders and their respective roles and responsibilities for the EPR Treatment Fund and e-waste management are described in detail in the Project management arrangement under Section V Management Arrangement. Since early stage of project formulation, PPG stage, and project document preparation, the Executing Agency, FECO/MEP, and the International Implementing Agency, UNDP, have conducted extensive and exhaustive consultation sessions, including a stakeholder workshop, with all key relevant stakeholders and project partners to exchange experience and knowledge to facilitate effective project design and formulation where stakeholder's interest and influence were assessed. FECO/MEP also undertook numerous consultative missions to evaluate provinces, municipalities, cities and enterprises for their selection as demonstration locations and demonstration enterprises, including evaluation of different environmentally friendly processing technologies.

On the national level, inter-ministerial cooperation and coordination are periodically carried out on policy, enforcement and strategy matters. The national 12<sup>th</sup> Five Year Development Plan on environmental protection when WEEE was included for the first time, and the provincial and municipality level Five Year Development Plan serve as the strategic guidance to undertake environmentally sound WEEE management.

On the international level, consultations and coordination have been effectively conducted with bilateral donors and international organizations on carrying out related activities. This has proven useful in international experience and knowledge exchanges during project implementation.

All these cooperation and coordination efforts have been proven effective during project design and formulation, and the well-established mechanism will continue to be used, and their interest and influence will be taken into full consideration during project implementation to generate efficient and effective stakeholder engagement.

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

The overall socioeconomic benefit of the project is derived from the elimination of POPs releases that having significant negative impacts on biological resources, inclusive of human health. The associated risk reduction at both a local and national level will positively impact the productivity of populations and reduce the financial burden imposed by potentially degraded public health, as well as contributing to general wellness, economic development and quality of life. This is particularly true for vulnerable parts of the population and for maternal health that would be improved by reduced POPs and PTS exposure.

More specific socioeconomic benefits from the project are associated with its proactive approach to integrating the informal sector into a properly managed and funded WEEE management system. The informal sector generally involves low income sectors of the population who currently undertake the polluting informal processing of WEEE, essentially in their home environments with the significant health effects on all ages and genders in close proximity. The transition of dismantling and primary processing activities to appropriately sited and equipped locations supported by collective environmentally sound infrastructure and operating with appropriate workplace standards will positively change this situation, as well as better assuring an equitable distribution of revenues for labour provided.

One specific aspect that a formal EPR based system can offer is to ensure that sufficient financial incentive exists for the collection and pre-treatment (dismantling) of all WEEE regardless of value which without the financial incentives at this level does not happen in an informal system. In addition to the environmental benefit of maximizing waste stream capture, it serves to create additional income for bottom income tier of the system with associated positive social impacts.

At the same time, it is recognized that the transition of WEEE processing in China from the informal to formal sector will potentially cause some socio-economic changes as individuals and communities adjust to the more structured but environmentally sustainable system. The project itself assists in ensuring this aspect is considered in the design and implementation of the EPR system by maximizing integration of informal sector resources into the system. With a carefully organized and calibrated approach towards bringing the current informal sector into the formal recycling system, the informal sector can move up the value chain bringing their income levels up from current low levels. Additionally, these considerations will need to be factored into the tools developed in Component 3 that will allow the national level to provide direction to local level and other international initiatives intended to mitigate historical environmental and health impacts from traditional informal sector activities.

In daily life, men, women, and children are exposed to different kinds of toxic chemicals include POPs in varying concentrations. The level of exposure to toxic chemicals – as well as the resulting impacts on human health – is determined by social as well as biological factors. The increasing use of appliances in homes and business, combined with shorter lifecycle of appliances, has drastically increased the volume of e-waste globally and domestically in China. Generally the level and type of harmful substances are not depending on whether the e-waste is treated in large or small scale, or indeed whether mechanical or manual step are utilized. There is however, a large difference in the scale of harmful releases depending on whether e-waste treatment is conducted under controlled and systemized circumstances by operators that are aware of the various hazards or treated uncontrolled by unaware processors.

In China, WEEE dismantling process employs more primitive, manual technology. As WEEE itself contains persistent toxic chemical contaminants (such as heavy metals, dioxins, brominated flame retardants, etc.) which will be released into the environment through improper treatment process, serious threats are imposed to the ecological system and the human health at the dismantling site. The Chinese WEEE recycling industry is related to severe health and safety risks for labours in this industry. The risks come from inadequate methods during the recovering procedures such as open burning of wires and the chemical treatment of circuit boards and electronic parts. The labours' health is not protected since there are not precautionary measures adopted in the informal sector. Therefore occupational diseases related to skin, stomach, respiratory tract and other organs have been found. Many of the workers in dismantling and processing e-waste informally are women children and thus women and children become the group most directly impacted by the health risk in the work place, as well as due to exposure in the contaminated sites where most of this group inhabited.

By addressing the POPs/PTS release in WEEE processing, health risks for the female workers and their children will be reduced from exposure of POPs/PTS leading to ameliorated health situation for them. During implementation, the project will address the priority concerns of vulnerable groups including female workers and the poor to assess and strengthen capacity to reduce POPs/PTS release sensitive streams. The project will ensure female participation in the related activities of training and capacity building. In addition, there will be two overarching interventions – awareness raising and multi-stakeholder's participation – that will contribute to ensuring the successful implementation of gender mainstreaming.

The direct global environmental benefits will involve assurance of significant elimination of POPs/PTS releases, primary POPs in the form of PCDD/F and PBDD/F that would otherwise be released on an ongoing basis in the absence of adoption of sustainable BAT/BEP based processing, but also covering the release of PBDEs and PCBs from random land disposal of processing residuals. At this point, the only readily quantifiable release reductions are for PCDD/F which if a conservatively estimated proportion of WEEE processed by the informal sector using open burning of cable, and printed circuit boards were eliminated could result in up to 655 gI-TEQ/year in PCDD/F reductions and avoidance of up to 8.3 t/year of PBDE either combusted or disposed of by random land disposal. The project will undertake quantification of the additional release reductions associated with other POPs and various heavy metals which are also anticipated to be globally significant. It should also be noted that the project compares favorably in term of GEF grant cost effectiveness measured in US\$/g I-TEQ PCDD/F release reduction relative to already approved projects in China primarily addressing GEF-5 Chemicals Focal Area Strategy Outcome 1.3 and Indicator 1.3

Two associated areas of significant global environmental benefit from the efficient and sustainable operation of the planned national WEEE management system are the reductions in releases of heavy metals from traditional WEEE processing practice and that methodology will be developed for e-waste business on carbon emission reduction trading. The reduction in heavy metal releases is estimated at 1,000 ton of lead.

In terms of carbon emission reduction trading, as the biggest challenge for e-waste management in China is the difficulty for the formal sector to compete with the informal sector as the formal sector takes care of environmental and health issues in their e-waste management activities, hence incurring higher cost, while the informal sector can generate higher profit without considering the negative environmental and health impacts. As a result informal sector can pay a much higher premium for the raw materials than the formal sector.

Even with the subsidies under the EPR Treatment Fund, the electrical and electronic producers still have to pay a higher cost for e-waste management, the financial support is still not sufficient for the formal sector to compete with the informal sector. It is necessary to identify other channels to further support the formal sector to compete or even to integrate the informal sector to mitigate the negative environmental and health impacts of e-waste management.

As energy consumption in removing precious metals from e-waste is much less than extracting the same metals from mining, the project will also explore the potential of carbon emission reduction by developing methodologies for e-waste management in the formal sector. The project will coordinate relevant stakeholders in public and private sector to create an enabling policy and market environment for the formal sector to sell the carbon emission reduction to electronic and electronic product producers for carbon emission reduction. Partnership between the government and carbon trading market in China and other countries will be strengthened so that the methodology and the carbon credit can be accepted globally. The main outputs will include:

- a. Evaluation conducted to analyze the carbon emission potential for the e-waste management.
- b. Methodologies developed for the formal sector for the e-waste management
- c. Working mechanism established for the government as well as the carbon trading exchanges in China to endorse the relevant methodology and carbon credit.
- d. Advocacy and communication strengthened to create enabling market for the carbon credit from formal sector e-waste management while at the same time help those electrical and electronic product producers to reduce their carbon emission.
- e. Partnership with developed and developing countries strengthened so that the methodologies and carbon credit can be accepted globally.

Main partners in this activity will include the government (MEP and NDRC), business sector (Environmental Exchanges in China and other parts of the world, e-waste management companies and electrical and electronics products producers), and relevant associations and academies

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

The overall project strategy is to blend GEF funding into the overall national EPR WEEE management system development process to address the issues and principle barriers to achieving the targeted overall improvement in the environmental performance of the WEEE processing sector and the areas where GEF intervention can be of assistance in ensuring these targets are achieved and exceeded, specifically ensuring that international best practice experience and technology options are considered.

The overall result of the project will be China having an domestic WEEE management system financed by a robust sustainable EPR mechanism and operating with BAT/BEP that effectively maximizes the resource recovery potential available while eliminating the major environmental releases, particularly POPs releases currently attributed to WEEE processing. The incremental and additional cost reasoning supporting the GEF intervention relates to the use of GEF funding as an integral part of a large proactive national program with the GEF support specifically targeting areas where international experience in addressing the WEEE issue will strengthen the national program, and substantively increase its effectiveness in terms of coverage, sustainability and environmental benefits.

The specific assistance areas where GEF assistance will focus to achieve incremental/addition results are: i) the detailed design and operational implementation of the EPR mechanism to shorten the inevitable learning curve in establishing the

charges, financial flows and feedback controls to maximize its flexibility and transparency by transferring well established international experience as appropriate; ii) ensuring that it fully encompasses and appropriately charges POPs/PTS release sensitive products; iii) maximizing resource recovery efficiency and environmental performance by introduction and demonstration of internationally bench marked BAT/BEP; iv) supports the proactive integration of the currently competing informal sector into the EPR financed system that may otherwise not be a priority in design of system; v) accelerate efforts to control and eliminate the current illegal trade in WEEE that could undermine the EPR based domestic system, specifically through promotion of increased enforcement and coordination with exporting countries; and v) facilitate initiation of dealing with legacies from past practices that might otherwise be deferred.

The extensive exchange and consultation during project design and formulation with all relevant key stakeholders is key to ensure cost-effective use of GEF resources, project activities have been carefully designed, reviewed and appropriately budgeted to ensure maximum resource utilization. This is particularly true for all the demonstration activities as the demonstration locations, the demonstration enterprises, the technologies selected all went through an elaborated selection process, where the management and technological capacities were extensive evaluated, and the project budgets carefully negotiated and agreed upon.

Cost-effectiveness in project design can be evidenced by the amount of co-financing being committed, \$47 million. This reflects strong commitment of the national and local governments, the private enterprises and the international communities, to see China having an existence of a domestic WEEE management system, financed by a robust sustainable EPR mechanism and operating with BAT/BEP through inputs of international knowledge and experience, to eliminate major environmental POPs/PTS releases.

Communication and coordination with donor and international agencies working on similar interventions have been established to ensure there are no overlaps of activities and full advantage of beneficial synergies are taken. This is especially important as one of the major activities is the infusion of international experience and knowledge on EPR, WEEE management, and BAT/BEP.

Project activities have been carefully reviewed and designed to take full advantage of the project cycle, to ensure that project activities can be timely completed to achieve project objectives and outcomes.

### **C. DESCRIBE THE BUDGETED M & E PLAN:**

#### **Monitoring and Reporting**

Project monitoring and evaluation (M&E) will be conducted in accordance with established UNDP and GEF procedures and will be provided by the project team and the UNDP Country Office (UNDP-CO) with support from UNDP-GEF Regional Coordination Unit in Bangkok. The Results and Resources Framework under Section III provides performance and impact indicators for project implementation along with their corresponding means of verification. These indicators, together with the POPs Tracking Tool will be used as instruments to monitor progress in POPs reduction management effectiveness and form the basis for the M&E system under this project. The M&E plan includes: inception report, project implementation reviews, quarterly and annual review reports, and mid-term and final evaluations. The following sections outline the principal components of the Monitoring and Evaluation Plan and indicative cost estimates related to M&E activities. The project's Monitoring and Evaluation Plan will be presented and finalized in the Project's Inception Report following a collective fine-tuning of indicators, means of verification, and the full definition of project staff M&E responsibilities.

The Ministry of Environment (MEP) as the national implementing agency will designate the National Project Team (NPT) to be responsible for the organization of the M&E activities as stated in table below.

#### **Project Inception Phase**

A Project Inception Workshop (IW) will be conducted with the full project team, relevant government counterparts, co-financing partners, the UNDP-CO and representative from the UNDP-GEF Regional Coordinating Unit, as well as UNDP-GEF (HQs) as appropriate to inform the key stakeholders the goal, objectives and management arrangement of the project, mobilize them to actively participate in the implementation of this project. A fundamental objective of the Inception Workshop will be to assist the project team to understand and take ownership of the projects goal and objective, as well as to finalize preparation of the project's first annual Work Plan (AWP) on the basis of the Results and Resources Framework, along with M&E plan, with concise and measurable performance indicators and in a manner

consistent with the expected outcomes of the project. Additionally, the purpose and objective of the Inception Workshop will be to: (i) introduce project staff to the UNDP-GEF team which will support the project during its implementation, namely the CO and responsible Regional Coordinating Unit staff; (ii) detail the roles, support services and complementary responsibilities of UNDP-CO and RCU staff vis à vis the project team; (iii) provide a detailed overview of UNDP-GEF reporting and monitoring and evaluation (M&E) requirements, with particular emphasis on the Annual Project Implementation Reviews (PIRs) and related documentation, the Annual Review Report (ARR), Annual Review Meetings, audited financial statements, as well as mid-term and final evaluations. Equally, the IW will provide an opportunity to inform the project team on UNDP project related budgetary planning, budget reviews, and mandatory budget rephasings. The IW will also provide an opportunity for all parties to understand their roles, functions, and responsibilities within the project's decision-making structures, including reporting and communication lines, and conflict resolution mechanisms. The Terms of Reference for project staff and decision-making structures will be discussed again, as needed, in order to clarify for all, each party's responsibilities during the project's implementation phase. NPT will prepare the Inception Report to summarize the outputs and achievement of the workshop.

#### *Monitoring responsibilities and events*

A detailed schedule of project reviews meetings will be developed by the project management, in consultation with project implementation partners and stakeholder representatives and incorporated in the Project Inception Report. Such a schedule will include: (i) tentative time frames for Tripartite Reviews, Steering Committee Meetings, (or relevant advisory and/or coordination mechanisms) and (ii) project related Monitoring and Evaluation activities.

Day-to-day monitoring of implementation progress will be the responsibility of the Project Coordinator based on the project's Annual Work Plan and its indicators. The National Project Team will inform the UNDP-CO of any delays or difficulties faced during implementation so that the appropriate support or corrective measures can be adopted in a timely and remedial fashion.

The Project Coordinator, the National Technical Advisor, and the Chief Technical Advisor will fine-tune the progress and performance/impact indicators of the project in consultation with the full project team at the Inception Workshop with support from UNDP-CO and assisted by the UNDP-GEF Regional Coordinating Unit. Specific targets for the first year implementation progress indicators together with their means of verification will be developed at this Workshop. These will be used to assess whether implementation is proceeding at the intended pace and in the right direction and will form part of the Annual Work Plan. The local project management offices will also take part in the Inception Workshop in which a common vision of overall project goals will be established. Targets and indicators for subsequent years would be defined annually as part of the internal evaluation and planning processes undertaken by the project team.

Measurement of impact indicators related to global benefits will be done according to the schedules defined in the Inception Workshop. The measurement of these will be undertaken through subcontracts or retainers with relevant institutions, or through specific studies that are to form part of the projects activities. Indicators of project goal, progress and performance will be continuously monitored and evaluated throughout the whole project life.

Periodic monitoring of implementation progress will be undertaken by the UNDP-CO through quarterly meetings with the project proponent, or more frequently as deemed necessary. This will allow parties to take stock and to troubleshoot any problems pertaining to the project in a timely fashion to ensure smooth implementation of project activities.

UNDP-CO and UNDP-GEF RCU as appropriate, will conduct yearly visits or more often based on an agreed upon schedule to be detailed in the project's Inception Report / Annual Work Plan to assess first hand project progress. Any other member of the Steering Committee can also accompany, as decided by the Steering Committee. A Field Visit Report will be prepared by the UNDP-CO and circulated no less than one month after the visit to the project team, all Steering Committee members, and UNDP-GEF.

Annual Monitoring will occur through the Tripartite Review (TPR). This is the highest policy-level meeting of the parties directly involved in the implementation of a project. The project will be subject to Tripartite Review (TPR) at least once every year. The first such meeting will be held within the first twelve months of the start of full implementation. The project proponent will prepare an Annual Project Report (APR) and submit it to UNDP-CO and the UNDP-GEF RCU at least two weeks prior to the TPR for review and comments.

The APR will be used as one of the basic documents for discussions in the TPR meeting. The project proponent will present the APR to the TPR, highlighting policy issues and recommendations for the decision of the TPR participants. The project proponent also informs the participants of any agreement reached by stakeholders during the APR preparation on how to resolve operational issues. Separate reviews of each project component may also be conducted if necessary.

The Terminal Tripartite Review (TTR) will be held in the last month of project operations. The project proponent is responsible for preparing the Terminal Report and submitting it to UNDP-CO and UNDP-GEF's Regional Coordinating Unit. It shall be prepared in draft at least two months in advance of the TTR in order to allow review, and will serve as the basis for discussions in the TTR. The Terminal Tripartite Review considers the implementation of the project as a whole, paying particular attention to whether the project has achieved its stated objectives and contributed to the broader environmental objective. It decides whether any actions are still necessary, particularly in relation to sustainability of project results, and acts as a vehicle through which lessons learnt can be captured to feed into other projects under implementation or formulation.

The TPR has the authority to suspend disbursement if project performance benchmarks are not met. Benchmarks will be developed at the Inception Workshop, based on delivery rates, and qualitative assessments of achievements of outputs.

#### *Verify performance indicators*

During the implementation of the project, NPT, in collaboration with UNDP-CO and with assistance by the LPMOs, will organize the activities for verifying performance indicators. Detailed M&E schedule will be developed simultaneously with and as part of the Annual Work Plan.

UNDP-CO and UNDP-GEF RCU as appropriate, will conduct yearly visits or more often based on an agreed upon schedule to be detailed in the project's Inception Report / Annual Work Plan.

#### *Project Reporting*

The Project Manager in conjunction with the UNDP-GEF extended team will be responsible for the preparation and submission of the following reports that form part of the monitoring process. The first six reports are mandatory and strictly related to monitoring, while the last two have a broader function and the frequency and nature is project specific to be defined throughout implementation.

A Project Inception Report (IR) will be prepared immediately following the Inception Workshop. It will include a detailed work plan divided in quarterly time-frames detailing the activities and progress indicators that will guide implementation during the first year of the project. This work plan will include the dates of specific field visits, support missions from the UNDP-CO or the Regional Coordinating Unit (RCU) or consultants, as well as time-frames for meetings of the project's decision making structures. The Report will also include the detailed project budget for the first full year of implementation, prepared on the basis of the Annual Work Plan, and including any monitoring and evaluation requirements to effectively measure project performance during the targeted 12 month time-frame. The Inception Report will include a more detailed narrative on the institutional roles, responsibilities, coordinating actions and feedback mechanisms of project related partners. In addition, a section will be included on progress to date on project establishment and start-up activities and an update of any changed external conditions that may affect project implementation. When finalized, the report will be circulated to project counterparts who will be given a period of one calendar month in which to respond with comments or queries. Prior to this circulation of the IR, the UNDP Country Office and UNDP-GEF's Regional Coordinating Unit will review the document.

An Annual Project Report (APR) shall be prepared by the Project Manager and shared with the Project Steering Committee. As a self-assessment by the project management, it does not require a cumbersome preparatory process. As minimum requirement, the Annual Project Report shall consist of the Atlas standard format for the Project Progress Report (PPR) covering the whole year with updated information for each element of the PPR as well as a summary of results achieved against pre-defined annual targets at the project level. As such, it can be readily used to spur dialogue with the Project Steering Committee and partners. An APR will be prepared on an annual basis prior to the Project Steering Committee meeting to reflect progress achieved in meeting the project's Annual Work Plan and assess performance of the project in contributing to intended outcomes through outputs and partnership work. The APR should consist of the following sections: (i) project risks and issues; (ii) project progress against pre-defined indicators and targets and (iii) outcome performance.

The Project Implementation Review (PIR) is an annual monitoring process mandated by the GEF. It has become an essential management and monitoring tool for project managers and offers the main vehicle for extracting lessons from ongoing projects. Once the project has been under implementation for a year, a Project Implementation Report must be completed by the CO together with the project team. The PIR should be participatorily prepared in July and discussed with the CO and the UNDP/GEF Regional Coordination Unit during August with the final submission to the UNDP/GEF Headquarters in the first week of September.

Quarterly progress reports: Short reports outlining main updates in project progress will be provided quarterly to the local UNDP-Country Office and the UNDP-GEF RCU by the project team.

UNDP ATLAS Monitoring Reports: A Combined Delivery Report (CDR) summarizing all project expenditures, is mandatory and should be issued quarterly following the finalization of the quarterly. The Project Manager should send it to the Project Steering Committee for review and the Implementing Partner should certify it. The following logs should be prepared: (i) The Issues Log is used to capture and track the status of all project issues throughout the implementation of the project. It will be the responsibility of the Project Manager to track, capture and assign issues, and to ensure that all project issues are appropriately addressed; (ii) the Risk Log is maintained throughout the project to capture potential risks to the project and associated measures to manage risks. It will be the responsibility of the Project Manager to maintain and update the Risk Log, using Atlas; and (iii) the Lessons Learned Log is maintained throughout the project to capture insights and lessons based on good and bad experiences and behaviours. It is the responsibility of the Project Manager to maintain and update the Lessons Learned Log.

Project Terminal Report: During the last three months of the project the project team will prepare the Project Terminal Report. This comprehensive report will summarize all activities, achievements and outputs of the Project, lessons learnt, objectives met, or not achieved, structures and systems implemented, etc. and will be the definitive statement of the Project's activities during its lifetime. It will also lay out recommendations for any further steps that may need to be taken to ensure sustainability and replicability of the Project's activities.

Periodic Thematic Reports: As and when called for by UNDP, UNDP-GEF or the Implementing Partner, the project team will prepare Specific Thematic Reports, focusing on specific issues or areas of activity. The request for a Thematic Report will be provided to the project team in written form by UNDP and will clearly state the issue or activities that need to be reported on. These reports can be used as a form of lessons learnt exercise, specific oversight in key areas, or as troubleshooting exercises to evaluate and overcome obstacles and difficulties encountered. UNDP is requested to minimize its requests for Thematic Reports, and when such are necessary will allow reasonable timeframes for their preparation by the project team.

Technical Reports are detailed documents covering specific areas of analysis or scientific specializations within the overall project. As part of the Inception Report, the project team will prepare a draft Reports List, detailing the technical reports that are expected to be prepared on key areas of activity during the course of the Project, and tentative due dates. Where necessary this Reports List will be revised and updated, and included in subsequent APRs. Technical Reports may also be prepared by external consultants and should be comprehensive, specialized analyses of clearly defined areas of research within the framework of the project and its sites. These technical reports will represent, as appropriate, the project's substantive contribution to specific areas, and will be used in efforts to disseminate relevant information and best practices at local, national and international levels.

Project Publications such as knowledge products and compilations of lessons learned will form a key method of crystallizing and disseminating the results and achievements of the Project. These publications may be scientific or informational texts on the activities and achievements of the Project, in the form of journal articles, multimedia publications, etc. These publications can be based on Technical Reports, depending upon the relevance, scientific worth, etc. of these Reports, or may be summaries or compilations of a series of Technical Reports and other research. The project team will determine if any of the Technical Reports merit formal publication, and will also (in consultation with UNDP, the government and other relevant stakeholder groups) plan and produce these Publications in a consistent and recognizable format. Project resources will need to be defined and allocated for these activities as appropriate and in a manner commensurate with the project's budget.

### ***Independent Evaluations, Audits and Financial Reporting***

The project will be subjected to at least two independent external evaluations as follows: An independent Mid-Term Review will be undertaken at exactly the mid-point of the project lifetime. The Mid-Term Review will determine

progress being made towards the achievement of outcomes and will identify course correction if needed. It will focus on the effectiveness, efficiency and timeliness of project implementation; will highlight issues requiring decisions and actions; and will present initial lessons learned about project design, implementation and management. Furthermore, it will review and update the ESSP report. Findings of this review will be incorporated as recommendations for enhanced implementation during the final half of the project's term. The organization, terms of reference and timing of the mid-term review will be decided after consultation between the parties to the project document. The Terms of Reference for this Mid-term review will be prepared by the UNDP-CO based on guidance from the UNDP-GEF Regional Coordinating Unit.

An independent Final Evaluation will take place three months prior to the terminal Project Steering Committee meeting, and will focus on the same issues as the mid-term evaluation. The final evaluation will also look at impact and sustainability of results, including the contribution to capacity development and the achievement of global environmental goals. The Final Evaluation should also provide recommendations for follow-up activities. The Terms of Reference for this evaluation will be prepared by the UNDP-CO based on guidance from the UNDP-GEF Regional Coordinating Unit.

### ***Learning and Knowledge Sharing***

Results from the project will be disseminated within and beyond the project intervention zone through a number of existing information dissemination networks and forums. New channels will be created to strengthen the knowledge sharing among the public. Knowledge sharing will support the development of national policies, guidelines, regulations, financial mechanisms.

The project will identify and participate, as relevant and appropriate, in scientific, policy-based and/or any other networks, which may be of benefit to project implementation though lessons learned. The project will identify, analyze, and share lessons learned that might be beneficial in the design and implementation of similar future projects. Identification and analysis of lessons learned is an on- going process, and the need to communicate such lessons as one of the project's central contributions is a requirement to be delivered at least once in every 12 months. UNDP-GEF shall provide a format and assist the project team in categorizing, documenting and reporting on lessons learned.

### ***Audit Clause***

The Government will provide the Resident Representative with certified periodic financial statements, and with an annual audit of the financial statements relating to the status of UNDP (including GEF) funds according to the established procedures set out in the Programming and Finance manuals. The Audit will be conducted according to UNDP financial regulations, rules and audit policies by the legally recognized auditor of the Government, or by a commercial auditor engaged by the Government.

#### **M&E ACTIVITIES, RESPONSIBILITIES, BUDGET AND TIME FRAME**

<b>Type of M&amp;E Activity</b>	<b>Responsible Parties</b>	<b>Budget GEF</b>	<b>Budget Co-financing</b>	<b>Budget US\$ (Excluding project team Staff time)</b>	<b>Time frame</b>
Initiate the project by Inception Workshop (IW)	National Project Team (NPT)	30,000	60,000	90,000	Within first three months of project start up
Prepare Inception Report	NPT			Included in IW	Submit draft two weeks before IW, finalize two weeks after IW
Verify impact indicators, project progress and performance by field visits, questionnaires, interviews and monitoring as appropriate	NPT, Project Manager to oversee and designate responsibilities	170,000	340,000	510,000	Annually, prior to APR/PIR as defined in AWP



Prepare Quarterly Progress Reports	NPT			None	Quarterly
Prepare Annual Project Reports (APR) and Project Implementation Reviews (PIR)	NPT in collaboration with UNDP-CO and UNDP-GEF	20,000	40,000	60,000	Annually, before ARM
Convene Annual Review Meetings ARM)	Project Coordinator in collaboration with UNDP-CO	80,000	160,000	240,000	Annually
Prepare minutes for Annual Review Meetings	UNDP-CO			Included in ARM	Two weeks after meeting
Carry out annual project financial audits	Independent Audit Entity	20,000	40,000	60,000	Annually
Carry out mid-term review and final external evaluation	PT, UNDP-CO, External Consultants	120,000	240,000	360,000	Mid and End of the project
Prepare Terminal Report, with social and economic impact assessment	PT, UNDP-CO, local consultants	40,000	80,000	120,000	Two months after project completion
Lessons Learned	PT, UNDP-CO, UNDP-GEF	10,000	20,000	30,000	Annually
Visits to field sites (UNDP staff travel costs to be charged to IA fees)	UNDP-CO, UNDP-GEF (as appropriate), Government Representatives	10,000	20,000	30,000	Annually as required
<b>TOTAL Indicative Cost excluding expenses of NPT and UNDP</b>		<b>500,000</b>	<b>1,000,000</b>	<b>1,500,000</b>	


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

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

NAME	POSITION	MINISTRY	DATE (MM/dd/yyyy)
Jiandi Ye  GEF Operational Focal Point, China	Director, International Financial Institution, Division III, International Department	Ministry of Finance	02/28/2012

**B. GEF AGENCY(IES) CERTIFICATION**

This request has been prepared in accordance with GEF/LDCF/SCCF/NPIF policies and procedures and meets the GEF/LDCF/SCCF/NPIF criteria for CEO endorsement/approval of project.

Agency Coordinator, Agency Name	Signature	Date	Project Contact Person	Telephone	Email Address
Adriana Dinu, UNDP-GEF Officer-in-Charge and Deputy Executive Coordinator		26 December 2013	Suely Carvalho, GEF Principal Technical Advisor for POPs/Ozone UNDP/MPU/Chemicals	+1 212 906 6687	suely.carvalho@undp.org

## ANNEX A: PROJECT RESULTS FRAMEWORK

The Project Results Framework is presented below and in Section III of the Project Document (pages 24 to 32).

	Indicator	Baseline	End of Project Target	Source of Verification	Risks and Assumptions
<b>Project Objective</b> The project will address the POPs/PTS release sensitive e-waste stream in the recycling, dismantling, treatment and final disposal processes of Waste Electrical and Electronic Equipment (WEEE).	Efficient and functional EPR and WEEE management system  Amount of WEEE treated by permitted recyclers in the three demonstration locations  Number of facilities replicating or establishing sound WEEE recycling  Numbers of workers received training in sound WEEE processing	EPR Treatment Fund established but not efficiently operational  Over 2 million units of WEEE collected and processed by permitted recyclers at the 3 demonstration provinces / municipality	National policy about EPR finalized Improved operational mechanism of EPR Treatment Fund and WEEE management At least 250 management personnel at national and demonstration locations trained on EPR concept and WEEE management system Estimated 50% increase of WEEE collected and processed  At least 2 BAT/BEP technologies for pre-treatment demonstrated and relevant technical guidelines finalized At least 2 BAT/BEP technologies for disposal demonstrated, end gas discharge of PCDD/PCDF to meet pollution control standards for hazardous waste incineration if incineration technology selected. Relevant technical guidelines finalized At least 25,000 technical workers trained on BAT/BEP and sound WEEE processing	List of registration and permitted recyclers EPR Treatment Fund disbursement records	<u>Risks:</u> <ul style="list-style-type: none"> <li>- Insufficient funds generated to adequately attract process facility and associated infrastructure investment</li> <li>- Technology limited in eliminating POPs/PTS release</li> <li>- Lack of interest to participate in diverting WEEE from informal to formal processing facilities</li> <li>- Sustained informal operations due continued illegal WEEE imports</li> </ul> <u>Assumptions:</u> <ul style="list-style-type: none"> <li>- International experience injected appropriate to improve EPR based WEEE management</li> <li>- BAT/BEP technologies suitable and applicable to Chinese context</li> <li>- Increased formal collection and economic incentives facilitates diversion of WEEE to formal processing facilities</li> </ul>

	Indicator	Baseline	End of Project Target	Source of Verification	Risks and Assumptions
	Market based WEEE processing infrastructure demonstrated and developed	Low rate of WEEE collection and recycling by formal sector  Dominated by primitive and manual processing of WEEE	Demonstration of collection successfully completed at selected enterprises.  Technology demonstration activities at selected enterprises at the three demonstration provinces/municipality successfully completed  Over 5,000 ton of BFR containing plastic/resins performed/reused annually  Over 5,000 tons of CRT to be recycled annually from environmental emission annually in the demonstration locations  5 WEEE technical guidelines about eco-design finalized  Eco-design for at least one electrical and electronic equipment developed	Technology improvement and records of POPs/PTS release	
	Informal WEEE processing facilities upgraded and integrated into EPR system through diversion into formal processing facilities  Number of newly registered WEEE processors	Large percentage of WEEE is estimated to be collected and processed by the informal sector  Zero	Three types of WEEE collection/recycling demonstrated and successfully completed at three selected provinces/municipality.  Increase WEEE collected and channeled by informal or newly registered (ex-informal) collectors to formal recycling enterprises for treatment  New WEEE entities registered and qualified and eligible to receive EPR Treatment Fund subsidies	List of registered recyclers	

	Indicator	Baseline	End of Project Target	Source of Verification	Risks and Assumptions
<b>Component 1: Develop and implement national EPR system for WEEE</b>					
<b>Outcome 1.1</b> Operational national EPR system covering priority POPs/PTS release sensitive E-Waste streams	<b>Expected Outputs:</b> 1.1.1 National EPR Treatment Fund supporting environmentally sound WEEE collection, dismantling and processing operations is established and disbursing with coverage of POPs sensitive e-waste. 1.1.2 International experience on EPR system management and control of WEEE material and financial flows in the WEEE management chain delivered through training particularly with respect to POPs sensitive e-waste stream components. 1.1.3 Integrated information/data management system providing current data covering national, regional and local levels of the WEEE management chain operating in support of the EPR system.				
	Number of companies in EPR system	Approximately 120 formal enterprises	All newly established and qualified formal enterprises are required to be registered	EPR Treatment Fund annual activities and financial reports List of registered recyclers	<b>Risks:</b> - Insufficient funds generated to adequately attract process facility and infrastructure investment, particularly for POPs/PTS release sensitive products  <b>Assumptions:</b> - International experience and strengthened capacity will improve EPR WEEE management and administration and operation of EPR Treatment Fund - An efficient and functioning registration and permitting established to attract registration of formal and informal processing facilities
	Amount of WEEE processed by companies receiving EPR Treatment Fund	2,000,000 units WEEE collected and processed at the three demonstration provinces/municipality	Estimated 50% increase in WEEE collected and processed in the demonstration locations		
	Amount of fund disbursed by the EPR Treatment Fund		Nationally, RMB 500 million disbursed annually from EPR Treatment Fund		
	At least one training per year conducted disseminating international EPR experience	No training with input of international experience	3 trainings conducted	Training material and list of participants	
	Integrated information/data management system installed and utilized by MOF for disbursement under the EPR Treatment Fund	Preliminary database used by MOF to calculate and manage subsidy and disbursement	Fully established data-base, with all EPR Treatment Fund disbursements released through the Integrated Information Data Management System	Annual reports on the mass flows handled by registered WEEE processors	
<b>Outcome 1.2</b> Adopted and implemented national technical standards and operational business documentation governing the management of WEEE in support of the EPR system.	<b>Expected Outputs:</b> 1.2.1 Technical standards defining targeted high POPs/PTS release sensitive WEEE (e-waste) streams, and applicable WEEE management chain technology performance, adopted and implemented.				
	Number of technical standards established	No specific technical standard document available for collection, logistics, pre-treatment, material recovery and hazardous waste disposal	2 technical standard documents finalized	Technical standards documents finalized	<b>Risks:</b> Resistance in compliance and inadequate enforcement effort  <b>Assumptions:</b> Standards guiding proper WEEE processing to reduce POPs/PTS release

	Indicator	Baseline	End of Project Target	Source of Verification	Risks and Assumptions
Outcome 1.3 Applied LCA/LCM procedures and labeling for product design and production.	Expected Outputs: 1.3.1 Guidance documentation for LCA/LCM and associated eco-labeling applied to product design and production for waste minimization and R&R processing optimization in use.				
	Five eco-design standard documents  Electric and electronic product eco-design developed	None exist	Eco-design document finalized and made available  Eco-design for at least one electrical and Electronic equipment developed	Eco-design standard document finalized	Risks: Lacking interest in adopting LCA/LCM by manufacturers  Assumptions: Eco-design and cleaner production adopted in POPs/PTS sensitive release products
Outcome 1.4 Achieved public awareness and stakeholder consensus on the detailed design and implementation of the national EPR system.	Expected Outputs: 1.4.1 Stakeholder consultation program involving product producers, government implementing agencies, distributors, consumer representatives and NGOs at all levels on EPR system implementation through workshops, and input solicitation on disseminated documentation implemented. 1.4.2 Public awareness initiatives respecting the EPR system in the form of information product dissemination delivered.				
	One stakeholder nodal body is established	No coordination body exist for WEEE stakeholders	1 multi-stakeholder platform established	Status of the nodal body	Risks: Difficult in coordination and collaboration
	At least one public awareness campaign conducted every year	None. Level of awareness to be established during first year of implementation	3 public awareness campaigns conducted in the demonstration provinces/municipality	Publications, audio visual and other promotion materials  Surveys on awareness	Assumptions: Multi and inter-ministerial will facilitate consensus in legislative and technology improvement
Outcome 1.5 Implementation of effective discrimination between second hand product and e-waste imports.	Expected Outputs: 1.5.1 Strengthened policy, regulations and enforcement covering the expanded controls on second hand product and e-waste imports 1.5.2 Training and detection enhancement for improved discrimination between e-waste and second hand product imports consistent with Basel Convention requirements and guidance in place. 1.5.3 Strengthened bi-lateral cooperation and coordination with major exporting countries implemented.				
	Training Guidelines for the control of imports are made available to the relevant government agency	None existed	Guidelines compatible with Basel Convention finalized and made available and used by relevant government agencies	Guideline documents	Risks:  - Continued illegal imports due economic considerations and prolonged end of life of WEEE due consumer habits
	Training program and workshop	None implemented	Guidelines documents of the Basel Convention are used	Guideline documents	Assumptions:  - Established infrastructure and strengthened capacity for enforcement efforts

	Indicator	Baseline	End of Project Target	Source of Verification	Risks and Assumptions
	Criteria for discrimination between e-waste and second hand product established and used by relevant government authorities	None implemented	Guideline documents of the Basel Convention are used as reference	Guideline documents	
	Contacts and communication with major exporting countries established	No active activities	Possibilities and mechanisms of cooperation and coordination explored and activities initiated	Cooperation and coordination arrangements	
<b>Component 2: Demonstration and development of market based WEEE processing</b>					
<b>Outcome 2.1</b> Utilization and upgrading of the existing domestic WEEE collection system to efficiently and cost effectively supply registered WEEE processing facilities particularly for POPs/PTS sensitive e-waste constituents.	<b>Expected Outputs:</b> 2.1.1 Comprehensive characterization of current WEEE and specifically e-waste collection chain, inclusive of developing and documenting the identified measures necessary to optimize the collection chain.				
	Diagnostic studies and action plan conducted with at least one recycler in each demonstration province.	None	3 diagnostic reports and action plan finalized	Diagnostic reports and action plans	<u>Risks:</u> unclear and scarce data availability; inadequate collection from coverage area <u>Assumptions:</u> Improved collection system will divert WEEE to formal processing facilities
<b>Outcome 2.2</b> Operation of a comprehensive national network of registered WEEE processing facilities to dismantle and process POPs/PTS release sensitive materials in an environmentally sound manner utilizing demonstrated BAT/BEP technologies.	<b>Expected Outputs:</b> 2.2.1 Registration of WEEE processing operations including those handling POPs/PTS sensitive e-waste implemented and required upgrading/expansion opportunities identified. 2.2.2 Technology selection and operational technical guidelines appropriate to various scale levels of WEEE processing developed. 2.2.3 BAT/BEP technology demonstration initiatives investments targeting on POPs/PTS release sensitive e-waste materials undertaken. 2.2.4 At least one center created for processing of high value materials (i.e. printed circuit boards) to recover precious metals) at qualified non-ferrous metals smelter(s). 2.2.5 Existing and new formal dismantling and processing operations supported based on incremental requirements matched to market growth such that a network of major regional facilities are operational. 2.2.6 Policy, technology, and management support and promotion of demonstration activities in the three demonstration provinces/municipality				
	Authorized recyclers registered with the EPR Treatment Fund	Only about 120 formal recyclers registered	All newly established formal recyclers in the demonstration provinces/municipality are registered	Extract of EPR Treatment Fund registry	<u>Risks:</u> - Continued operation of informal sector will not provide adequate volume to formal processing

	Indicator	Baseline	End of Project Target	Source of Verification	Risks and Assumptions
	Operational Guidelines for upgrading to technical standards are made available	None	3 operational guideline documents finalized and made available	Guideline documents	facilities - Technologies not directly targeting POPs/PTS sensitive release products <u>Assumptions:</u> - BAT/BEP technology suitable and application to Chinese processing enterprises to reduce POPs/PTS release - Complete registration of formal processing facilities and increased registration of informal processing facilities
	Technical guidelines for pre-treatment of WEEE prepared	Not existed	Technical guideline for pre-treatment of WEEE finalized and made available	Guideline documents	
	Demonstration initiatives implemented with at least one recycler in each demonstration province/municipality	None	3 demonstration activities implemented	Completion reports Technical reports from demonstrations	
	Risk assessment undertaken to evaluate the establishment of a network of regional facilities	None	At least 3 assessment reports completed	Recommendations and action plans	
	At least one non-ferrous metal smelter processing printed circuit boards with precious metal recovery >85 %	None	Emission meeting pollution control standard for hazardous wastes incineration	Material flow audits at non-ferrous metal smelter	
Component 3: Upgrading of informal WEEE processing and its integration into the EPR System					
Outcome 3.1 Characterization of overall national scale, scope and impacts associated with the informal e-waste processing inclusive of identification high priority regions and centers.	Expected Outputs: 3.1.1 National informal WEEE sector characterization study of the informal WEEE processing sector, particularly that handling POPs/PTS sensitive e-waste undertaken. 3.1.2 Guidance and procedural documentation for undertaking environmental and health impact evaluations of potentially impacted areas and locations at the local level prepared and disseminated.				
	Characterization study highlighting the most critical processes from the informal WEEE recycling sector undertaken	Several reports mentioned the informal sector but data not clear due to data scarcity	Characterization study report completed and finalized	Project documentation Characterization study report	Risks: Difficulties in getting clear data on informal sector <u>Assumptions:</u> A better understanding of the informal sector will facilitate their integration into the EPR system
	Guidance document completed and information disseminated	No guidance document available on the measurement of impacts associated with informal recycling	Guidance document finalized	Guidance document	
Outcome 3.2 Provision of policy, regulatory	Expected Outputs: 3.2.1 Model regulations and guidance materials on the supervision of WEEE processing at the local level developed and disseminated.				



	Indicator	Baseline	End of Project Target	Source of Verification	Risks and Assumptions
enforcement and awareness support provided through MEP to the local level related to supervision of the informal WEEE sector.	3.2.2 Awareness and assessment programs on the control and impacts of informal WEEE processing for local officials, operators and the public developed and delivered.				
	WEEE flows from informal sector to registered recyclers are monitored by the EPR Treatment Fund	No registered exchange between informal and formal recyclers	Enforcement actions on informal recyclers and efforts to divert e-waste to formal sector	Audit reports on mass flows	<u>Risks</u> : difficulties in getting a clear picture on the informal sector <u>Assumptions</u> : A clear understanding of the informal sector will facilitate supervision and monitoring of their activities and help in their integration into the EPR system
	At least one awareness campaign conducted in each demonstration province/municipality	None	3 awareness campaigns conducted	Publications, printed, audio visual and promotion materials	
<b>Outcome 3.3</b> Demonstration of collective infrastructure supporting informal WEEE processors and providing environmentally sound dismantling operations related to POPs/ PTS release developed and integrated with the national EPR system recycling network for further processing.	<b>Expected Outputs:</b> 3.3.1 Collectives formed from informal dismantling/processing operations established, inclusive of common support infrastructure and links to environmentally sound processors/residual disposal facilities. Pilot interventions in the collection chain to optimize efficiency, particularly related to primary product separation for direction to recycling facilities undertaken				
	Pilot interventions implemented based on technical standards for collection and logistics	None	At least 3 pilot interventions implemented	Contracts for pilot implementation	<u>Risks</u> : Continued operation of the informal sector due to economic reason will not provide adequate quantity of WEEE to formal processing facilities <u>Assumptions</u> : Improved WEEE collection by formal collection system and economic incentives to informal collection will facilitate diversion of WEEE to formal WEEE processing facilities
<b>Component 4: Project Monitoring and Evaluation</b>					
<b>Outcome 4.1</b> Monitoring and evaluation, knowledge sharing and information dissemination	<b>Expected Outputs:</b> 4.1.1 Monitoring, evaluation and impact assessment 4.1.2 Knowledge sharing and post-project action plan				
	Timing and quality of annual (APRs, PIRs etc.) and M&E reports	Indicative M&E plan, budget and timeframe	M&E activities implemented as scheduled and project implementation monitored to achieve project objectives	Various M&E and substantial reports	<u>Risks</u> : failure to exercise timely and effective M&E activities due to capacity issue <u>Assumptions</u> : Efficient M&E to facilitate achievement of outcomes and project objectives
	Quality appraisal in Mid-Term Review and Terminal Evaluation			Mid-Term Review and Terminal Evaluation reports	
	Lessons learnt and experience documented and disseminated; post-project action plan formulated	None	Lessons and experience documented and disseminated	Knowledge products; post-project action plan	

	Indicator	Baseline	End of Project Target	Source of Verification	Risks and Assumptions
<b>Component 5: Project Management</b>					
<b>Outcome 5.1</b> Strengthened project management capacities and efficiency	<b>Expected Outputs:</b> 5.1.1 Strengthened institutional capacity for project management in MEP and three demonstration provinces/municipality 5.1.2 Project smoothly implemented and all results specified achieved.				
	Timely project implementation and disbursement	Existing staff	Capacity of National Project Team strengthened. In addition to existing staff, a Project Coordinator and a secretary are recruited. National Project Team established, staffed, equipped and trained	Project APRs, PIRs, CDRs	<u>Risks:</u> Inadequate capacity and insufficient coordination will impact project implementation <u>Assumptions:</u> Efficient project management will lead to timely achievement of outcomes and project objectives
	LPMO established in each demonstration provinces/city furnished with staff and equipment	None	LPMOs at each demonstration province/city established, staffed, equipped and trained	Organization structure, training reports	
	Project Implementation Manual (PIM) developed	PIM for other GEF project can be used as reference	PIM finalized and used as guidance for project implementation	PIM Documents	
	Staff of PT and LPMOs staff trained about the PIM and relevant requirements of GEF and UNDP on project management	None	Staff trained and project management capacity strengthened	Training reports	
	Routine project management activities undertaken to ensure the smooth and timely implementation of the project. The activities include but not limited to: drafting TORs, select and contract with consultants, organize M&E activities, organize the review of substantial report	None	Efficient and effective project management leading to achievement of project objectives	Progress and annual reports, mission reports and achieved outcomes	

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

Comments	Response	Reference in documents

**ANNEX C: STATUS OF IMPLEMENTATION OF PROJECT PREPARATION ACTIVITIES AND THE USE OF FUNDS<sup>5</sup>**

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

PPG Grant Approved at PIF: <b>\$220,000</b>			
<i><b>Project Preparation Activities Implemented</b></i>	<i><b>GEF/LDCF/SCCF/NPIF Amount (\$)</b></i>		
	<i><b>Budgeted Amount</b></i>	<i><b>Amount Spent To date</b></i>	<i><b>Amount Committed but not yet disbursed</b></i>
Scope definition for EPR system design and implementation mechanisms, national level stakeholder/public consultation, and control measures	54,000	26,158	27,842
Scope definition on existing collection, dismantling and processing infrastructure, and demonstration of BAT/BEP	62,000	36,970	25,030
Scope definition on informatl WEEE sector	56,000	47,916	8,084
Project Document and CEO Endorsement Request preparation	48,000	20,049	27,951
<b>Total</b>	<b>220,000</b>	<b>131,093</b>	<b>88,907</b>

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

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

N/A

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



**United Nations Development Programme  
People's Republic of China  
Project Document**

**Project Title:** Reduction of POPs and PTS release by environmentally sound management throughout the life cycle of electrical and electronic equipment and associated wastes in China

**UNDAF Outcome(s):** UNDAF Outcome 5: Increased role and participation in international arena and international cooperation

**Expected Outcome(s):** CPD Outcome 9: Key United Nations conventions promoted through improved capacity to fulfill their obligations

**Expected Output(s):** Output 9.1 Policy makers and general public engaged to support United Nations conventions implementation

**Executing Entity:** Foreign Economic Cooperation Office, Ministry of Environmental Protection of China (FECO/MEP)

**Implementing Agencies:** United Nations Development Programme (UNDP)

**Brief Description**

The four-year project will help China to fulfill the requirement of the Stockholm Convention. Consistent with this objective, the project will address the POPs/PTS release sensitive e-waste stream in the recycling, dismantling, treatment and final disposal processes of Waste Electrical and Electronic Equipment (WEEE). The project as outlined is structured with five components: Component 1 covers national WEEE management system development and implementation in terms of scope, administration, business arrangements and promotion with the UNDP-GEF support being focused on introduction of international experience and lessons learned; Component 2 covers the development of the required infrastructure and the demonstration of BAT/BEP technologies with the UNDP-GEF support focused on introduction of international technology and capability; Component 3 addresses the integration of the informal sector into the formal EPR system with UNDP-GEF support focused on demonstration of collection systems and information exchange, training and international cooperation related to illegal imports; Component 4 supports the monitoring and evaluation of the project and dissemination of experience, something that is seen as useful for other developing countries dealing with the issue globally; and Component 5 strengthens project management capacity to achieve implementation effectiveness and efficiency.

Programme Period:	48 months	Total Budget	\$58,650,000
Key Result Area (Strategic Plan)		Allocated resources:	
Atlas Project ID:	00078105/00088552	• GEF	\$11,650,000
PIMS No.	5044	• Government	\$ 3,800,000
Start date:	1 March 2014	• Private Sector	\$16,805,000
End Date:	28 February 2018	• Other (Institutes)	\$ 535,000
PAC Meeting Date:		In kind contributions:	
Management Arrangement:	National Execution (NIM)	▪ Government	\$ 8,616,000
		▪ Private Sector	\$16,045,000
		▪ UNDP	\$ 100,000
		▪ Bilateral Aid Agencies	\$ 59,000
		▪ Others (Institutes)	\$ 1,040,000

Agreed by: Ministry of Finance \_\_\_\_\_ Date: \_\_\_\_\_

Agreed by: FECO,  
Ministry of Environmental Protection: \_\_\_\_\_ Date: \_\_\_\_\_

Agreed by: UNDP \_\_\_\_\_ Date: \_\_\_\_\_

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## ACRONYMS AND ABBREVIATIONS

APR	Annual Project Report
ARR	Annual Review Report
AWP	Annual Work Plan
BAT	Best Available Techniques
BEP	Best Environmental Practice
CDR	Combined Delivery Report
CIO	Convention Implementation Office
CO	Country Office
CRT	Cathode Ray Tube
EFUP	Environmentally Friendly Use Period
EMSW	Environment Management of Solid Waste in China
EPB	Environmental Protection Bureau
EPR	Extended Producer Responsibility
FECO	Foreign Economic Cooperation Office
GAC	General Administration of Customs
GEF	Global Environment Facility
GOC	Government of China
HQs	Headquarters
IA	Implementing Agencies
IR	Inception Report
IW	Inception Workshop
LCA	Life-cycle Assessment
LCM	Life-cycle Management
LPMO	Local Project Management Office
M&E	Monitoring & Evaluation
MEP	Ministry of Environmental Protection
MIIT	Ministry of Industry and Information Technology
MIS	Management Information System
MOC	Ministry of Commerce
MOF	Ministry of Finance
MT	Metric ton
NDRC	National Development and Reform Commission
NGO	Non-governmental Organizations
NIP	National Implementation Plan
NPT	National Project Team
OP	Operational Program
PBDD/F	<i>Polybrominated dibenzodioxins/dibenzofurans</i>
PBDE	<i>Polybrominated Diphenyl Ethers</i>
PC	Project Coordinator
PCB	<i>Polychlorinated biphenyl</i>
PCDD/F	<i>Polychlorinated dibenzodioxins/dibenzofurans</i>
PFOS	<i>Perfluorooctanesulfonic sulfonate</i>
PIM	Programme Implementation Manual
PIR	Project Implementation Review
PMO	Project Management Office
POP	Persistent Organic Pollutant
PPG	Project Preparation Grant
PRC	People's Republic of China
PTS	Persistent Toxic Substances
RCU	Regional Coordinating Unit
RMB	Renminbi, "People's currency"
RoHS	Directive on the Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment
SAICM	Strategic Approach to International Chemicals Management
SEPA	State Environmental Protection Administration (former body of MEP)
TCG	Technical Coordination Group
TPR	Tripartite Review
TTR	Terminal Tripartite Review

UN	United Nations
UNDP	United Nations Development Programme
UNDP-GEF	United Nations Development Programme, Global Environment Facility Unit
UNEP	United Nations Environment Programme
UNIDO	United Nations Industrial Development Organization
U-POPs	Unintentional Persistent Organic Pollutants
USD	United States dollars
WEEE	Waste Electrical and Electronic Equipment
WPCB	Waste Printed Circuit Board



## I. SITUATION ANALYSIS

### Problem to be addressed

China is considered the world's largest current processor of e-waste derived from Waste Electrical and Electronic Equipment (WEEE) recycling generally with an estimated amounts ranging from 15 to 30 million tons/year. This compares to global generation of 20 to 50 million tons/year. Historically a substantial portion of this (estimates range from 60% to 90%) has been associated with illegal imports, largely from North America, Europe via Southeast Asia. However, China also predicts a general stabilization and decline in illegally imported e-waste over the next five years. This trend will result from China's own enforcement efforts, exporters shifting to lower cost developing countries, more effective export controls in developed countries, and general global implementation of the Basel Convention Ban Amendment. On the other hand it is apparent that China will see compensating rapid growth in domestic WEEE and associated e-waste. Expert national estimates for 2010 indicate domestic WEEE generation at 3 million tons. However, while imports have peaked and are anticipated to decline, the domestic generation is predicted to approach 4 million tons by 2013, 6 million tons by 2015, and see rapid escalation of generation rates beyond 2015. Longer term prediction of WEEE generation is difficult due to the speed at which production and consumption in electrical and electronic equipment is increased.

As reported in a survey report on WEEE recycling prepared by Tsinghua University and commissioned by the Foreign Economic Cooperation Office (FECO) of the China Ministry of Environmental Protection (MEP), it indicated rapid increase in the production and consumption of electrical and electronic equipment. In 2010, National Statistics Bureau reported production of colour television of 119.38 million units, refrigerator of 75.46 million units, washing machine of 62.08 million units, room air conditioner of 112.20 million units and computers of 245.85 million units. The survey report cites the July 2009 UNEP report "Recycling – From E-Waste to Resources," that predicted China will produce 2.3 million tons of WEEE in 2010, of which 1.3 million tons would be generated from televisions, 0.5 million tons from refrigerators, and 0.3 million tons from personal computers. It is expected that by 2020, WEEE generated from personal computers will increase by 400% as compared to 2007. According to estimates by J H Li, 58 million units of television, 9 million units of refrigerator, 12 million units of air conditioner, 11 million units of washing machine and 70 million units of personal computer were recorded as WEEE in China for the year 2010.<sup>12</sup> In addition, there are large quantities of e-waste generated from mobile phone, fax machines, printers and copiers and other electrical and electronic equipment. For domestic generation on estimated e-waste of the five electrical appliances categories (televisions, refrigerators, washing machines, personal computers and air conditioners) from 2001 to 2012, was conducted by A. Veenstra et al (Intgl J. Adv Manuf Technol DOI 10.1007/s00170-009-2356-5), the 2012 forecasted volume is estimated at 12.79 million units of refrigerators, 31.351 million units of air conditioners, 30.355 million units of washing machines, 74.318 million units of televisions and 80.849 million units of personal computers, for a total of 229.664 million units of WEEE. China is also the final destination for a substantial of WEEE from developed countries. Although figures on the actual quantity of WEEE imports are unavailable, certain news reports in China claim that import is an increasing problem. Imports of second hand appliances and WEEE have been estimated at 10-30 million ton per year. The import WEEE is classified into legal and illegal imports. However, it is not easy to distinguish legal and illegal imports. In a July 2012 presentation, the MEP indicated that the illegal import of e-waste was being restrained as a result of policies and close cooperation between the MEP and customs and quality inspection departments to enhance the effectiveness of both the monitoring of and the crackdowns on illegal e-waste import.

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<sup>1</sup> 1 Li J H, Tian B G, Liu T Z, et al. Status quo of e-waste management in mainland China. J. Mater. Cycles and Waste Management, 2006 8(11):13

<sup>2</sup> Hicks C, Dietmar R, Eugster M. The Recycling and Disposal of Electrical and Electronic Waste in China. Env Impact Assess Rev.2005,25(5):472

Historically, WEEE and specifically the e-waste component has been collected and processed primarily by an informal resource recovery and recycling sector that typically utilizes crude, polluting processing technologies such as smoldering of cable and crude leaching of printed circuit boards to extract high value metals, while burning or randomly disposing of residual plastics. This has resulted in the sector being associated with a range of serious environmental and health impacts including significant air U-POPs releases of PCDD/F (largely from cable and plastics burning) and PBDD/F (from combustion of brominated flame retardant treated plastic components). Direct POPs release from random land disposal of PCB, PBDE and potentially PFOS containing components also result in eventual POPs release. Additionally these processes also result in release of a variety of toxic heavy metals classed as Persistent Toxic Substances (PTS), notably mercury, lead, and cadmium, which further contribute to air, land and water contamination.

Estimation of actual POPs releases from this processing is difficult to comprehensively estimate given the absence of accurate data and, in some cases, emission factors. However, a conservative analysis of cable and printed circuit board burning alone using emission factors from the UNEP tool kit and the current literature indicate that 655.4 g I-TEQ/year of PCDD/F would be released. Additional releases would occur from burning or dumping of other residual plastics containing PBDE (estimated at 8.3 t/year contained in the e-waste stream) as would the release of PBDD/F from burning PBDE treated plastics, although in the absence of emission factors these releases cannot be estimated. To place the emission estimates in context, for PCDD/F alone this level of emission represents 13% of the national PCDD/F air emission inventory in the National Implementation Plan (NIP) (5,042.4 g I-TEQ/year) and 26% of that attributed to the dominate ferrous and non-ferrous metals source category, noting that the WEEE processing sub-sector was not in fact considered in the original inventory.

Beginning in 2003, China initiated work on development of a national WEEE management system that has involved promotion of development of a formal processing sector employing environmentally sound technologies. This has resulted in a series of regulatory initiatives undertaken by the Ministry of Environmental Protection (MEP), Ministry of Industry and Information Technology (MIIT), and, at the state level, through the Ministry of Finance (MOF). The latter has initiated putting in place the required economic instruments to sustainably fund a national WEEE management system. Initially, this resulted in investment in a small number of formal e-waste processing facilities being developed but for the most part these had difficulty attracting sufficient materials to be sustainable. This situation changed in 2009 with introduction of a transitional three year program known as “Home Appliance Old for New Rebate Program” (Old for New Program) where consumers were given discounts to replace old electrical/electronic products, and the transportation and processing costs at permitted facilities were subsidized. This resulted in a major increase in formal sector WEEE processing, generated volumes and creation of approximately 100 new registered WEEE processing facilities of various sizes. This program has now been replaced by a permanent WEEE management system financed by an Extended Producer Responsibility (EPR) mechanism under the state level *Regulations on the Administration of Recovery and Disposal of Waste Electrical and Electronic Products*. This was introduced in 2009, came into effect in 2011 and targets national coverage of domestically generated WEEE by 2015.

It should also be noted that the scope of what products with the overall WEEE spectrum that are addressed has been and will continue to be incrementally expanded. The initial program emphasis has been on white goods and TV recycling but is progressively being expanded under the WEEE regulations with supporting inputs from this project to other waste streams sensitive to POPs and other PTS release. This will include computers and monitors of all types, mobile telephones, and digital technology based consumer products generally as well as air conditioners.

### **National institutional and legal framework**

In China, in addition to governmental agencies, there are various key stakeholders who are involved in WEEE issues. The key stakeholders include civil society organizations, institutions, agencies, researchers, private sector, industrial groups, local and indigenous communities. The respective roles of key stakeholders and their areas of expertise are described below.

At the national level, six governmental agencies play the key roles in legislation, management, monitoring and communication of e-waste issues, namely, the National Development and Reform Committee (NDRC), Ministry of Environmental Protection (MEP), Ministry of Industry and Information Technology (MIIT), Ministry of Commerce (MOC), Ministry of Finance (MOF) and General Administration of Customs (GAC). NDRC is responsible for developing macroeconomic plans and pilot projects related to the socially-, economically- and environmentally-responsible treatment of e-waste. MEP is the agency with the greatest role in defining treatment standards, emissions and pollution controls, licensing for recyclers, transboundary shipment controls and monitoring related to e-waste. MIIT is most relevant to the electronics manufacturing industry, as it is responsible for encouraging cleaner production and eco-design of electrical and electronic equipment. MOC is responsible for the establishment of e-waste collection channels. MOF is responsible for defining and managing subsidies on logistics, collection and recycling of e-waste. Customs is responsible for port control, checking containers, registration and reporting of shipments, and monitoring of illegal activities. Collectively, these institutions work to tackle the complex challenges of e-waste management.

In the industry, the responsible parties are producers, e-waste collection and treatment enterprises, associations (China Household Electrical Appliances Association; Executive Committee of Foreign Investment enterprises; China Resources Recycling Association; and China Electronics Energy Saving Technology Association). Consumers are important actors in the e-waste disposal chain because they choose the disposal channels and destinations for their household e-waste.

Then, there are the research institutions which comprise of Tsinghua University, Basel Convention Regional Center for the Asia and Pacific Region in China (BCRC Beijing), Chinese Academy of Science, China National Electric Apparatus Research Institute, China Household Electric Appliance Research Institute, E-waste Recycling Technology and Equipment Institute, Chinese Research Academy of Environmental Sciences, Engineering Centre for e-waste Resource Recycling in Jiangsu, other domestic research institutes, and Overseas researchers.

Finally, there are the NGOs whose activity and influence on illegal export of e-waste to China and the consequences of informal e-waste recycling in China, the livelihoods and working conditions of local workers were brought forward for global attention, as a result of the NGO's in-depth investigations and untiring efforts in bringing the issues forward.

China's WEEE management system consists of laws, regulations and standards components. China has issued numerous WEEE related laws and regulations (Table 1). Meanwhile, to support the implementation of laws and regulations, management departments have or are developing a number of WEEE recycling standards and norms (Table 2).

Table 1 Main Law and Regulations on WEEE in China

Law/Regulation Name	Issuing Institutions	Implementation Date	Applicable Scope
<i>Law of the People's Republic of China on the Promotion of Clean Production</i>	NPC Standing Committee of PRC	2002	Promote cleaner production, increase the efficiency of the utilization rate of resources, reduce and avoid the generation of pollutants, protect and improve environments, ensure the health of human beings and promote the sustainable development of the economy and society.
<i>The Circular on Strengthening Environmental Management of Waste Electrical and Electronic Equipment</i>	State Environmental Protection Administration	2003	Encourage eco-design and cleaner production of e-product. Ban on the environmental harmful technology for e-waste disposal
<i>Technical Policy on Pollution Prevention of Waste Batteries</i>	State Environmental Protection	2003	Stipulate guidance of production, collection, transport, storage,

	Administration		recycling and disposal of battery. Prohibit production and sale oxidation mercury batteries. Encourage environmentally friendly technology for battery production
<i>Law of People's Republic of China on Prevention of Environmental Pollution caused by Solid Waste (2004 revision)</i>	NPC Standing Committee of PRC	1 April 2005	Regulations on pollution prevention and control in WEEE recycling and treatment
<i>Technical Policy on Pollution Prevention of Discarded Appliances and Electronic Products</i>	State Environmental Protection Administration, Ministry of Science and Technology, Ministry of Industry and Information Technology, Ministry of Commerce	2006	Encourage the establishment of multivariate recycling system of e-waste. Set forth the "3R" principle and "polluter pays" principle. Stipulate general rules of eco-design and information disclosure of toxic substances contained in e-products
<i>Measures for Administration of the Pollution Control of Electronic Information Products</i>	Ministry of Industry and Information Technology	1 March 2007	Restrict the use of hazardous substance (including POPs) in the design and production of electronic information products (corresponding to the EU RoHS Directive)
<i>Renewable Resources Recycling Management</i>	Ministry of Commerce	1 May 2007	Provisions on management and supervision of renewable resources, including waste electrical and electronic products. Encourage environmentally friendly processing of renewable resources recycling and relevant technological innovation. Qualified certification for recycling enterprises. Establish modern renewable resources recycling system
<i>Administrative Measures on the Prevention and Control of Environmental Pollution by Waste Electric and Electronic Products (SEPA, No. 40)</i>	Ministry of Environmental Protection	1 February 2008	Provision on the supervision and management responsibilities by relevant parties on the dismantle, use and disposal of waste electric and electronic products
<i>Circular Economy Promotion Law of the PRC</i>	NPC Standing Committee of PRC	1 January 2009	Principle requirements on the development of waste electrical and electronic recovery and recycling industry
<i>The catalogue of disposal of Waste Electrical and Electronic Equipment (The first batch),</i>	Ministry of Environmental Protection	10 September 2010	Establishment of WEEE treatment catalogue
<i>Notice on the Formation of the Development Plan of the Treatment and Disposal of Waste Electrical and Electronic Products</i>	Ministry of Environmental Protection, NDRC, MIIT, MOC	10 September 2010	Guide the provinces and municipalities under the scientific and reasonable planning and development of WEEE treatment industry

<i>The Regulations on the Administration of the Recycling and Treatment and Disposal of Waste Electrical and Electronic Products (No. 551)</i>	State Council of PRC	1 January 2011	Provisions targeting the recycling and related activities of waste electrical and electronic products, not to engage in trading of second hand products. Establishment of WEEE treatment catalogue, certification, funds, and development plans
<i>Administrative Measures on Qualification License of the Treatment and disposal of Waste Electrical and Electronic Products</i>	Ministry of Environmental Protection	1 January 2011	Standardize the WEEE products processing qualification licensing work
<i>Administrative Measures on Collection and Use for Treatment Fund of Waste Electrical and Electronic Equipment</i>	MOF, MEP, NDRC, MIIT	1 July 2012	Standardize and promote the management of WEEE products treatment fund, including collection, use and range.

Table 2 WEEE Related National Standards and Specifications

<b>Standards/Specifications Name</b>	<b>Issuing Institution</b>	<b>Effective Date</b>
<i>Second Hand Goods Quality Appraisal Part 2: Appraisal Standard for Second Hand Home Electrical Appliances (GB/T 10398.2-2005)</i>	Ministry of Commerce	1 March 2005
<i>Environmental Protection Technical Specifications for Centralized District undertaking Disassembly, Utilization and Disposal of Waste Mechanical and Electrical Equipment (HJ/T181-2005)</i>	Ministry of Environmental Protection	1 September 2005
<i>Technical Policy on Pollution Prevention and Control of Waste Electrical and Electronic Equipment (SEPA No. 115)</i>	Ministry of Environmental Protection	27 April 2006
<i>Guideline for the Assessment on the Reuse and Recycling System of Waste Electrical and Electronic Equipment (GB/T21474-2008)</i>	Standardization Administration of China	1 August 2008
<i>General Technical Specifications of Recycling for Waste Electrical and Electronic Equipment (GBT23685-2009)</i>	Standardization Administration of China	1 December 2009
<i>Technical Specifications of Pollution Control for Processing Waste Electrical and Electronic Equipment (HJ527)</i>	Ministry of Environmental Protection	1 April 2010
<i>Code for design of the waste electrical and electronic equipment processing engineering (GB 50678-2011)</i>	Ministry of Industry and Information Technology	September 2011

Source: Ministry of Environmental Protection, Standardization Administration of China

#### *Extended Producer Responsibility (EPR)*

In 2005 China began implementing “*Law on Prevention of Environmental Pollution caused by Solid Waste*.” Article 18 of the Law stipulates that: “enterprises that produce, sell, import products and packaging materials included in the compulsory recycling list must undertake recycling of the products and packaging materials in accordance with relevant state regulations. The “*Circular Economy Promotion Law*” became effective January 1, 2009 and clearly declared that when electrical and electronic products reach their end of technical life, the responsibility for the recycling and treatment of the product rests with the producer. For controlling pollution during disposal process China began implementing the “*Regulation on the Administration of the Recovery and Disposal of Waste Electrical and Electronic Products*” in 2011. Under Article 2 of the Regulation, disposal of waste electrical and electronic products is defined as comprising the following activities:

*disassembling waste electrical and electronic products, extracting therefrom substances to be used as raw materials or fuel, reducing the quantity of existing waste electrical and electronic products through changing their physical and chemical properties, reducing or eliminating their hazardous elements, and disposing of them in landfills that are in compliance with environmental protection requirements, excluding activities of product maintenance or reconditioning and use of such products after reconditioning*

The Regulation mandates the formulation of a “List of Waste Electrical and Electronic Products to be Disposed” by NDRC, in cooperation with the MEP and the MIIT, and its submission to the State Council for approval before implementation. The applicable scope of the Regulation will gradually be expanded. The Regulations also prescribe the establishment of a special WEEE Treatment Fund to subsidize the costs of recycling the waste products. Electrical and electronic product manufacturers and consignees of electrical and electronic product imports or their agents will be obligated to contribute to the Fund. The system for setting up the Fund will be based on relevant laws and regulations, conditions in China, as well as the foreign practice of an Extended Producer Responsibility system. The mechanics of the Fund and the eventual level of contributions required will be determined in accordance with implementing rules to be promulgated by the Ministry of Finance (MOF), after consultation with MEP, NDRC and MIIT as well as product manufacturers, disposal enterprises, and relevant industry associations and experts

The WEEE Treatment Fund is set up to promote development of WEEE recycling, dismantling and processing industries; encourage producers and importers to carry out independently or to entrust others (distributors, repair entities, after-sale service outlets, or entities that engage in WEEE recovery) to undertake recycling of WEEE; and require producers or importers to apply design plans that are conducive to comprehensive resource utilization, environmentally sound recovery treatment, and utilize materials that are nontoxic, non-hazardous or of low toxicity or low hazard or that are convenient for recovery. These provisions fully reflect the main principles of EPR. However, China has not yet promulgated related supporting policies and measures to efficiently implement “*Circular Economy Promotion Law*” and EPR has not been effectively implemented.

On the existing laws, there is no explicit legal definition on the responsibilities of the producer, and lacks detailed rules and regulations on how to implement EPR. Until 2012, only the “*Measures for the Collection, Use and Management of Funds for the Disposal of Waste Electric and Electronic Products*” was promulgated and took effect on 1 July 2012 to collect fees from producers towards a WEEE Treatment Fund to subsidize the costs of dismantling and processing of the waste products. The Measures clearly defines the collection, use and management of the Fund, and states that enterprises qualified to process WEEE, and included in the provincial (autonomous regions and municipalities) development plan, can apply for the subsidy. In handling the dismantling and disposal of WEEE, these processing enterprises must comply with the requirements of relevant national comprehensive resource utilization, environmental protection and technical specifications. Local Environmental Protection Bureaus (EPBs) are responsible for verifying the type and quantity of WEEE dismantling by these enterprises. Based on the data submitted by MEP, MOF will calculate and approve the amount of subsidy pay to each processing enterprise. In 2010, MEP issued “Audit Guidelines for Subsidy to WEEE Processing Enterprises” that provide policy and guidance to EPBs on auditing the quantities of WEEE that were processed in an environmentally sound manner by the processing enterprises applying for subsidy payment.

Despite these regulatory measures, there still lacks specific regulations on recovery system, on applying design plans that are conducive to comprehensive resource utilization, and on environmentally sound recovery and treatment. Furthermore, in the absence of specific legal requirements, producers lack initiative to implement EPR. As of March 2013, only two disposal enterprises were built by producers despite the fact that there were more than 80 producers that had been qualified for WEEE dismantling and treatment, but lack interest to voluntarily build such new facilities. Even though some domestic producers of appliances are looking at using their sales outlets to set up WEEE recycling system, but substantive work has yet to be implemented.

## *Life cycle management system*

### Eco-design and Production

At present, China has not yet established a comprehensive life cycle management system for electrical and electronic equipment. The main control focuses on the manufacturing process and the disposal process as waste. For controlling pollution from the sources, it relies on the policies and standards system under the framework of the “*Measures for Administration of the Pollution Control of Electronic Information Products*” to put forth the goal of life cycle scientific resource utilization and environmental protection. The *Measures* that restrict the use of hazardous substance (including POPs) in the design and production of electronic information products (corresponding to the EU RoHS Directive) became effective on 1 March 2007 and was to be implemented in two phases. The first phase applies to “producers and importers” of a specific list of electronic information products provided by MIIT that are placed on the market in China after 1 March 2007. Such producers and importers must mark their products with the appropriate “recycling logo” and their “Environmental Friendly Use Period” (EFUP). The EFUP is, essentially, the period during which the product can be used without the release of any toxic or hazardous substances it may contain. In addition, the producer or importer must specify in the product instructions, the names and contents of toxic or hazardous substances (lead, mercury, cadmium, hexavalent chromium, polybrominated biphenyls (PBB) and polybrominated diphenyl ether (PBDE, not including decabromodiphenyl ether) contained in the product and identify the product parts where those substances are located. The product or product packaging must also contain the date on which the product was manufactured. Additional requirements, or Phase 2 compliance, will only be imposed upon products set forth in the “Catalogue for Priority Prevention of Pollution from Electronic Information Products.” Products listed in this catalogue must either have completed the substitution for toxic and hazardous substances, or have met the restriction standard. They may enter the China market only after stringent 3C certification determines that they are qualified.

To launch the requirement for clean production and industrial products eco-design and to introduce a series of product quality control standards, on 30 January 2013 the Ministry of Industry and Information Technology, the National Development and Reform Commission and the Ministry of Environmental Protection jointly issued “Guidance on the Development of Industrial Product Eco-Design, MITT Combined (2013) No. 58”, to guide enterprises to develop eco-design of industrial products, to promote transition of the production and consumption patterns towards low carbon, clean and safe environment.

The Guidance encourages full understanding the significance of the development of industrial product eco-design, and lays out the basic idea of establishing source control concept to product lifecycle scientific resource utilization and environmental protection as the goal, supplemented with technology advancement and establishment of standards system, to support the development of industrial product eco-design pilot projects, to establish a combination of evaluation and oversight mechanism for promoting eco-design products through policy guidance and market driven activities, to encourage enterprises to promote and develop products eco-design.

The main principles are:

- Start with the pilot projects. Based on the products leaning production status, select representative products to carry out ecological product design pilot activities, with accumulated experience to gradually expand the range of products, and with in-depth evaluation to promote the continuous development of industrial products eco-design.
- Through scientific and technological support. Guide and support enterprises and research institutions to increase investment, to develop a number of key generic technologies and cleaner production processes and to use not harmful and non-toxic or less harmful and low toxic materials (products), to increase application and promotion efforts to enhance the level of product eco-design.
- Motivate enterprises. Guide enterprises to carry out eco-design as an important measure to enhance product competitiveness, to recognize their corporate social responsibility, and with

strengthen policy support and guidance, to create an enabling policy and marketing environment for enterprises to develop eco-design.

The Guidance also spells out the important objectives and tasks including organization of pilot industrial products eco-design; preparation of key product eco-design standards; establishment of eco-design evaluation and monitoring mechanisms; and reinforced eco-design foundation, to promote technology development and application.

#### End of Technical Life

For controlling pollution at the technical end of life of the electrical and electronic equipment, MEP, together with NDRC and MIIT that are concerned with comprehensive use of resources and for industry and information technology, will be responsible for drafting policies and measures for recovery and disposal of WEEE and coordinating their implementations and for the supervision over the disposal of such products. The Ministry of Commerce (MOC) is responsible for the administration over the recovery of such products. MOF, together with the departments in charge of industry and commerce, quality supervision, taxation, and customs will be responsible for administration to the extent of their functions. The basic framework of WEEE recycling established by the Regulation is multichannel recovery and centralized disposal, and a qualification permit system. These provisions reflect the main principles of life cycle management of WEEE.

The State will enforce a permit system for disposal of WEEE. The local Environmental Protection Bureaus (EPBs) will examine and approve the qualifications of disposal enterprises as set forth in written applications and supporting materials. WEEE recovery operators who intend to engage in the disposal of the waste products must have the stipulated qualifications; those without such qualifications must deliver the products to qualified disposal enterprises for handling. Potential permit holders must have the suitable WEEE treatment facilities; have appropriate plans for the use or disposal of the products that cannot be completely treated; have sorting, packing, and other equipment suited for the treated products; and have relevant safety, quality, and environmental protection professional technical personnel.

Any recycled products sold after repair or restoration must conform to mandatory requirements of national technical norms guaranteeing human health and safety of the person and of property. In addition, the label "second-hand good" must be affixed in a prominent position.

Disposal enterprises are to have a daily environmental monitoring system for the waste product treatment; establish a database on the waste products and report the data and relevant information to the local environmental agency; and retain the basic data for at least three years. Provincial-level EPBs, in consultation with the NDRC, MEP, and MIIT departments at the same level, are responsible for drawing up regional development plans for WEEE disposal and reporting them to MEP for the record. The Regulation also states that the local governments should include in their city and county planning infrastructure construction for WEEE recycling. With the approval of the provincial-level government, centralized WEEE disposal centers may be established.

The liability provisions of the Regulation covers, among other punishments, penalties for: the failure to supply – on the domestic or imported electrical and electronic products or in their product manuals – information on toxic or hazardous substance content or recycling directions; engaging in WEEE disposal without having obtained the requisite qualifications; applying state-declared obsolete WEEE disposal technology and processes; and causing environmental pollution through WEEE disposal.

#### Barriers

The current implementation plan for the EPR based WEEE management system is based on several critical assumptions as follows: i) the current informal sector will be replaced by or absorbed into the new formal sector, something that will depend on the effectiveness and competitiveness of the EPR system relative to the informal sector that should be achieved by the financial incentives a well-funded EPR system can preferentially provide to the formal sector and the private sector investing in it as a consequence; ii) the current large volumes of imported e-waste which might otherwise sustain a competing informal sector will be eliminated; iii) there is a broader coverage of WEEE than currently



provided for; and iv) international experience related to implementing EPR systems and introducing processing technology based on international BAT/BEP is available and applicable to the Chinese context.

These assumptions also effectively define the principle barriers to achieving the targeted overall improvement in the environmental performance of the WEEE processing sector and the areas where GEF intervention can be of assistance in ensuring these targets are achieved and exceeded. These are:

- i) Limited attention in the past to proactively facilitating the integration of the existing informal sector and the portion of the processing market it covers into environmentally sound processing infrastructure adequately funded by an effective market based mechanism such as the proposed EPR system;
- ii) Limited access to international experience in implementing and sustaining a EPR system financially and operationally;
- iii) Need for access to international BAT/BEP experience related to WEEE processing technology and ability to pilot and demonstrate it;
- iv) Limited monitoring and supervision capacity in the WEEE management system; the need for capacity building;
- v) Low public awareness on e-waste; the need to undertake educational activities to promote awareness on harms of e-waste on environment and human health;
- vi) Partial capture of targeted POPs/PTS release sensitive products due to the current WEEE system on being limited to white goods and TV products and the need to expand the scope of the WEEE system to ensure coverage of additional POPs/PTS release sensitive products, namely mobile telephones, a complete range of digital data processing and communications devices, and other IT equipment; and
- vii) Lower priority assigned to aggressively addressing control and reduction of illegal e-waste imports, and dealing with both socio-economic and environmental legacies associated with the traditional informal sector.

### **Root causes and barriers analysis**

Majority of China's WEEE dismantling process employs more basic, manual or simple machinery technologies. As WEEE itself contains persistent toxic chemical contaminants (such as POPs and other brominated flame retardants, heavy metals, etc.) which will be released into the environment through improper treatment and residual waste disposal processes. Also improper treatment processes cause the release of other types of POPs such as dioxins, serious threats are imposed to the ecological system and the human health at the dismantling sites and further to global commons. The problems and obstacles can be specified as follows:

- i) Existing references all point to the fact that WEEE contains POPs/PTS substances, and that improper treatment will release additional POPs, yet China has not undertaken quantitative analysis on POPs/PTS substances during the production process of electronic products; nor had it undertaken qualitative and quantitative identification of the types and quantities of POPs/PTS discharge or emission in the waste treatment and disposal process.
- ii) Enterprises undertaking WEEE dismantling or processing perform only part of dismantling and material recovery work. For example, a licensed enterprise that can handle the four major types of home appliances (television, refrigerator, washing machines, air conditioner) and computer, was found to only crush the plastic shell of sorted WEEE and then the waste was sold to the market and how it was subsequently treated remains unknown. This increases the difficulties in controlling POPs/PTS substances flow during the dismantling and treatment processes of WEEE and not conducive to the management and reduction of POPs/PTS release.
- iii) At present, there is a variety of technologies used for WEEE dismantling and treatment process. While it is known that in general POPs/PTS substances are released during the dismantling and treatment process, however, in the absence of monitoring and control

mechanism, enterprises do not pay attention to whether the wastes generated contain POPs/PTS substances nor the quantities generated. This results in difficulties to take effective measures to control and reduce POPs/PTS emission, and that also impacts on China's compliance with the Stockholm Convention.

- iv) Currently the main aim for WEEE disposal and treatment process centers on resources and regeneration, and barely considers environmental protection, paying little concern on assessment and management of POPs/PTS release. Furthermore, the lack of related emission standards, emission reduction guidelines and corresponding EIA guidelines on WEEE limits the sound management and supervision of POPs/PTS release.
- v) Existing studies fail to find qualitative and quantitative solutions for an effective management strategy that encompasses multi objectives including economic costs, recycling rate of WEEE, management and reduction of POPs/PTS, thus making it difficult for an efficient state- and local-level environmental management effort, or to offer local enterprises a constructive and practical programme on reducing POPs/PTS release.

## **II. STRATEGY**

### **Strategy to address EPR and WEEE**

The overall project strategy is to blend GEF funding into the overall national EPR WEEE management system development process to address the issues and barriers noted above, specifically ensuring that international best practice experience and technology options are considered. The project will achieve reduction of POPs/PTS release through five comprehensive and targeted components. At the macro level, it will take in international EPR experience to develop and improve the national EPR system for WEEE, in particular, to support the development of procedural and administrative mechanism required for an efficiently operated EPR Treatment Fund. National technical standards will be adopted and implemented for effective WEEE management, particularly on POPs containing or releasing waste streams. LCA/LCM procedures and labelling will be applied for eco-design and clean production. Public awareness activities will be conducted to promote implementation of national EPR system, and effective discrimination between second hand product and e-waste imports will be implemented.

Through demonstration activities at three selected locations and actions to be taken at selected enterprises, WEEE collection, proper qualification and registration of WEEE processing facilities, proper procedures to dismantle, treat, process and final disposal of POPs/PTS release sensitive materials in an environmentally sound manner utilizing demonstrated BAT/BEP technologies, will result in achieving reduction of POPs/PTS release.

Through demonstration of a more organized and efficient collection system by the registered recyclers at the three demonstration locations, it is expected that the volume of collection by the formal sector will increase and the quantities of WEEE being processed by the formal sector will correspondingly increase. Furthermore, through economic incentives targeting the informal sector, this sector will move towards a more organized structure resulting in a larger quantify of WEEE being diverted to the formal processing facilities. This will reduce the environmental pollution caused by crude processing at the informal facilities.

### **Project Rational and Policy Conformity**

The project is fully consistent with the GEF-5 Chemicals Focal Area Strategy and its Objective CHEM-1 (Phase out POPs and reduce POPs releases). Its primary contribution will be through Focal Area Outcome 1.3 (POPs releases to the environment reduced) and Outcome 1.5 (Country capacity built to effectively phase out and reduce releases of POPs). Contributions are also made to Outcome 1.4 (POPs waste prevented, managed, and disposed of, and POPs contaminated sites managed in an environmentally sound manner) and to meeting Objective CHEM-3 (Pilot chemicals management and mercury reduction) and specifically Outcome 3.2 (Contribute to the overall objective of the SAICM of achieving the sound management of chemicals throughout their life-cycle in ways that lead to the minimization of significant adverse effects on human health and the Environment). The following

elaborates these contributions by GEF outcomes and indicators under this strategic programming area as follows:

Relevant GEF-5 Strategy Outcome/Indicator	Project's Contribution
<p><u>Outcome 1.3</u> POPs releases to the environment reduced.</p> <p><u>Indicator 1.3.1</u> 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>	<p>The project's major focus in all three Components is to ensure the environmentally sound management of China's large and growing WEEE generation, specifically components thereof that are sensitive to POPs release if improperly processed as has been the case historically. The major POPs releases that will be addressed are PCDD/F derived from incomplete combustion of chlorinated plastics. Other minor POPs releases will be prevented by separation and environmentally sound disposal of PCB and PBDE containing components in WEEE that would otherwise be randomly disposed of or "cross contaminating clean materials being recycled for use in consumer products. The project is expected to have over 5,000 tons of BFR containing plastics/resins performed/reused annually under the Stockholm Convention and over 5,000 tons of CRT recycled from environmental emission annually in the demonstration locations.</p>
<p><u>Outcome 1.4</u> POPs waste prevented, managed, and disposed of, and POPs contaminated sites managed in an environmentally sound manner.</p> <p><u>Indicator 1.4</u> Amount of POPs related waste prevented, managed and disposed.</p>	<p>The implementation of a well-financed formal system of managing WEEE under an EPR principle (Components 1 and 2) while taking measures to upgrade and integrate the informal sector currently responsible for substantial POPs legacies in the form of POPs wastes and contaminated sites (Component 3), effectively acts to prevent generation of POPs waste and facilitates the addressing POPs contaminated site legacies in an environmentally sound manner.</p>
<p><u>Outcome 1.5</u> Country capacity built to effectively phase out and reduce releases of POPs.</p> <p><u>Indicator 1.5.1</u> 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.</p>	<p>Components 1, 2 and 3 all contain capacity strengthening directed to realizing a modern system of WEEE management based on a comprehensive legal and regulatory framework as well as legally binding EPR system to ensure the economic sustainability of environmentally sound WEEE processing. This is accomplished through ensuring the application of internationally benchmarked regulations and technical standards, as well as access to BAT/BEP based technology. Additionally, it supports strengthening of qualified enforcement capacity to facilitate the elimination of polluting informal practices and illegal imports, and ensuring a high level of stakeholder and public awareness and acceptance for this system is developed. This will entail development of working level enforcement level techniques and monitoring standards for application on the ground by local environmental and customs authorities.</p>
<p><u>Outcome 3.2</u> Contribute to the overall objective of the SAICM of achieving the sound management of chemicals throughout their life-cycle in ways that lead to the minimization of significant adverse effects on human health and the Environment.</p> <p><u>Indicator 3.2.1</u> Countries implement SAICM relevant activities that generate global environmental benefits and report to the International Conference on Chemicals Management.</p>	<p>The scope and nature of the project has a linkage to SAICM and the global environmental benefits derived from its Global Plan of Action, and the Global Priorities associated with it. At a practical level, these linkages are associated with the synergy in reducing both POPs and PTS (PBT) releases inherent in implementing ESM of WEEE, specifically through release reduction of cadmium, mercury, lead and other heavy metals. It also has linkages to measures to reduce illegal trade in products containing POPs and PTS and associated, international cooperation initiative. Similarly promotion of a life cycle and "cradle to grave" approach both to management of WEEE and for the future in the design and production of electrical and electronic products is of global significance given China's leading role as a producer of such products.</p>

Relevant GEF-5 Strategy Outcome/Indicator	Project's Contribution
	Overall, the project has direct linkages to 9 of the 12 SAICM Global Priorities listed in the Global Plan of Action.

### **Project Consistency with National Priorities/Plans**

The principle relevant Conventions that this project supports directly are the Stockholm Convention on POPs (signed in 2001/ ratified in 2004) and the Basel Convention (ratified in 1991) inclusive of the Ban Amendment (ratified 2001). The latter is important given China's role in the international trade in WEEE. Additionally, China has ratified the Rotterdam Convention on Prior Informed Consent in 2005, is active in the International Conference on Chemicals Management and the current INC process leading to a global convention on mercury which the project will support generally as part of the expanding integration of initiatives under a sound chemicals management framework.

The Stockholm Convention National Implementation Plan on POPs (NIP), completed and submitted in 2007, is the principle national plan directly pertinent to this project. It's Action Plan that places a high priority on reduction of unintentionally produced POPs releases. During the period up to 2015, the planned actions focus on sectoral or source category initiatives involving first-stage interventions to initiate control of PCDD/F sources by means of technical evaluation, environmental impact assessment, revised release standards, monitoring capacity building, and BAT/BEP demonstration. GEF -5 projects are approved in two such priority source categories, municipal waste and pulp and paper. This project, with its primary focus on unintentional POPs releases represents the third such sectoral initiative proposed for GEF support and is consistent with the NIP Action Plan it focused on these first stage interventions. The secondary processing of non-ferrous metals generally was also identified in the NIP as a primary source category and priority for action. The informal processing e-waste is now recognized under the UNEP Tool Kit Source Category 2 (Ferrous and Non-Ferrous Metal Production/Group 1 (Thermal wire reclamation and e-waste recycling). In China, this is a major and rapidly growing sub-sector in this source category, as well as also being a source of unintended new POPs emissions in the form of PBDD/F as a consequence of open-burning of cables and circuit boards (Tool Kit Classes 2.1.1 and 2.1.2. respectively).

The project also is a key part of a current national policy initiative under the *Regulation on the Administration of the Recovery and Disposal of Waste Electrical and Electronic Products* that came into effect in 2011. This has the overall objective of establishing a national Extended Producer Responsibility (EPR) system by 2015, inclusive of an EPR Treatment Fund that provides environmentally sound processing of such wastes, including those currently associated with U-POPs releases. This system assumes and relies on substantial private sector involvement as noted elsewhere herein. More generally, this flows from the *Circular Economy Promotion Law of the PRC* (2008), and earlier *Law of People's Republic of China on Prevention of Environmental Pollution caused by Solid Waste (2004 revision)* and *Promotion of Clean Production* (2002). It is also consistent with a number of broader national environmental and economic development programs including the current (12th) National 5-years Plan which specifically includes a specific sub-plan to address POPs.

### **Project Objective and Indicated Outputs**

The proposed four-year project will help China to fulfill the requirement of the Stockholm Convention. Consistent with this objective and taking into account of achievements of the PPG activities, the project will address the POPs/PTS release sensitive e-waste stream in eco-design, recycling, dismantling, treatment and final disposal processes of Waste Electrical and Electronic Equipment (WEEE). The project as outlined is structured with five components: Component 1 covers national WEEE management system development and implementation in terms of scope, administration, business arrangements and promotion with the GEF support being focused on introduction of international experience and lessons learned; Component 2 covers the development of the required infrastructure and the demonstration of BAT/BEP technologies with the GEF support focused on introduction of international technology and capability; Component 3 addresses the integration of the informal sector into the formal EPR system with GEF support focused on information exchange, training and international cooperation related to illegal imports, Component 4

supports the monitoring and evaluation of the project and dissemination of experience, something that is seen as useful for other developing countries dealing with the issue globally; and Component 5 strengthens project management capacity to achieve implementation effectiveness and efficiency.

The following describes activities envisioned under each component consistent with the Outcomes and Outputs provided above:

### **Component 1 - Development and implementation of the national EPR system for WEEE**

**Outcome 1.1:** Operational national EPR system covering priority POPs/PTS release sensitive E-Waste streams.

Activity 1.1.1 Support the development of procedural and administrative mechanisms required for the national and provincial level EPR Treatment Fund's efficient operation inclusive of input of international experience. Support implementation of the national EPR Treatment Fund system through trainings to stakeholders.

Activity 1.1.2 Support improvement of WEEE management system through development of training modules in collaboration with international EPR systems. Support knowledge exchange to acquire international experience on EPR system, particularly on how POPs/PTS containing materials are separated and managed.

Activity 1.1.3 Develop required data information management system to allow registration of authorized operators, material flow monitoring, audits, and market adjustment to EPR financing system at provincial and national level. Set up a national center of integrated e-waste information/data management system in support of the EPR system.

**Outcome 1.2:** Adopted and implemented national technical standards and operational business documentation governing the management of WEEE in support of the EPR system.

Activity 1.2.1 Develop the product and recovered material specific technical standards for at least one product, defining targeted POPs/PTS release sensitive WEEE in cooperation with the private sector. Prepare a catalogue of sensitive processes and materials on the selected product. Report and track POPs/PTS containing material; implement WEEE management chain technology performance and residual waste management standards prioritizing POPs release minimization through trainings to local stakeholders.

**Outcome 1.3:** Applied LCA/LCM procedures and labelling for product design and production.

Activity 1.3.1 Introduce a LCA component into the determination of EPR charges with specific emphasis on scaling such charges to the potential level of environmental impact such that POPs/PTS release sensitive products attract appropriate charges.

Activity 1.3.2 Support internationally bench marked LCA/LCM and demonstrate eco-labelling based product design and production in conjunction with the private sector taking into account of identifying critical environmental parameters related to POPs/PTS emissions such as product design for recycling, waste minimization, phasing out of hazardous substances and waste residuals, energy efficiency, and cost efficiency. At least one electrical and electronic equipment developed through demonstration of eco-design and production. Introduce the international guidelines through workshops. Develop guidelines of LCA/LCM and associated eco-labelling of product design and production.

**Outcome 1.4:** Achieved public awareness and stakeholder consensus on the detailed design and implementation of the national EPR system.

Activity 1.4.1 Conduct annual consultation meetings with stakeholders including the private sector and public interest NGOs throughout the EPR system design and implementation process to ensure that a national consensus and acceptance of the system as well as equitable distribution of responsibilities, liabilities and benefits. Set up an online stakeholder consultation platform for long term review and planning of EPR Treatment Fund improvement. Undertake public awareness initiatives (campaigns, brochures, publications etc.) supporting the EPR system and soliciting public participation, particularly in relation to support for voluntary collection and early

replacement where beneficial, including involvement of public interest NGOs at the local and community level.

**Outcome 1.5:** Implementation of effective discrimination between second hand product and e-waste imports.

Activity 1.5.1 Review and strengthen policy and regulatory controls on imports of second hand electronic equipment and e-waste consistent with developing Basel Convention requirements through improving / upgrading the policy framework in China.

Activity 1.5.2 Develop the practical guidelines of discrimination between e-waste and second hand products imported. Conduct trainings and detection capacity upgrading at ports of entry to strengthen import control enforcement.

Activity 1.5.3 Bilateral and multi-lateral initiatives (regional coordination group meeting, joint detection mechanism etc.) with exporting countries on WEEE trade and adoption of coordinated notification/consent procedures including cooperation with agencies and organizations involved in the issue.

## **Component 2: Demonstration and development of market based WEEE processing infrastructure**

**Outcome 2.1:** Utilization and upgrading of the existing domestic WEEE collection system to efficiently and cost effectively supply registered/permitted WEEE processing facilities particularly for POPs/PTS sensitive e-waste constituents.

Activity 2.1.1 Undertake a comprehensive characterization, at the provincial level, of the current collection chain from source through various collection, segregation and consolidation steps inclusive of the types of participants, business arrangements operating and constraints that may exist. Undertake case study on 3 currently operating collection schemes with existing authorized recyclers in the three regions (reverse supply, on-line collection, network of small shops and public organizations) and assessment of the improvement measures for increasing collection, including payback schemes, elaboration of new collection strategies, collaboration with door-to-door collectors, etc. Mapping of e-waste production distribution and collection network in the 3 selected regions; also develop a menu of interventions for optimization of the collection network matching the licensed recyclers in the region.

Activity 2.1.2 Conduct knowledge and experience exchange on pilot interventions in collection chain to optimize efficiency, particularly relating to primary product separation for direction to recycling facilities.

**Outcome 2.2:** Operation of a comprehensive national network of registered WEEE processing facilities to dismantle and process POPs/PTS release sensitive materials in an environmentally sound manner utilizing demonstrated BAT/BEP technologies.

Activity 2.2.1 Support the registration and permitting activities of existing WEEE processing operations through introducing internationally benchmarked standards in at least one of the three selected municipality/provinces. Develop/improve the management rules/procedures for registration/authorization of the different WEEE processing enterprises (including collection, storage, sorting, dismantling, depollution, pre-treatment, recycling). Demonstrate the registration system of WEEE processing operations covering all different WEEE processing companies in one province.

Activity 2.2.2 Develop technology selection and operational technical guidelines, particularly paying attention to diverting POPs containing plastics from further recycling, that are appropriate to various scale levels of WEEE processing, comprising manual dismantling, mechanical pre-processing and end material refining. Organize a multi-stakeholder technical control committee in charge of formulating recommendations and editing technical guidelines for various scales of WEEE processing. Review international best practices and technical standards, and systematic assessment for suitably applicable to Chinese context. Editing of technical guidelines and diffusion among Chinese operational organizations.

#### Activity 2.2.3 Undertake BAT/BEP technology demonstration

- on refined dismantling process at 3 enterprises in the three selected municipality/provinces. High attention is brought to the identification, removal and safe disposal of POPs/PTS containing components.

- on plastic, cable and epoxy resin processing at one enterprise: identification, segregation and safe disposal of BFR containing plastics, conduct risk assessment and carry out labelling of plastic products,

- on Waste Printed Circuit Boards at 2 enterprises in the three selected municipality/provinces. Improve mechanical pre-treatment processes in order to minimize losses of valuable fractions and diffusion of POPs/PTS. Ensure that the valuable fraction is channeled to a non-ferrous smelting facility. Support facilities that remove components from WPCBs to upgrade them to an integrated process.

- on hazardous component disposal/management at 2 enterprises. Ensure that the hazardous fractions that are removed during the dismantling processes are channeled to proper treatment and disposal facilities (high temperature incineration, hazardous waste landfills).

- on cathode ray tube (CRT). Ensure the safety dismantling and environmentally sound management and reuse of different components of CRT, in particular the extraction of lead in the cathode ray tubes.

Activity 2.2.4 Provide international experience in the establishment and qualification of at least one economically scaled center created for processing of high value materials (i.e. printed circuit boards) to recover precious metals on the basis of a qualified non-ferrous metals smelter. Support technology transfer to one Chinese non-ferrous smelter with an integrated precious metal refinery (possibly sourcing technology from Umicore, Boliden, NDA, or Xstrata). Undertake risk assessment to determine that smelter is a more suitable technology for non-ferrous metal mix from WEEE processors and precious metal recovery.

Activity 2.2.5 Technical Assistance in upgrading existing and establishing new formal dismantling and pre-treatment operations at the three demonstration provinces/municipality. Conduct survey of facilities operating within the national register and assess compatibility of processes for efficient POPs/PTS removal. Identify incremental improvements and document the feasibility of implementation. Implement improvement measures. Conduct evaluation and risk assessments on the implementation and achievements of the demonstration activities.

Activity 2.2.6 Provide policy, technology, and management support and promote the demonstration activities in the three demonstration provinces/municipality. Undertake research in environmentally sound collection, dismantling, processing and disposal technology and provide technical support to demonstration enterprises. Actively promote environmentally sound processing activities.

### **Component 3: Upgrading of informal WEEE processing and its integration into the EPR System**

**Outcome 3.1:** Characterization of overall national scale, scope and impacts associated with the informal WEEE processing inclusive of identification of high priority regions and centers.

Activity 3.1.1 Undertake a national level characterization study of the informal WEEE processing sector to better understand its level of activity, key locations, stakeholder networks, the nature of its operation and potential strategies to integrate it with the developing formal sector, including economic incentives. Identify and develop economic incentives that the EPR system can provide to enhance informal sector integration.

Activity 3.1.2 Develop guidance and procedural documentation for undertaking environmental and health impact evaluations of potentially impacted areas and locations at the local level. Develop operational guidelines on the 3 selected collection chains/systems, including primary product separation. Undertake stakeholder information dissemination related to the developing

EPR based system and promotion of participation of current operators in the informal sector, in cooperation with local and community level public interest NGOs and other local stakeholders.

**Outcome 3.2:** Provision of policy, regulatory enforcement and awareness support provided through MEP to the local level related to supervision of the informal WEEE sector.

Activity 3.2.1 Develop model regulations and guidance materials on enforcement activities on informal WEEE processing at the local level. Conduct training program for local level officials and other stakeholders including local and community level NGOs on controls appropriate to the informal sector and options available to it.

Activity 3.2.2 Prepare and deliver awareness programs on the impacts of informal WEEE processing for local officials, operators and the public with the involvement of local authorities and community level public interest NGOs.

**Outcome 3.3:** Demonstration of collective infrastructure supporting informal WEEE processors and providing environmentally sound dismantling operations related to POPs/PTS sensitive release developed and integrated with the national EPR system recycling network for further processing.

Activity 3.3.1 Identify opportunities for developing collective infrastructure that would attract and accommodate current informal dismantling/processing operations. Design and implement demonstration of municipal level collection chains/systems with 3 enterprises in the three selected provinces/municipality, including introduction of approaches adapted from international experience in the collection to optimize efficiency, particularly relating to primary product separation for direction to processing facilities.

#### **Component 4: Project Monitoring and Evaluation**

**Outcome 4.1:** Effective monitoring and evaluation; knowledge sharing and information dissemination

Activity 4.1.1 Undertake continuous monitoring and periodic progress reviews on development and operation of the overall EPR based WEEE managements system and associated effectiveness evaluations.

Activity 4.1.2 Develop and implement impact assessment procedures with respect to estimated POPs/PTS releases reduced, levels of WEEE diverted from the informal sector, degree of integration of informal operators into the system, and reductions in imports.

Activity 4.1.3 Conduct Mid-Term Review and Terminal Evaluation.

**Outcome 4.2:** Knowledge sharing implemented and post-project action plan prepared

Activity 4.2.1 Prepare and disseminate experience and lessons learned nationally as the system develops and internationally through multilateral forums such as Basel Regional Centers and directly with other developing countries.

#### **Component 5: Project Management**

**Outcome 5.1:** Strengthened project management capacities and efficiency

Activity 5.1.1 Strengthen institutional capacity of the National Project Team (NPT) in MEP for project management; establish Local Project Management Office (LPMO) and strengthen project management capacity in each of the three demonstration provinces/municipality; develop Project Implementation Manual (PIM), train staff on PIM and relevant GEF and UNDP requirements on project management.

Activity 5.1.2 Undertake day-to-day project management activities by NPT and LPMOs to ensure smooth and timely implementation of project activities including but not limited to: drafting TORs, select and contract with consultants, organize M&E activities, organize the review of substantial report.

#### **Baseline Project**

The baseline project is substantively defined by the currently planned implementation activities and scope associated with the EPR financed WEEE system being developed under the state level



*Regulations on the Administration of the Recovery and Disposal of Waste Electrical and Electronic Products* during the period 2011 thru 2015. This encompasses regulatory measures and technical standards associated with processing environmental standards, qualification and permitting of formal processing facilities, designation of products covered, development of provincial level plans, administrative measures (audit, information systems), and establishment and operation of an EPR based treatment fund. During 2011, establishment of technical and environmental requirements as well as registration and qualification procedures was undertaken at the national level, the provincial level infrastructure plans for a network of formal collection and processing facilities were prepared and the EPR Treatment Fund was announced. The design and implementation of the WEEE management system will be supported by an initial LCA/LCM analysis and labeling methodology both to new product design and management of WEEE processing. In the case of the latter, this will include its use in scaling EPR charges to reflect potential environmental impacts of processing, BAT/BEP technology selection, and the qualification/permitting of processing facilities. Application of the WEEE management system currently is for white goods (domestic/commercial refrigeration equipment and washing machines), domestic air conditioners, TVs and computers. Implementation on an incremental basis by province is envisioned with a functioning national system operating in 2015. Revenue generation from the EPR Treatment Fund will support EPR system operation. When EPR is fully implemented the associated capital investment made by mainly private sector will be substantial. Current initiatives undertaken lack interventions that will address the barriers identified above. The inclusion of GEF funding will introduce international best practice; provides full coverage of the WEEE sector to fully capture POPs/PTS sensitive e-waste; extends experience and technology inputs that will support rapid implementation of the system to fully meeting expectations of global environmental benefits.

The following elaborates on the baseline project definition by Component:

- **Component 1 - Development and implementation of the national EPR system for WEEE:** The baseline project aspect of this component is essentially the system development and implementation without international inputs, and a reduced focus on POPs release sensitive waste streams and potentially others with global environmental impacts. It would encompass the establishment of the EPR treatment fund but without the benefit of the substantial international experience base developed with this economic instrument elsewhere. It would include development of technical standards and guidelines which would have a lower degree of international benchmarking in terms of environmental performance and operational efficiency. The initial development of LCA/LCM procedures would be part of the baseline as would a basic level of public and stakeholder consultation. Some initiatives related to addressing import issues would be part of the baseline but at lower priority and degree of effort than the proposed project inclusive of GEF interventions.
- **Component 2: Demonstration and development of market based WEEE processing:** The baseline project aspect of this component is primarily focused on the development of large formal WEEE processing facilities and an associated structured collection system, all using readily available technologies and practice. The facilities developed would have an inherent bias toward processing high volume and value WEEE with a lower emphasis on those with significant environmental, particularly POPs, issues. The development of a major printed circuit board processing capability in an upgraded smelter would be in the baseline project but would lack the substantial amount of international experience accumulated in maximizing efficiency and environmental performance in these operations. It would also lack the international inputs that are planned in the proposed project related to designing the operational system both physically and in terms of financial flows to take advantage of and incorporate the relatively efficient existing primary collection system. It would also have less demonstration of BAT/BEP in relation to processing facilities, particularly for POPs release sensitive products where international experience would provide benefits.
- **Component 3: Upgrading of informal WEEE processing and its integration into the EPR System:** The baseline project would essentially undertake limited policy and national level technical guidance efforts in addressing the informal sector, its integration into the EPR based

formal system, and the legacy issues associated with past practices. However this would have a limited priority given the primary focus in the baseline project on developing the large scale formal processing capability and would not include the more locally oriented demonstration and assessment activities contemplated in the proposed project.

- **Component 4: Project Monitoring and Evaluation:** This component would involve a fairly minimal effort in the baseline project except as required under local practice and procedures. The international M&E practices associated with GEF projects would not be included and the potentially important initiatives associated with international dissemination of results, lessons learned and best practices would be absent in the baseline project.
- **Component 5: Project Management:** The baseline project would essentially undertake basic and routine project management functions without an organized infrastructure and strengthened capacity to efficiently manage and monitor project activities.

### **Expected Results**

The overall result of the project will be China having an domestic WEEE management system financed by a robust sustainable EPR mechanism and operating with BAT/BEP that effectively maximizes the resource recovery potential available while eliminating the major environmental releases, particularly POPs releases currently attributed to WEEE processing by 2015. For PCDD/F this reduction has been estimated on a preliminary basis to be as high as 655 g I-TEQ/year along with avoidance of up to 8.3 t/year of PBDE being released just from cable and printed circuit board combustion as well as plastic waste stream management. The basis of the above estimates is application of source category emission factors from the UNEP Tool Kit and technical literature for cable burning and printed circuit board open burning applied to estimates of projected quantities of these two e-waste stream constituents (2% and 1.7% of total generation of 17.3 million t respectively) discounted by a conservative assumption that 50% is directed to the informal sector and subject to open burning. This system will have the potential to substantially displace the current informal processing of WEEE that is associated with globally significant POPs releases as well as release of other high impact pollutants, and associated negative impacts on health, air quality, and levels of soil and water contamination.

### **Incremental and Additional Cost Reasoning and Global Environmental Benefits**

The incremental and additional cost reasoning supporting the GEF intervention relates to the use of GEF funding as an integral part of a large proactive national program with the GEF support specifically targeting areas with high global significance in form of global environmental benefits and where international experience in addressing the WEEE issue will strengthen the national program, and substantively increase its effectiveness in terms of coverage, sustainability and environmental benefits. In the absence of the GEF intervention the significant global environmental benefits noted below would likely not be achieved or at best significantly deferred.

The specific assistance areas where GEF assistance will focus to achieve incremental/addition results are: i) the detailed design and operational implementation of the EPR mechanism to shorten the inevitable learning curve in establishing the charges, financial flows and feedback controls to maximize its flexibility and transparency by transferring well established international experience as appropriate; ii) ensuring that it fully encompasses and appropriately charges POPs/PTS release sensitive products; iii) maximizing resource recovery efficiency and environmental performance by introduction and demonstration of internationally bench marked BAT/BEP; iv) supports the proactive integration of the currently competing informal sector into the EPR financed system that may otherwise not be a priority in the design of system; v) accelerate efforts to control and eliminate the current illegal trade in WEEE that could undermine the EPR based domestic system, specifically through promotion of increased enforcement and coordination with exporting countries; and v) facilitate initiation of dealing with legacies from past practices that might otherwise be deferred.

The direct global environmental benefits will involve assurance of significant elimination of POPs/PTS releases, primary POPs in the form of PCDD/F and PBDD/F that would otherwise be released on an ongoing basis in the absence of adoption of sustainable BAT/BEP based processing,

but also covering the release of PBDEs and-PCBs from random land disposal of processing residuals. At this point, the only readily quantifiable release reductions are for PCDD/F which if a conservatively estimated proportion of WEEE processed by the informal sector using open burning of cable, and printed circuit boards were eliminated could result in up to 655 gI-TEQ/year in PCDD/F reductions and avoidance of up to 8.3 t/year of PBDE either combusted or disposed of by random land disposal. The project will undertake quantification of the additional release reductions associated with other POPs and various heavy metals which are also anticipated to be globally significant. It should also be noted that the project compares favorably in term of GEF grant cost effectiveness measured in US\$/g I-TEQ PCDD/F release reduction relative to already approved projects in China primarily addressing GEF-5 Chemicals Focal Area Strategy Outcome 1.3 and Indicator 1.3.

Two associated areas of significant global environmental benefit from the efficient and sustainable operation of the planned national WEEE management system are the reductions in releases of heavy metals from traditional WEEE processing practice and identification of the possibility of e-waste business on carbon emission reduction trading. From available data, the reduction in heavy metal releases is estimated at 1,000 ton of lead.

As energy consumption in removing precious metals from e-waste is much less than extracting the same metals from mining, the project will also explore the potential of carbon emission reduction by developing methodologies for e-waste management in the formal sector. The project will coordinate relevant stakeholders in public and private sector to create an enabling policy and market environment for the formal sector to sell the carbon emission reduction to electronic and electronic product producers for carbon emission reduction. Partnership between the government and carbon trading market in China and other countries will be strengthened so that the methodology and the carbon credit can be accepted globally.

### **Socioeconomic Benefits**

The overall socioeconomic benefit of the project is derived from the elimination of POPs releases that having significant negative impacts on biological resources, inclusive of human health. The associated risk reduction at both a local and national level will positively impact the productivity of populations and reduce the financial burden imposed by potentially degraded public health, as well as contributing to general wellness, economic development and quality of life. This is particularly true for vulnerable parts of the population and for maternal health that would be improved by reduced POPs and PTS exposure.

More specific socioeconomic benefits from the project are associated with its proactive approach to integrating the informal sector into a properly managed and funded WEEE management system. The informal sector generally involves low income sectors of the population who currently undertake the polluting informal processing of WEEE, essentially in their home environments with the significant health effects on all ages and genders in close proximity. The transition of dismantling and primary processing activities to appropriately sited and equipped locations supported by collective environmentally sound infrastructure and operating with appropriate workplace standards will positively change this situation, as well as better assuring an equitable distribution of revenues for labour provided.

One specific aspect that a formal EPR based system can offer is to ensure that sufficient financial incentive exists for the collection and pre-treatment (dismantling) of all WEEE regardless of value which without the financial incentives at this level does not happen in an informal system. In addition to the environmental benefit of maximizing waste stream capture, it serves to create additional income for bottom income tier of the system with associated positive social impacts.

At the same time, it is recognized that the transition of WEEE processing in China from the informal to formal sector will potentially cause some socio-economic changes as individuals and communities adjust to the more structured but environmentally sustainable system. The project itself assists in ensuring this aspect is considered in the design and implementation of the EPR system by maximizing integration of informal sector resources into the system. With a carefully organized and calibrated approach towards bringing the current informal sector into the formal recycling system, the informal

sector can move up the value chain bringing their income levels up from current low levels. Additionally, these considerations will need to be factored into the tools developed in Component 3 that will allow the national level to provide direction to local level and other international initiatives intended to mitigate historical environmental and health impacts from traditional informal sector activities.

### Risks and Mitigation Measures

Risks that might prevent the achievement of project objectives and the proposed mitigation measures are presented below:

Risks	Mitigation Measures
<p>Insufficient funds will be generated under the WEEE EPR management system to adequately attract process facility and associated infrastructure investment, and to sustain the WEEE managements system's operation, particularly for POPs/PTS release sensitive products which might have a lower priority relative to other high volume products in terms of investment demand.</p>	<p>Careful planning including utilization of international experience with EPR system management should ensure the appropriate funds are raised and allocated effectively across the system including introduction of concepts such as advanced recycling fees.</p> <p>Specific efforts will be made to target and appropriately charge POPs/PTS release sensitive products based on LCA principles to balance economic bias to products of higher volume of economic value in terms of recovered materials.</p>
<p>The environmental performance objectives of eliminating POPs and PTS release will be technology limited.</p>	<p>The approach of piloting and demonstrating international technologies employing BAT/BEP will mitigate limitations on technology availability and its economic and environmental performance efficiency, as will strict regulatory enforcement banning improper technologies should ensure the efficient implementation of BAT/BEP.</p>
<p>Continued operation of an informal sector that diverts a substantial amount of WEEE away from the national system and the formal processing operations</p>	<p>Ensuring that the financial flows from the EPR system reach down to local collectors and ultimately the consumers disposing of WEEE such that a financial incentive exist to supply the qualified and permitted WEEE processing facilities.</p> <p>This will be further supported by ensuring that all aspects of the WEEE value chain are registered and financed on an equitable basis.</p> <p>Public awareness and information campaign directed at consumers and informal collectors to promote WEEE be eventually channeled to formal sector for processing</p>
<p>Sustained informal operations due to continued availability of illegal WEEE imports with continued environmental impacts and potential to undermine the economic basis for the formal domestic WEEE management system.</p>	<p>Proactive enforcement of current import regulations and expanded capacity for detection will accelerate the elimination of illegal imports of WEEE.</p> <p>Implementation of Basel Ban requirements on OECD country exporters of WEEE including enforcement of Basel G/L differentiating second hand materials from e-waste and implementation of notification and consent procedures.</p> <p>Collaboration with formalized international enforcement networks which target illegal traffic of environmental goods via seaports such as the INECE SESN.</p>

## **Sustainability and Replicability**

The project components will become integral parts of the functioning national EPR system for electrical and electronic goods ensuring technical, institutional and financial long-term sustainability. Component 1 covers the development and improvement of a national WEEE management system with the introduction of international experience and lessons learned that will result in an efficient infrastructure and strengthened capacity for effective WEEE management. With the administrative and procedural enhancements in the collection, administration and disbursement of the WEEE EPR Treatment Fund, it facilitates a working mechanism to ensure financial sustainability in the WEEE management system. Component 2 covers the development of the required infrastructure and the demonstration of BAT/BEP technologies with the introduction of international technology and capacity at selected enterprises in three demonstration locations. This will strengthen structure and capacity to ensure infrastructure and technological sustainability, to reduce POPs/PTS sensitive releases and ensure efficient and environmentally sound chemical management. Significant co-financing committed by these selected demonstration enterprises will also contribute to successful technology demonstration and the long term sustainability of technological improvements. Component 3 focus principally on the informal sector, addressing the integration of the informal sector into formal EPR system, targeting illegal imports and the discrimination of second hand products. Through improved collection system and economic incentives, it aims to divert WEEE to formal recycling facilities for processing, thus reducing POPs/PTS release at the primitive and manual operations at the informal recyclers. Sustainability might be attained with proper channeling of WEEE for treatment. Components 4 and 5 will provide proper infrastructure and strengthened capacity for efficient project monitoring and management to achieve project objectives. The structure and capacity developed will ensure long-term sustainability.

The demonstration activities, with introduction of international experience, lessons learned and BAT/BEP technology at selected enterprises in the three provinces/municipality will be appropriately replicable at many other formal processing facilities. Replication can be first expanded to other processing facilities at the demonstration provinces/municipality, and subsequently nationally to other provinces throughout China. Improved WEEE management with introduction of international EPR experience, experience in combating illegal imports, effective discrimination of second hand products, and collaboration with international enforcement networks can all be replicated at other developing countries experience enormous and rapid growth of e-waste like China.

## **Mainstreaming Gender in Reduction and Elimination of POPs**

In daily life, men, women, and children are exposed to different kinds of toxic chemicals include POPs in varying concentrations. The level of exposure to toxic chemicals – as well as the resulting impacts on human health – is determined by social as well as biological factors. The increasing use of appliances in homes and business, combined with shorter lifecycle of appliances, has drastically increased the volume of e-waste globally and domestically in China. Generally the level and type of harmful substances are not depending on whether the e-waste is treated in large or small scale, or indeed whether mechanical or manual step are utilized. There is however, a large difference in the scale of harmful releases depending on whether e-waste treatment is conducted under controlled and systemized circumstances by operators that are aware of the various hazards or treated uncontrolled by unaware processors.

In China, WEEE dismantling process employs more primitive, manual technology. As WEEE itself contains persistent toxic chemical contaminants (such as heavy metals, dioxins, brominated flame retardants, etc.) which will be released into the environment through improper treatment process, serious threats are imposed to the ecological system and the human health at the dismantling site. The Chinese WEEE recycling industry is related to sever health and safety risks for labours in this industry. The risks come from inadequate methods during the recovering procedures such as open burning of wires and the chemical treatment of circuit boards and electronic parts. The labours' health is not protected since there are not precautionary measures adopted in the informal sector. Therefore occupational diseases related to skin, stomach, respiratory tract and other organs have been found. Many of the workers in dismantling and processing e-waste informally are women children and thus

women and children become the group most directly impacted by the health risk in the work place, as well as due to exposure in the contaminated sites where most of this group inhabited.

By addressing the POPs/PTS release in WEEE processing, health risks for the female works and their children will be reduced from exposure of POPs/PTS leading to ameliorated health situation for them. During implementation, the project will address the priority concerns of vulnerable groups including female workers and the poor to assess and strengthen capacity to reduce POPs/PTS release sensitive streams. The project will ensure female participation in the related activities of training and capacity building. In addition, there will be two overarching interventions – awareness raising and multi-stakeholder’s participation – that will contribute to ensuring the successful implementation of gender mainstreaming.

### **Achievements of Project Preparation Grant (PPG)**

A Project Preparation Grant (PPG) in the amount of US\$220,000 was approved by GEF in order to refine the project objectives, outcomes, and outputs as well as the work plan and budget on the project components of the PIF submitted. The PPG is primarily to support local and international consultants to undertake assessment and technical assistance necessary to define the detailed project scope inclusive of TORs and technical specifications needed to rapidly implement the Full-sized Project (FSP). It also included activities to improve baseline scenario mapping, cost effectiveness and the global benefits of the project.

The PPG undertook the following activities and yielded the following outputs:

- i) *National Baseline Survey*: Based on the situation in China, a national survey was conducted on policy and regulatory measures, recycling methodology, dismantling and processing technology. Survey data shows that significant environmental pollution was caused by deficient processing technology and inadequate regulatory measures on the control and management of WEEE. Through the survey and research, gaps in policy and technology areas were identified, through analysis of the different project components, keys issues to be addressed were further elaborated and strategies to address the issues better identified and better defined. Relevant data on international knowledge and experience became clearer through the survey and research conducted.
- ii) *PPG Inception Workshop convened*: MEP/FECO convened on 21 December 2012 the Inception Workshop with participation of UNDP, MIIT, MOF, MEP, Environmental Protection Bureaus from Tianjin City, Jiangsu and Hubei Provinces, Solid Waste Management Center of MEP, Research Center for Eco-Environmental Sciences of the Chinese Academy of Sciences, Chinese Academy of Household Appliances, China Electronics Engineering Design Institute, China Household Electrical Appliances Association, China Resource Recycling Association, Asia-and Pacific Regional Coordination Center of the Basel Convention, Tsinghua University, Beijing Normal University and participants from relevant organizations. Participants analyzed the life-cycle of electrical and electronic products, vigorously discussed and offered many valuable suggestions on improving relevant policy measures, technical standards, strengthen supervision and technical support capacities, eco-design and clean production. They facilitated the identification of representative provinces/cities to undertake demonstration on WEEE recycling, treatment and disposal.
- iii) *National level coordination mechanism strengthened*. Led by MEP, a National Coordination Committee for Stockholm Convention was formed to coordinate at national level the important tasks of POPs management and implementation in order to comply with the obligation of the Stockholm Convention. For this project on the reduction of POPs/PTS release, MIIT and MOC will strengthen the cooperation effort on eco-design and WEEE recycling management.
- iv) *Survey, evaluation and selection of demonstration sites, enterprises and technologies*. After careful and extensive background research and site surveys, and based on principles established for the selection of demonstration activities, three locations, Tianjin City, Jiangsu

Province and Hubei Province, that have typical representative nature of the country's WEEE industry and with their overall range of large and small WEEE development plan, were selected to participate as demonstration sites. Furthermore, these three locations contain areas for technological improvement as well as for emerging technology adaptation. Simultaneously, a number of enterprises in these three locations were researched, evaluated and identified as potential candidates to participate as demonstration enterprises in the collection, dismantling, treatment and final disposal processes. Based on the current domestic situation, technical capacity and the need to address the difficult issue of pollution prevention and control, various technology roadmap and demonstration technologies were also researched and evaluated as basis for technological improvement. Candidate for eco-design and production was evaluated and selected based on established selection principles.

- v) The Expert team visited the three demonstration locations to conduct research, and through continuous communications, consultation and coordination, continued to interact with the industry. In the selection of demonstration technologies, the expert team conducted several workshops to discuss technical difficulties, exchange ideas to identify appropriate technology route.
- vi) *Establishment of an expert group* consists of national and international experts under the PPG phase has already produced quality reports.
- vii) *Verification of strategy*: Studies conducted to control POPs/PTS release through eco-design, combating illegal imports of hazardous wastes, material sorting and classification during dismantling process, material flow control of toxic substances, limiting new waste generation during treatment processing, risk assessment on comprehensive resource utilization, increase recovery rate of formal recyclers including strategies to divert from informal to formal processing facilities, and targeting small informal recyclers.
- viii) Through evaluation and analysis, the critical emphasis and difficulties of *technologies for treatment of waste printed circuit board, and leading containing CRT glass* were researched, evaluated and identified for potential adaptation by demonstration enterprises.
- ix) Participated in bilateral discussions, and with United States Environmental Protection Agency to establish cooperation partnerships. UNDP also conducted discussions and exchanges with GIZ, Norway, Japan etc. for cooperation opportunities and co-financial support.
- x) Mobilized enterprises to actively participate in project design and formulation, and secured their commitments to actively participate in project implementation, on co-financing commitment, and on their consent and involvement of Public-Private Partnership support

A number of remaining activities and studies were recently completed, including detailed plan and budget for demonstration activities at the demonstration sites and demonstration enterprises; detailed information on some demonstration enterprises; and technology selection for treatment of glass screen from CRT, have been incorporated in the project document. As these activities were recently completed, disbursements for the contractual services are yet to be effected.

### III. RESULTS AND RESOURCES FRAMEWORK

<b>Intended Outcome as stated in the Country Programme Results and Resource Framework:</b> CPD Outcome 9: Key United Nations conventions promoted through improved capacity to fulfill their obligations					
<b>Outcome indicators as stated in the Country Programme Results and Resources Framework, including baseline and targets.</b>					
<b>Outcome indicators and Targets:</b> Implementation of the Stockholm Convention supported through strengthened capacities and policies, especially in the area of reduction of POPs/PTS					
<b>Applicable Key Result Area (from 2009-2013 Strategic Plan):</b>					
<b>Partnership Strategy</b>					
UNDP will be the GEF Implementing Agency, responsible for monitoring and evaluating project objectives, activities, output and emerging issues. UNDP will manage the GEF fund based on the UNDP established procedures on GEF-funded projects.					
<b>Project title and ID (ATLAS Award ID):</b> Reduction of POPs and PTS release by environmentally sound management throughout the life cycle of electrical and electronic equipment and associated wastes in China					
<b>Applicable GEF Expected Outcomes:</b> 1.3 POPs releases to the environment reduced. 1.4. POPs waste prevented, managed and disposed of, and POPs contaminated sites managed in an environmentally sound manner. 1.5. Country capacity built to effectively phase out and reduce releases of POPs, 3.2 Contribute to the overall objective of the SAICM of achieving the sound management of chemicals throughout their life-cycle in ways that lead to the minimization of significant adverse effects on human health and the Environment.					
<b>Applicable GEF Outcome Indicators:</b> 1.3 Amount of unintentionally produced POPs releases avoided or reduced from industrial sectors; measured in grams TEQ against baseline as recorded through the POPs tracking tool. 1.4 Amount of POPs related waste prevented, managed and disposed. 1.5.2 Progress in developing and implementing legislative and regulatory framework for environmentally sound management of POPs, and or the sound management of chemicals in general, as recorded in POPs tracking tool. 3.2.1 Countries implement SAICM relevant activities that generate global environmental benefits and report to International Conference on Chemicals Management.					
	Indicator	Baseline	End of Project Target	Source of Verification	Risks and Assumptions
<b>Project Objective</b> The project will address the POPs/PTS release sensitive e-waste stream in the recycling, dismantling, treatment and final disposal processes of Waste Electrical and Electronic Equipment (WEEE).	Efficient and functional EPR and WEEE management system	EPR Treatment Fund established but not efficiently operational	National policy about EPR finalized  Improved operational mechanism of EPR Treatment Fund and WEEE management  At least 250 management personnel at national and demonstration locations trained on EPR concept and WEEE management system	List of registration and permitted recyclers  EPR Treatment Fund disbursement records	<u>Risks:</u>  - Insufficient funds generated to adequately attract process facility and associated infrastructure investment  - Technology limited in eliminating POPS/PTS release  - Lack of interest to participate in diverting WEEE from informal to formal processing facilities  - Sustained informal operations due continued illegal WEEE imports
	Amount of WEEE treated by permitted recyclers in the three demonstration locations	Over 2 million units of WEEE collected and processed by permitted recyclers at the 3 demonstration provinces / municipality	Estimated 50% increase of WEEE collected and processed		<u>Assumptions:</u>  - International experience injected appropriate to improve EPR based WEEE management
	Number of facilities replicating		At least 2 BAT/BEP		



	Indicator	Baseline	End of Project Target	Source of Verification	Risks and Assumptions
	or establishing sound WEEE recycling		technologies for pre-treatment demonstrated and relevant technical guidelines finalized  At least 2 BAT/BEP technologies for disposal demonstrated, end gas discharge of PCDD/PCDF to meet pollution control standards for hazardous waste incineration if incineration technology selected. Relevant technical guidelines finalized  At least 25,000 technical workers trained on BAT/BEP and sound WEEE processing		<ul style="list-style-type: none"> <li>- BAT/BEP technologies suitable and applicable to Chinese context</li> <li>- Increased formal collection and economic incentives facilitates diversion of WEEE to formal processing facilities</li> </ul>
	Numbers of workers received training in sound WEEE processing				
	Market based WEEE processing infrastructure demonstrated and developed	Low rate of WEEE collection and recycling by formal sector  Dominated by primitive and manual processing of WEEE	<p>Demonstration of collection successfully completed at selected enterprises.</p> <p>Technology demonstration activities at selected enterprises at the three demonstration provinces/municipality successfully completed</p> <p>Over 5,000 ton of BFR containing plastic/resins performed/reused annually</p> <p>Over 5,000 tons of CRT to be recycled annually from environmental emission annually in the demonstration locations</p> <p>5 WEEE technical guidelines about eco-design finalized</p> <p>Eco-design for at least one electrical and electronic equipment developed</p>	Technology improvement and records of POPs/PTS release	

	Indicator	Baseline	End of Project Target	Source of Verification	Risks and Assumptions
	<p>Informal WEEE processing facilities upgraded and integrated into EPR system through diversion into formal processing facilities</p> <p>Number of newly registered WEEE processors</p>	<p>Large percentage of WEEE is estimated to be collected and processed by the informal sector</p> <p>Zero</p>	<p>Three types of WEEE collection/recycling demonstrated and successfully completed at three selected provinces/municipality.</p> <p>Increase WEEE collected and channeled by informal or newly registered (ex-informal) collectors to formal recycling enterprises for treatment</p> <p>New WEEE entities registered and qualified and eligible to receive EPR Treatment Fund subsidies</p>	List of registered recyclers	
<b>Component 1: Develop and implement national EPR system for WEEE</b>					
<b>Outcome 1.1</b> Operational national EPR system covering priority POPs/PTS release sensitive E-Waste streams	<b>Expected Outputs:</b> <p>1.1.1 National EPR Treatment Fund supporting environmentally sound WEEE collection, dismantling and processing operations is established and disbursing with coverage of POPs sensitive e-waste.</p> <p>1.1.2 International experience on EPR system management and control of WEEE material and financial flows in the WEEE management chain delivered through training particularly with respect to POPs sensitive e-waste stream components.</p> <p>1.1.3 Integrated information/data management system providing current data covering national, regional and local levels of the WEEE management chain operating in support of the EPR system.</p>				
	Number of companies in EPR system	Approximately 120 formal enterprises	All newly established and qualified formal enterprises are required to be registered	EPR Treatment Fund annual activities List of registered recyclers	<u>Risks:</u> <ul style="list-style-type: none"> <li>- Insufficient funds generated to adequately attract process facility and infrastructure investment, particularly for POPs/PTS release sensitive products</li> </ul> <u>Assumptions:</u> <ul style="list-style-type: none"> <li>- International experience and strengthened capacity will improve EPR WEEE management and administration and operation of EPR Treatment Fund</li> <li>- An efficient and functioning registration and permitting</li> </ul>
	Amount of WEEE processed by companies receiving EPR Treatment Fund	2,000,000 units WEEE collected and processed at the three demonstration provinces/municipality	Estimated 50% increase in WEEE collected and processed in the demonstration locations		
	Amount of fund disbursed by the EPR Treatment Fund		Nationally, RMB 500 million disbursed annually from EPR Treatment Fund		
	At least one training per year conducted disseminating international EPR experience	No training with input of international experience	3 trainings conducted	Training material and list of participants	

	Indicator	Baseline	End of Project Target	Source of Verification	Risks and Assumptions
	Integrated information/data management system installed and utilized by MOF for disbursement under the EPR Treatment Fund	Preliminary database used by MOF to calculate and manage subsidy and disbursement	Fully established data-base, with all EPR Treatment Fund disbursements released through the Integrated Information Data Management System	Annual reports on the mass flows handled by registered WEEE processors	established to attract registration of formal and informal processing facilities
Outcome 1.2 Adopted and implemented national technical standards and operational business documentation governing the management of WEEE in support of the EPR system.	Expected Outputs: 1.2.1 Technical standards defining targeted high POPs/PTS release sensitive WEEE (e-waste) streams, and applicable WEEE management chain technology performance, adopted and implemented.				
	Number of technical standards finalized	No specific technical standard document available for collection, logistics, pre-treatment, material recovery and hazardous waste disposal	2 technical standard documents finalized	Technical standards documents finalized	<u>Risks</u> : Resistance in compliance and inadequate enforcement effort  <u>Assumptions</u> : Standards guiding proper WEEE processing to reduce POPs/PTS release
Outcome 1.3 Applied LCA/LCM procedures and labeling for product design and production.	Expected Outputs: 1.3.1 Guidance documentation for LCA/LCM and associated eco-labeling applied to product design and production for waste minimization and R&R processing optimization in use.				
	Five eco-design standard documents  Electric and electronic product eco-design developed	None exist	Eco-design document finalized and made available  Eco-design for at least one electrical and Electronic equipment developed	Eco-design standard document finalized	<u>Risks</u> : Lacking interest in adopting LCA/LCM by manufacturers  <u>Assumptions</u> : Eco-design and cleaner production adopted in POPs/PTS sensitive release products
Outcome 1.4 Achieved public awareness and stakeholder consensus on the detailed design and implementation of the national EPR system.	Expected Outputs: 1.4.1 Stakeholder consultation program involving product producers, government implementing agencies, distributors, consumer representatives and NGOs at all levels on EPR system implementation through workshops, and input solicitation on disseminated documentation implemented. 1.4.2 Public awareness initiatives respecting the EPR system in the form of information product dissemination delivered.				
	One stakeholder nodal body is established	No coordination body exist for WEEE stakeholders	1 multi-stakeholder platform established	Status of the nodal body	<u>Risks</u> : Difficult in coordination and collaboration  <u>Assumptions</u> : Multi and inter-ministerial will facilitate consensus in legislative and technology improvement
	At least one public awareness campaign conducted every year	None. Level of awareness to be established during first year of implementation	3 public awareness campaigns conducted in the demonstration provinces/municipality	Publications, audio visual and other promotion materials Surveys on awareness	
Outcome 1.5 Implementation of effective discrimination	Expected Outputs: 1.5.1 Strengthened policy, regulations and enforcement covering the expanded controls on second hand product and e-waste imports 1.5.2 Training and detection enhancement for improved discrimination between e-waste and second hand product imports consistent with Basel Convention requirements				

	Indicator	Baseline	End of Project Target	Source of Verification	Risks and Assumptions
between second hand product and e-waste imports.	and guidance in place. 1.5.3 Strengthened bi-lateral cooperation and coordination with major exporting countries implemented.				
	Training Guidelines for the control of imports are made available to the relevant government agency	None existed	Guidelines compatible with Basel Convention finalized and made available and used by relevant government agencies	Guideline documents	<u>Risks:</u>  - Continued illegal imports due economic considerations and prolonged end of life of WEEE due consumer habits  <u>Assumptions:</u>  - Established infrastructure and strengthened capacity for enforcement efforts
	Training program and workshop	None implemented	Guidelines documents of the Basel Convention are used	Guideline documents	
	Criteria for discrimination between e-waste and second hand product established and used by relevant government authorities	None implemented	Guideline documents of the Basel Convention are used as reference	Guideline documents	
	Contacts and communication with major exporting countries established	No active activities	Possibilities and mechanisms of cooperation and coordination explored and activities initiated	Cooperation and coordination arrangements	
Component 2: Demonstration and development of market based WEEE processing					
Outcome 2.1 Utilization and upgrading of the existing domestic WEEE collection system to efficiently and cost effectively supply registered WEEE processing facilities particularly for POPs/PTS sensitive e-waste constituents.	Expected Outputs: 2.1.1 Comprehensive characterization of current WEEE and specifically e-waste collection chain, inclusive of developing and documenting the identified measures necessary to optimize the collection chain.				
	Diagnostic studies and action plan conducted with at least one recycler in each demonstration province.	None	3 diagnostic reports and action plan finalized	Diagnostic reports and action plans	<u>Risks:</u> unclear and scarce data availability; inadequate collection from coverage area  <u>Assumptions:</u> Improved collection system will divert WEEE to formal processing facilities
Outcome 2.2 Operation of a comprehensive national network of registered WEEE processing facilities to dismantle and process POPs/PTS release sensitive materials in an environmentally sound manner utilizing	Expected Outputs: 2.2.1 Registration of WEEE processing operations including those handling POPs/PTS sensitive e-waste implemented and required upgrading/expansion opportunities identified. 2.2.2 Technology selection and operational technical guidelines appropriate to various scale levels of WEEE processing developed. 2.2.3 BAT/BEP technology demonstration initiatives investments targeting on POPs/PTS release sensitive e-waste materials undertaken. 2.2.4 At least one center created for processing of high value materials (i.e. printed circuit boards) to recover precious metals) at qualified non-ferrous metals smelter(s). 2.2.5 Existing and new formal dismantling and processing operations supported based on incremental requirements matched to market growth such that a network of major regional facilities are operational.				

	Indicator	Baseline	End of Project Target	Source of Verification	Risks and Assumptions
demonstrated BAT/BEP technologies.	2.2.6 Policy, technology, and management support and promotion of demonstration activities in the three demonstration provinces/municipality				
	Authorized recyclers registered with the EPR Treatment Fund	Only about 120 formal recyclers registered	All newly established formal recyclers in the demonstration provinces/municipality are registered	Extract of EPR Treatment Fund registry	<u>Risks:</u> <ul style="list-style-type: none"> <li>- Continued operation of informal sector will not provide adequate volume to formal processing facilities</li> <li>- Technologies not directly targeting POPs/PTS sensitive release products</li> </ul> <u>Assumptions:</u> <ul style="list-style-type: none"> <li>- BAT/BEP technology suitable and application to Chinese processing enterprises to reduce POPs/PTS release</li> <li>- Complete registration of formal processing facilities and increased registration of informal processing facilities</li> </ul>
	Operational Guidelines for upgrading to technical standards are made available	None	3 operational guideline documents finalized and made available	Guideline documents	
	Technical guidelines for pre-treatment of WEEE prepared	Not existed	Technical guideline for pre-treatment of WEEE finalized and made available	Guideline documents	
	Demonstration initiatives implemented with at least one recycler in each demonstration province/municipality	None	3 demonstration activities implemented	Completion reports Technical reports from demonstrations	
	Risk assessment undertaken to evaluate the establishment of a network of regional facilities	None	At least 3 assessment reports completed	Recommendations and action plans	
	At least one non-ferrous metal smelter processing printed circuit boards with precious metal recovery >85 %	None	Emission meeting pollution control standard for hazardous wastes incineration	Material flow audits at non-ferrous metal smelter	
<b>Component 3: Upgrading of informal WEEE processing and its integration into the EPR System</b>					
<b>Outcome 3.1</b> Characterization of overall national scale, scope and impacts associated with the informal e-waste processing inclusive of identification high priority regions and centers.	<b>Expected Outputs:</b> 3.1.1 National informal WEEE sector characterization study of the informal WEEE processing sector, particularly that handling POPs/PTS sensitive e-waste undertaken. 3.1.2 Guidance and procedural documentation for undertaking environmental and health impact evaluations of potentially impacted areas and locations at the local level prepared and disseminated.				
	Characterization study highlighting the most critical processes from the informal WEEE recycling sector undertaken	Several reports mentioned the informal sector but data not clear due to data scarcity	Characterization study report completed and finalized	Project documentation Characterization study report	<u>Risks:</u> Difficulties in getting clear data on informal sector  <u>Assumptions:</u> A better understanding of the informal sector will facilitate their integration into the EPR system
	Guidance document completed and information disseminated	No guidance document available on measurement of impacts associated with informal recycling	Guidance document finalized	Guidance document	

	Indicator	Baseline	End of Project Target	Source of Verification	Risks and Assumptions
<b>Outcome 3.2</b> Provision of policy, regulatory enforcement and awareness support provided through MEP to the local level related to supervision of the informal WEEE sector.	<b>Expected Outputs:</b> 3.2.1 Model regulations and guidance materials on the supervision of WEEE processing at the local level developed and disseminated. 3.2.2 Awareness and assessment programs on the control and impacts of informal WEEE processing for local officials, operators and the public developed and delivered.				
	WEEE flows from informal sector to registered recyclers are monitored by the EPR Treatment Fund	No registered exchange between informal and formal recyclers	Enforcement actions on informal recyclers and efforts to divert e-waste to formal sector	Audit reports on mass flows	<u>Risks:</u> difficulties in getting a clear picture on the informal sector <u>Assumptions:</u> A clear understanding of the informal sector will facilitate supervision and monitoring of their activities and help in their integration into the EPR system
	At least one awareness campaign conducted in each demonstration province/municipality	None	3 awareness campaigns conducted	Publications, printed, audio visual and promotion materials	
<b>Outcome 3.3</b> Demonstration of collective infrastructure supporting informal WEEE processors and providing environmentally sound dismantling operations related to POPs/PTS release developed and integrated with the national EPR system recycling network for further processing.	<b>Expected Outputs:</b> 3.3.1 Collectives formed from informal dismantling/processing operations established, inclusive of common support infrastructure and links to environmentally sound processors/residual disposal facilities. Pilot interventions in the collection chain to optimize efficiency, particularly related to primary product separation for direction to recycling facilities undertaken				
	Pilot interventions implemented based on technical standards for collection and logistics	None	At least 3 pilot interventions implemented	Contracts for pilot implementation	<u>Risks:</u> Continued operation of the informal sector due to economic reason will not provide adequate quantity of WEEE to formal processing facilities <u>Assumptions:</u> Improved WEEE collection by formal collection system and economic incentives to informal collection will facilitate diversion of WEEE to formal WEEE processing facilities
<b>Component 4: Project Monitoring and Evaluation</b>					
<b>Outcome 4.1</b> Monitoring and evaluation, knowledge sharing and information dissemination	<b>Expected Outputs:</b> 4.1.1 Monitoring, evaluation and impact assessment 4.1.2 Knowledge sharing and post-project action plan				
	Timing and quality of annual (APRs, PIRs etc.) and M&E reports Quality appraisal in Mid-Term Review and Terminal Evaluation	Indicative M&E plan, budget and timeframe	M&E activities implemented as scheduled and project implementation monitored to achieve project objectives	Various M&E and substantial reports Mid-Term Review and Terminal Evaluation reports	<u>Risks:</u> failure to exercise timely and effective M&E activities due to capacity issue <u>Assumptions:</u> Efficient M&E to facilitate achievement of outcomes and project objectives
	Lessons learnt and experience documented and disseminated; post-project action plan formulated	None	Lessons and experience documented and disseminated	Knowledge products; post-project action plan	

	Indicator	Baseline	End of Project Target	Source of Verification	Risks and Assumptions
<b>Component 5: Project Management</b>					
<b>Outcome 5.1</b> Strengthened project management capacities and efficiency	<b>Expected Outputs:</b> 5.1.1 Strengthened institutional capacity for project management in MEP and three demonstration provinces/municipality 5.1.2 Project smoothly implemented and all results specified achieved.				
	Timely project implementation and disbursement	Existing staff	Capacity of National Project Team strengthened. In addition to existing staff, a Project Coordinator and a secretary are recruited. National Project Team established, staffed, equipped and trained	Project APRs, PIRs, CDRs	<u>Risks:</u> Inadequate capacity and insufficient coordination will impact project implementation  <u>Assumptions:</u> Efficient project management will lead to timely achievement of outcomes and project objectives
	LPMO established in each demonstration provinces/municipality furnished with staff and equipment	None	LPMOs at each demonstration location established, staffed, equipped and trained	Organization structure, training reports	
	Project Implementation Manual (PIM) developed	PIM for other GEF project can be used as reference	PIM finalized and used as guidance for project implementation	PIM Documents	
	Staff of PT and LPMOs staff trained about the PIM and relevant requirements of GEF and UNDP on project management	None	Staff trained and project management capacity strengthened	Training reports	
	Routine project management activities undertaken to ensure the smooth and timely implementation of the project. The activities include but not limited to: drafting TORs, select and contract with consultants, organize M&E activities, organize the review of substantial report	None	Efficient and effective project management leading to achievement of project objectives	Progress and annual reports, mission reports and achieved outcomes	

#### IV. ANNUAL WORK PLAN

##### Detailed Breakdown of GEF and Co-Financing Budget and Work Plan

##### Part 1: Total Project Workplan and Budget under GEF Financing

Award ID: 00078105					Project ID: 00088552				Business Unit:	CHN10		
Project Title		Reduction of POPs and PTS release by environmentally sound management throughout the life cycle of electrical and electronic equipment and associated wastes in China										
Executing Agency		Ministry of Environmental Protection (MEP)										
		Planned Budget										
GEF Outcome / Atlas Activity*	Implementing Agent/Resp. Party	Source of Funds	Atlas Code	Atlas Budget Description	Amount (USD) 2014	Amount (USD) 2015	Amount (USD) 2016	Amount (USD) 2017	Amount (USD) 2018	Total (USD)	Budget Notes	
Component 1: Development and implementation of the national EPR system for WEEE	MEP	62000 GEF	71200	International Consultants								
			71300	Local Consultants		5,000	5,000	5,000		15,000	2	
			71400	Contractual Services – individuals								
			71600	Travel	50,000	10,000	5,000	5,000		70,000	3	
			72100	Contractual Services – companies	354,000	535,500	462,900	390,000	72,600	1,815,000	4	
			72200	Equipment and Furniture								
			72400	Communication & Audio Visual Equip								
			74100	Professional Services								
			74500	Miscellaneous								
			75700	Training, workshop, and conference								
Sub-total					404,000	550,500	472,900	400,000	72,600	1,900,000		
Component 2: Demonstration and development of market based WEEE processing infrastructure	MEP	62000 GEF	71200	International Consultants	20,000	40,000	20,000			80,000	1	
			71300	Local Consultants	20,000	20,000	20,000	20,000		80,000	2	
			71400	Contractual Services – individuals								
			71600	Travel	10,000	10,000	10,000			30,000	3	
			72100	Contractual Services – companies	1,299,200	2,243,100	1,677,800	1,339,900	50,000	6,610,000	4	
			72200	Equipment and Furniture								
			72400	Communication & Audio Visual Equip								
			74100	Professional Services								



GEF Outcome / Atlas Activity*	Implementing Agent/Resp. Party	Source of Funds	Atlas Code	Atlas Budget Description	Amount (USD) 2014	Amount (USD) 2015	Amount (USD) 2016	Amount (USD) 2017	Amount (USD) 2018	Total (USD)	Budget Notes
			74500	Miscellaneous							
			75700	Training, workshop, and conference							
			<b>Sub-total</b>		<b>1,349,200</b>	<b>2,313,100</b>	<b>1,727,800</b>	<b>1,359,900</b>	<b>50,000</b>	<b>6,800,000</b>	
<b>Component 3: Upgrading of informal WEEE processing and its integration into the EPR system</b>	MEP	62000 GEF	71200	International Consultants							
			71300	Local Consultants	5,000	10,000	20,000	5,000		<b>40,000</b>	<b>2</b>
			71400	Contractual Services – individuals							
			71600	Travel		20,000	40,000	10,000		<b>70,000</b>	<b>3</b>
			72100	Contractual Services – companies	381,000	584,500	503,500	291,700	9,300	<b>1,770,000</b>	<b>4</b>
			72200	Equipment and Furniture							
			72400	Communication & Audio Visual Equip							
			74100	Professional Services							
			74500	Miscellaneous							
			75700	Training, workshop, and conference	5,000	5,000	5,000	5,000		<b>20,000</b>	<b>10</b>
			<b>Sub-total</b>		<b>391,000</b>	<b>619,500</b>	<b>568,500</b>	<b>311,700</b>	<b>9,300</b>	<b>1,900,000</b>	
<b>Component 4: Project Monitoring and Evaluation</b>	MEP	62000 GEF	71200	International Consultants		20,000		20,000		<b>40,000</b>	<b>1</b>
			71300	Local Consultants	20,000	30,000	20,000	40,000	10,000	<b>120,000</b>	<b>2</b>
			71400	Contractual Services – individuals							
			71600	Travel	2,500	32,500	2,500	32,500		<b>70,000</b>	<b>3</b>
			72100	Contractual Services – companies	10,000	15,000	23,000	81,000	1,000	<b>130,000</b>	<b>4</b>
			72200	Equipment and Furniture	8,000	12,000	10,000	10,000		<b>40,000</b>	<b>5</b>
			72400	Communication & Audio Visual Equip							
			74100	Professional Services							
			74500	Miscellaneous							
			75700	Training, workshop, and conference	25,000	20,000	20,000	15,000	20,000	<b>100,000</b>	<b>10</b>
			<b>Sub-total</b>		<b>65,500</b>	<b>129,500</b>	<b>75,500</b>	<b>198,500</b>	<b>31,000</b>	<b>500,000</b>	
<b>Component 5:</b>	MEP	62000	71200	International Consultants							

GEF Outcome / Atlas Activity*	Implementing Agent/Resp. Party	Source of Funds	Atlas Code	Atlas Budget Description	Amount (USD) 2014	Amount (USD) 2015	Amount (USD) 2016	Amount (USD) 2017	Amount (USD) 2018	Total (USD)	Budget Notes
Project Management		GEF	71300	Local Consultants	81,000	90,000	95,000	95,000	9,000	370,000	2
			71400	Contractual Services – individuals							
			71600	Travel	6,750	7,500	7,500	7,500	750	30,000	3
			72100	Contractual Services – companies							
			72200	Equipment and Furniture							
			72400	Communication & Audio Visual Equip	2,250	2,500	2,500	2,500	250	10,000	6
			73100	Rental & Maintenance-Premises	4,500	5,000	5,000	5,000	500	20,000	7
			74100	Professional Services	3,750	5,000	5,000	5,000	1,250	20,000	8
			74500	Miscellaneous	13,500	15,000	15,000	15,000	1,500	60,000	9
			75700	Training, workshop, and conference	10,000	10,000	10,000	10,000	-	40,000	10
		Sub-total				121,750	135,000	140,000	140,000	13,250	550,000
Total GEF Allocation					2,331,450	3,747,600	2,984,700	2,410,100	176,150	11,650,000	

### Budget Notes

Budget Notes:	
	<b>Component 1 – Development and implement national EPR system for WEEE</b>
2	The national consultant cost for policy formulation and revision. (\$200/day for 75 working days).
3	Pro-rata travel costs for international, national consultants and project staff at established travel, DSA and terminal allowance rates; international knowledge exchange for senior MEP, Provincial/Municipality EPB, and technical personnel at demonstration enterprises (support Outcomes 1.1 and 1.2)
4	Subcontracts 1 – 18 for indicative activities and outputs as detailed in table below (page 41 – 44)
	<b>Component 2 – Demonstration and development of market-based WEEE processing</b>
1	The international consultant cost for experts in BAT/BEP demonstration. (\$700/day for 114 working days)
2	(i) The national consultant cost for printed circuit board processing technology. (\$200/day for 200 working days); (ii) The national consultant cost for dismantling technology. (\$200/day for 200 working days)
3	Pro-rata travel costs for international consultants at established travel, DSA and terminal allowance rates
4	Subcontracts 1 – 17 for indicative activities and outputs as detailed in table below (page 41 – 44)
	<b>Component 3 – Upgrading of informal WEEE processing and its integration into the EPR system</b>
2	(i) The national consultant cost for WEEE collection technology (\$200/day for 150 working days); (ii) The national consultant cost for public awareness advertisement (\$200/day for 50 working days)
3	Pro-rata travel costs for international, national consultants and project staff at established travel, DSA and terminal allowance rates; international exchange for senior MEP, Provincial/Municipality EPB, and technical personnel at collection demonstration enterprises (support Outcomes 3.2 and 3.3)
4	Subcontracts 1 – 10 for indicative activities and outputs as detailed in table below (page 41 – 44)
10	Training and exchange workshops on knowledge and experience on various collection channels and risk assessment on informal collection system

	<b>Component 4 - Project monitoring and evaluation</b>
1	The international consultant cost for conducting Mid-Term Review and Terminal Evaluation. (\$700/day for 57 working days)
2	(i) The national consultant cost for evaluation of project achievement of objectives and outcomes (\$200/day for 50 working days); (ii) The national consultant cost for Mid-Term Review and Terminal Evaluation. (\$200/day for 100 working days); (iii) The national consultant cost for evaluation and knowledge sharing of project achievements (\$200/day for 50 working days); (iv) The national consultant cost for daily working auditing (\$125/day for 640 working days)
3	Pro-rata travel costs for international, national consultants and project staff at established travel, DSA and terminal allowance rates for regular M&E activities, Mid-Term Review and Terminal Evaluation.
4	Subcontracts 1 – 3 for indicative activities and outputs as detailed in table below (page 41 – 44)
5	Essential office equipment for the establishment of Local Project Management Offices at the three demonstration locations
10	Inception Workshop (Year 1 mandatory), Training of project and technical personnel, periodical and annual review and coordination meetings
	<b>Component 5 – Project Management</b>
2	(i) The national consultant cost for project coordinator (\$6,000/month for 20 months); (ii) The national consultant cost for project management personnel (\$4,000/month for 35 months); (iii) The national consultant cost for project assistant (\$2,500/month for 40 months); and (iv) The national consultant cost for preparation of project implementation manual (\$200/day for 50 working days)
3	Pro-rata travel costs for national consultants and project staff at established travel, DSA and terminal allowance rates for project management.
4	Subcontracts 1 – 3 for indicative activities and outputs as detailed in table below (page 41 – 44)
6	Communication costs
7	Rental of premises and utilities
8	The national consultant cost for project external audit
9	Costs to cover miscellaneous unbudgeted activities
10	Training workshop and rental of conference room for various meetings

## Part 2: Total Project Workplan and Budget Reflecting GEF Resources and Co-Financing Based on Activities

Project Activities	Description of Activities	Yr 1	Yr 2	Yr 3	Yr 4	Total	GEF	Cofinancing
<b>Component 1: Development and implementation of the national EPR system for WEEE</b>								
Activity 1.1.1	Support the development of procedural and administrative mechanisms required for the national and provincial level EPR Treatment Fund's efficient operation inclusive of input of international experience. Support implementation of the national EPR Treatment Fund system through trainings to stakeholders					800,000	220,000	580,000
Activity 1.1.2	Support improvement of WEEE management system through development of training modules in collaboration with international EPR systems. Support knowledge exchange to acquire international experience on EPR system, particularly on how POPs/PTS containing materials are separated and managed					130,000	100,000	30,000
Activity 1.1.3	Develop required data information management system to allow registration of authorized operators, material flow monitoring, audits, and market adjustment to EPR financing system at provincial and national level. Set up a national center of integrated e-waste information/data management system in support of the EPR system					300,000	150,000	150,000
Activity 1.2.1	Develop the product and recovered material specific technical standards for at least one product, defining targeted POPs/PTS release sensitive WEEE in cooperation with the private sector. Prepare a catalogue of sensitive processes and materials on the selected product. Report and track POPs containing material. Implement WEEE management chain technology performance and residual waste management standards prioritizing POPs/PTS release minimization through trainings to local stakeholders					270,000	135,000	135,000
Activity 1.3.1	Introduce a LCA component into the determination of EPR charges with specific emphasis on scaling such charges to the potential level of environmental impact such that POPs/PTS release sensitive products attract appropriate charges.					1,200,000	600,000	600,000
Activity 1.3.2	Support internationally bench marked LCA/LCM and demonstrate eco-labelling based product design and production in conjunction with the private sector taking into account of identifying critical environmental parameters related to POPs/PTS emissions such as product design for recycling, waste minimization, phasing out of hazardous substances and waste residuals, energy efficiency, and cost efficiency. At least one electrical and electronic equipment developed through demonstration of eco-design and production. Introduce the international guidelines through workshops. Develop guidelines of LCA/LCM and associated eco-labelling of product design and production.					3,300,000	300,000	3,000,000
Activity 1.4.1	Conduct annual consultation meetings with stakeholders including the private sector and public interest NGOs throughout the EPR system design and implementation process to ensure that a national consensus					1,675,000	335,000	1,340,000

Project Activities	Description of Activities	Yr 1	Yr 2	Yr 3	Yr 4	Total	GEF	Cofinancing
	and acceptance of the system as well as equitable distribution of responsibilities, liabilities and benefits. Set up an online stakeholder consultation platform for long term review and planning of EPR Treatment Fund improvement. Undertake public awareness initiatives (campaigns, brochures, publications etc.) supporting the EPR system and soliciting public participation, particularly in relation to support for voluntary collection and early replacement where beneficial, including involvement of public interest NGOs at the local and community level.							
Activity 1.5.1	Review and strengthen policy and regulatory controls on imports of second hand electronic equipment and e-waste consistent with developing Basel Convention requirements through improving / upgrading the policy framework in China					60,000	20,000	40,000
Activity 1.5.2	Develop the practical guidelines of discrimination between e-waste and second hand products import. Conduct trainings and detection capacity upgrading at ports of entry to strengthen import control enforcement					65,000	20,000	45,000
Activity 1.5.3	Bilateral and multi-lateral initiatives (regional coordination group meeting, joint detection mechanism etc.) with exporting countries on WEEE trade and adoption of coordinated notification/consent procedures including cooperation with agencies and organizations involved in the issue					100,000	20,000	80,000
	<b>Sub-total Component 1</b>					<b>7,900,000</b>	<b>1,900,000</b>	<b>6,000,000</b>
<b>Component 2: Demonstration and development of market based WEEE processing</b>								
Activity 2.1.1	Undertake a comprehensive characterization, at the provincial level, of the current collection chain from source through various collection, segregation and consolidation steps inclusive of the types of participants, business arrangements operating and constraints that may exist. Undertake case study on 2-3 currently operating collection schemes with existing authorized recyclers in the three regions (reverse supply, on-line collection, network of small shops and public organizations) and assessment of the improvement measures for increasing collection, including payback schemes, elaboration of new collection strategies, collaboration with door2door collectors, etc. Mapping of e-waste production distribution and collection network in the 3 selected regions; also develop a menu of interventions for optimization of the collection network matching the licensed recyclers in the region					40,000	20,000	20,000
Activity 2.1.2	Undertake pilot interventions in collection chain to optimize efficiency, particularly relating to primary product separation for direction to recycling facilities. Develop operational guidelines on the 2-3 selected collection chains/systems, including primary product separation					40,000	20,000	20,000
Activity 2.2.1	Support the registration and permitting activities of existing WEEE processing operations through introducing internationally benchmarked standards in at least one of the three selected municipality/provinces.					160,000	80,000	80,000

Project Activities	Description of Activities	Yr 1	Yr 2	Yr 3	Yr 4	Total	GEF	Cofinancing
	Develop/improve the management rules/procedures for registration/authorization of the different WEEE processing enterprises (including collection, storage, sorting, dismantling, depollution, pre-treatment, recycling). Demonstrate the registration system of WEEE processing operations covering all different WEEE processing companies in one province							
Activity 2.2.2	Develop technology selection and operational technical guidelines, particularly paying attention to diverting POPs containing plastics from further recycling, that are appropriate to various scale levels of WEEE processing (2-3 technology solutions), comprising manual dismantling, mechanical pre-processing and end material refining. Organize a multi-stakeholder technical control committee in charge of formulating recommendations and editing technical guidelines for various scales of WEEE processing. Review international best practices and technical standards, and systematic assessment for suitably applicable to Chinese context. Editing of technical guidelines and diffusion among Chinese operational organizations					380,000	270,000	110,000
Activity 2.2.3	Undertake BAT/BEP technology demonstration on refined dismantling process at 3 enterprises in the three selected municipality/provinces. High attention is brought to the identification, removal and safe disposal of POPs/PTS containing components					8,074,000	1,501,000	6,573,000
	Undertake BAT/BEP technology demonstration on plastic, cable and epoxy resin processing at one enterprise: identification, segregation and safe disposal of BFR containing plastics, conduct risk assessment and carry out labelling of plastic products					1,500,000	250,000	1,250,000
	Undertake BAT/BEP technology demonstration on Waste Printed Circuit Boards at 2 enterprises in the three selected municipality/provinces. Improve mechanical pre-treatment processes in order to minimize losses of valuable fractions and diffusion of POPs/PTS. Ensure that the valuable fraction is channeled to a non-ferrous smelting facility. Support facilities that remove components from WPCBs to upgrade them to an integrated process					3,718,000	953,000	2,765,000
	Undertake BAT/BEP technology demonstration on hazardous component disposal/management at 2 enterprises. Ensure that the hazardous fractions that are removed during the dismantling processes are channeled to proper treatment and disposal facilities (high temperature incineration, hazardous waste landfills)					3,818,000	606,000	3,212,000
	Undertake BAT/BEP technology demonstration on cathode ray tube (CRT). Ensure the safety dismantling and environmentally sound management and reuse of different components of CRT, in particular the extraction of lead in the cathode ray tubes					7,800,000	1,300,000	6,500,000
Activity 2.2.4	Provide international experience in the establishment and qualification of at least one economically scaled center created for processing of high value materials (i.e. printed circuit boards) to recover precious metals on the basis of a qualified non-ferrous metals smelter. Support technology					5,200,000	500,000	4,700,000

Project Activities	Description of Activities	Yr 1	Yr 2	Yr 3	Yr 4	Total	GEF	Cofinancing
	transfer to one Chinese non-ferrous smelter with an integrated precious metal refinery (possibly sourcing technology from Umicore, Boliden, NDA, or Xstrata). Evaluate that smelter is the preferred destination for non-ferrous metal mix from WEEE processors and precious metal recovery							
Activity 2.2.5	Technical Assistance in upgrading existing and establishing new formal dismantling and pre-processing operations at the three demonstration provinces/municipality. Conduct survey of facilities operating within the national register and assess compatibility of processes for efficient POPs/PTS removal. Identify incremental improvements and document the feasibility of implementation. Implement improvement measures. Conduct evaluation and risk assessments on the implementation and achievement of the demonstration activities					1,350,000	270,000	1,080,000
Activity 2.2.6	Provide policy, technology, and management support and promote the demonstration activities in the three demonstration provinces / municipality. Undertake research in environmentally sound collection, dismantling, processing and disposal technology and provide technical support to demonstration enterprises. Actively promote environmentally sound processing activities					4,720,000	1,030,000	3,690,000
	<b>Sub-total Component 2</b>					<b>36,800,000</b>	<b>6,800,000</b>	<b>30,000,000</b>
<b>Component 3: Upgrading of informal WEEE processing and its integration into the EPR System</b>								
Activity 3.1.1	Undertake a national level characterization study of the informal WEEE processing sector to better understand its level of activity, key locations, stakeholder networks, the nature of its operation and potential strategies to integrate it with the developing formal sector, including economic incentives. Identify and develop economic incentives that the EPR system can provide to enhance informal sector integration					80,000	80,000	-
Activity 3.1.2	Develop guidance and procedural documentation for undertaking environmental and health impact evaluations of potentially impacted areas and locations at the local level. Undertake stakeholder information dissemination related to the developing EPR based system and promotion of participation of current operators in the informal sector, in cooperation with local and community level public interest NGOs and other local stakeholders					85,000	85,000	-
Activity 3.2.1	Develop model regulations and guidance materials on enforcement activities on informal WEEE processing at the local level. Conduct training program for local level officials and other stakeholders including local and community level NGOs on controls appropriate to the informal sector and options available to it					985,000	635,000	350,000
Activity 3.2.2	Prepare and deliver awareness programs on the impacts of informal WEEE processing for local officials, operators and the public with the involvement of local authorities and community level public interest NGOs					180,000	180,000	-

Project Activities	Description of Activities	Yr 1	Yr 2	Yr 3	Yr 4	Total	GEF	Cofinancing
Activity 3.3.1	Identify opportunities for developing collective infrastructure that would attract and accommodate current informal dismantling/processing operations. Design and implement demonstration of municipal level collection chains/systems with 3 enterprises in the three selected provinces/municipality, including introduction of approaches adapted from international experience in the collection to optimize efficiency, particularly relating to primary product separation for direction to processing facilities					8,370,000	920,000	7,450,000
	<b>Sub-total Component 3</b>					<b>9,700,000</b>	<b>1,900,000</b>	<b>7,800,000</b>
<b>Component 4: Project Monitoring and Evaluation</b>								
Activity 4.1.1	Undertake continuous monitoring and periodic progress reviews on development and operation of the overall EPR based WEEE managements system and associated effectiveness evaluations					420,000	140,000	280,000
Activity 4.1.2	Develop and implement impact assessment procedures with respect to estimated POPs/PTS releases reduced, levels of WEEE diverted from the informal sector, degree of integration of informal operators into the system, and reductions in imports					570,000	190,000	380,000
Activity 4.1.3	Conduct Mid-Term Review and Terminal Evaluation					360,000	120,000	240,000
Activity 4.2.1	Prepare and disseminate experience and lessons learned nationally as the system develops and internationally through multilateral forums such as Basel Regional Centers and directly with other developing countries					150,000	50,000	100,000
	<b>Sub-total Component 4</b>					<b>1,500,000</b>	<b>500,000</b>	<b>1,000,000</b>
<b>Component 5: Project Management</b>								
Activity 5.1.1	Strengthen institutional capacity of the National Project Team (NPT) in MEP for project management; establish Local Project Management Office (LPMO) and strengthen project management capacity in each of the three demonstration provinces/municipality; develop Project Implementation Manual (PIM), train staff on PIM and relevant GEF and UNDP requirements on project management					1,835,000	465,000	1,370,000
Activity 5.1.2	Undertake day-to-day project management activities by NPT and LPMOs to ensure smooth and timely implementation of project activities including but not limited to: drafting TORs, select and contract with consultants, organize M&E activities, organize the review of substantial report					915,000	85,000	830,000
	<b>Sub-total Component 5</b>					<b>2,750,000</b>	<b>550,000</b>	<b>2,200,000</b>
	<b>PROJECT TOTAL</b>					<b>58,650,000</b>	<b>11,650,000</b>	<b>47,000,000</b>



To ensure smooth and efficient implementation of the project under the arrangement of national execution modality agreed between UNDP and FECO/MEP, major component of the project activities will be implemented with the support of qualified technical national and international experts and institutes, to be engaged through contractual agreements (subcontracts) by FECO/MEP with the qualified individual experts or institutions as appropriate and applicable, in accordance with established financial rules and regulations, through competitive bidding process. Such contractual agreements will be a more effective and simplified mechanism that will enable efficient supervision and monitoring by FECO/MEP and UNDP to assure the timely delivery of anticipated results. Furthermore, the subcontract arrangements will also afford better financial management as payments will only be effected on agreed deliverables and upon satisfactory completion of the tasks stipulated in the subcontract. The table below highlights the major subcontracts to be awarded under each of the project component:

Description of subcontract	Total budget (USD)	GEF (USD)	Co-financing (USD)	Indicative Activities/Outputs of the subcontracts
<b>Component 1: Develop and implement national EPR system for WEEE</b>				
Subcontract 1: Development of procedural and administrative mechanisms for EPR Treatment Fund	200,000	100,000	100,000	Procedural and administration mechanism established/improved with input of international experience to facilitate efficient management of EPR Treatment Fund at national level
Subcontract 2 - 4: Development of procedural and administrative mechanisms for EPR Treatment Fund	600,000	120,000	480,000	Procedural and administration mechanism established/improved with input of international experience to facilitate efficient management of EPR Treatment Fund at provincial/municipality level
Subcontract 5: Improvement of WEEE management system through development of training modules	60,000	30,000	30,000	WEEE management system improved through training and audit guides etc., with input of international experience
Subcontract 6: Develop data information management system	300,000	150,000	150,000	National center of integrated e-waste information/data management established to support EPR system
Subcontract 7: Develop product and recovered material specific technical standards	240,000	120,000	120,000	Technical standards defining targeted POPs/PTS release sensitive WEEE in cooperation with private sector
Subcontract 8 - 11: Eco-design, labeling and demonstration	1,200,000	600,000	600,000	Eco-design, labeling technology and process improvement. Concept of eco-design demonstrated and experience shared
Subcontract 12: Demonstration of eco-labelling based product design and production	3,300,000	300,000	3,000,000	Demonstrate eco-labelling based product design and production in conjunction with private sector
Subcontract 13 -15: Undertake public awareness initiatives and conduct annual consultation meetings with stakeholders	1,675,000	335,000	1,340,000	Provincial/municipality level public awareness activities supporting EPR system and soliciting public participation. Conduct annual stakeholders consultation meetings

Subcontract 16: Review and strengthen policy and regulatory control on import of second hand electronic equipment and e-waste	60,000	20,000	40,000	Improved/upgrade policy framework on second hand import of electronic equipment and e-waste consistent with development of Basel Convention requirements
Subcontract 17: Conduct trainings and detection capacity upgrading	65,000	20,000	45,000	Trainings and detection capacity upgrading at ports of entry to strengthen import control enforcement
Subcontract 18: Cooperation with bilateral and multilateral initiatives with exporting countries	100,000	20,000	80,000	Cooperation and coordination established with export countries on WEEE trade and coordinated notification/consent procedures to address illegal e-waste import of second hand electrical and electronic equipment
<b>Sub-total</b>	<b>7,800,000</b>	<b>1,815,000</b>	<b>5,985,000</b>	
<b>Component 2: Demonstration and development of market based WEEE processing</b>				
Subcontract 1: Characterization of current collection chain and study on 2-3 collection schemes in the three regions	40,000	20,000	20,000	Data established on collection chain and collection schemes in the three regions and mapping of e-waste production, distribution and collection networks. Develop interventions for optimization
Subcontract 2: Experience exchange on collection and develop technology and operational technical guidelines appropriate for various scale levels of WEEE collection chain/system	40,000	20,000	20,000	National and international experience exchange and develop operational guidelines on the 2-3 collection chains/systems, including primary product separation
Subcontract 3: Develop/improve management rules/procedures for registration/authorization of different WEEE enterprises	160,000	80,000	80,000	Rules/procedures for registration/authorization of WEEE enterprises established, registration demonstrated
Subcontract 4: Develop technology selection and operational guidelines	80,000	80,000	-	Technology guidelines formulated comprising 2-3 technology selection, comprising manual dismantling, mechanical pre-processing and end material refining with input of international experience and know-how appropriate for Chinese enterprises context
Subcontract 5 - 8: Undertake BAT/BEP technology demonstration on dismantling process at 3 enterprises in the three regions	8,074,000	1,501,000	6,573,000	Technology selected and demonstrated at 3 different enterprises in the three regions: Tianjin City, Jiangsu Province, and Hubei Province. Retrofits, technology guidance, training etc. undertaken to improve prevention of POPs sensitive release and improve health and safety of workers. Demonstration results and experience shared.
Subcontract 9 - 10: undertake BAT/BEP technology demonstration on waste printed circuit boards at 2 enterprises in the three regions	3,718,000	953,000	2,765,000	Technology selected and demonstrated at 2 different enterprises in the two regions: Tianjin City and Jiangsu Province. Retrofits, technology guidance, training etc. undertaken to improve prevention of POPs sensitive release and improve health and safety of workers. Demonstration results and experience shared.
Subcontract 11 - 12:	3,818,000	606,000	3,212,000	Technology selected and demonstrated at 2 different enterprises in the two regions: Tianjin City and Hubei Province. Retrofits, technology guidance, training etc. undertaken

Undertake BAT/BEP technology demonstration on hazardous component disposal/management at 2 enterprise in the three regions				to improve prevention of POPs sensitive release and improve health and safety of workers. Demonstration results and experience shared.
Subcontract 13: Undertake BAT/BEP technology demonstration CRT at one enterprise	7,800,000	1,300,000	6,500,000	Technology selected and demonstrated at one enterprise in one of the three regions: Tianjin City, Jiangsu Province, and Hubei Province. Retrofits, technology guidance, training etc. undertaken to improve prevention of POPs sensitive release and improve health and safety of workers. Demonstration results and experience shared.
Subcontract 14: Undertake BAT/BEP technology demonstration on plastic, cable and epoxy resin at one enterprise	1,500,000	250,000	1,250,000	Technology selected and demonstrated at one enterprise in Jiangsu Province. Retrofits, technology guidance, training etc. undertaken to improve prevention of POPs sensitive release and improve health and safety of workers. Demonstration results and experience shared.
Subcontract 15: Establish one economically scaled center for processing of high value materials	5,200,000	500,000	4,700,000	International experience provided in the establishment and qualification of at least one economically scaled center created for processing of high value materials, technology transfer and equipment design and installation supported. Smelter as preferred destination for non-ferrous metal mix demonstrated
Subcontract 16: Identify incremental technology improvements and document the feasibility of implementation. Implement improvement measures. Conduct evaluation and risk assessments on the implementation and achievements of the demonstration activities	1,350,000	270,000	1,080,000	Existing and establishing new formal dismantling and pre-processing operations provided with technical assistance. Implementation of demonstration activities evaluated and risk assessment conducted
Subcontract 17: Provide policy, technology, and management support to demonstration activities in the three demonstration provinces/municipality. Undertake research in environmentally sound collection, dismantling, processing and disposal technology and provide technical support to demonstration enterprises. Actively promote environmentally sound processing activities	4,720,000	1,030,000	3,690,000	Technology support provided to demonstration activities in the three selected locations, management personnel trained (25,000 person-times) and promotion of environmentally sound processing technologies effectively implemented
<b>Sub-total</b>	<b>36,500,000</b>	<b>6,610,000</b>	<b>29,890,000</b>	
<b>Component 3: Upgrading of informal WEEE processing and its integration into the EPR System</b>				
Subcontract 1: Undertake a national level characterization study of the informal WEEE sector	50,000	50,000	-	Study to understand level of activities, key location, stakeholder networks, nature of operation of informal WEEE processing sector and identify strategies to integrate it with developing formal sector. Develop model regulations and guidance materials on enforcement activities on informal WEEE processing
Subcontract 2: Develop guidance and procedural documentation for undertaking environmental and health impact evaluations	65,000	65,000	-	Guidance and procedural documentation developed to be used on environmental and health impact evaluation

Subcontract 3 - 5: Develop model regulations and guidance materials on enforcement activities on informal WEEE processing at local level. Conduct training to strengthen capacity	915,000	565,000	350,000	Enforcement activities on informal WEEE processing at local level, Conduct training program for local level officials and other stakeholders including local and community level NGOs on controls appropriate to the informal sector and options available to it
Subcontract 6: Prepare and deliver awareness programs on impact of informal WEEE processing at the three demonstration provinces/municipality	170,000	170,000	-	Awareness program prepared and message delivered to relevant stakeholders on negative impacts of informal WEEE processing, to generate support
Subcontract 7 - 10: Design and implement demonstration collective dismantling and primary processing collectives. Design and implement demonstration of municipal level collection chains/systems with 3 enterprises in the three selected provinces/municipality	8,370,000	920,000	7,450,000	Opportunities and options identified, measures developed for possibilities to channel e-waste from informal to formal processing enterprises. Demonstration of collection activities at 3 enterprises
<b>Sub-total</b>	<b>9,570,000</b>	<b>1,770,000</b>	<b>7,800,000</b>	
<b>Component 4: Project Monitoring and Evaluation</b>				
Contract 1: Conduct impact assessment on project achievements including estimated reduction on POPs/PTS release and other data	270,000	90,000	180,000	Organize impact assessment with report prepared, shared, reviewed and applicable actions taken
Subcontract 2: Management Information System	90,000	30,000	60,000	Develop and maintain Management Information System
Subcontract 3: Publish project results, experience, and lessons learned	30,000	10,000	20,000	Project experience and lessons learned compiled and disseminated
<b>Sub-total</b>	<b>390,000</b>	<b>130,000</b>	<b>260,000</b>	
<b>Component 5: Project Management</b>				
Subcontracts 1 - 3: Establish Local Project Management Office at each of the three demonstration province / municipality, strengthen capacity and undertake project management activities	600,000	-	600,000	Local PMOs established and capacity strengthened to ensure efficient and effective project management and implementation of demonstration activities at the three selected demonstration provinces/municipality
<b>Sub-total</b>	<b>600,000</b>	<b>-</b>	<b>600,000</b>	

## V. MANAGEMENT ARRANGEMENTS

### Project management arrangement

The project will be implemented under National Execution (NIM) modality in line with the Standard Basic Assistance Agreement between UNDP and the Government of China and the Country Programme Action Plan (CPAP). The Ministry of Environmental Protection is the government institution responsible for the daily execution and coordination of the project and will serve as the government Executing Agency (EA). MEP has designated FECO as the entity in the implementation of activities relating to fulfilling China's obligations under multilateral environmental conventions. UNDP is the GEF Implementing Agency (IA) for the project.

For the coordination and management of e-waste flows, activities and policies, the government plays a pivotal role, but there is no single government agency designated to supervise and legislate the range of activities related to e-waste management, rather the responsibilities and tasks were allocated to various government agencies in accordance with their respective administrative domains. At the national level, six agencies play the key roles in legislation, management, monitoring and communication of e-waste issues, namely, the National Development and Reform Committee (NDRC), Ministry of Environmental Protection (MEP), Ministry of Industry and Information Technology (MIIT), Ministry of Commerce (MOC), Ministry of Finance (MOF) and General Administration of Customs (GAC).

For the implementation of this project, it will involve a wide range of stakeholders. The roles and responsibilities of the various stakeholders directly involved in project implementation are described below:

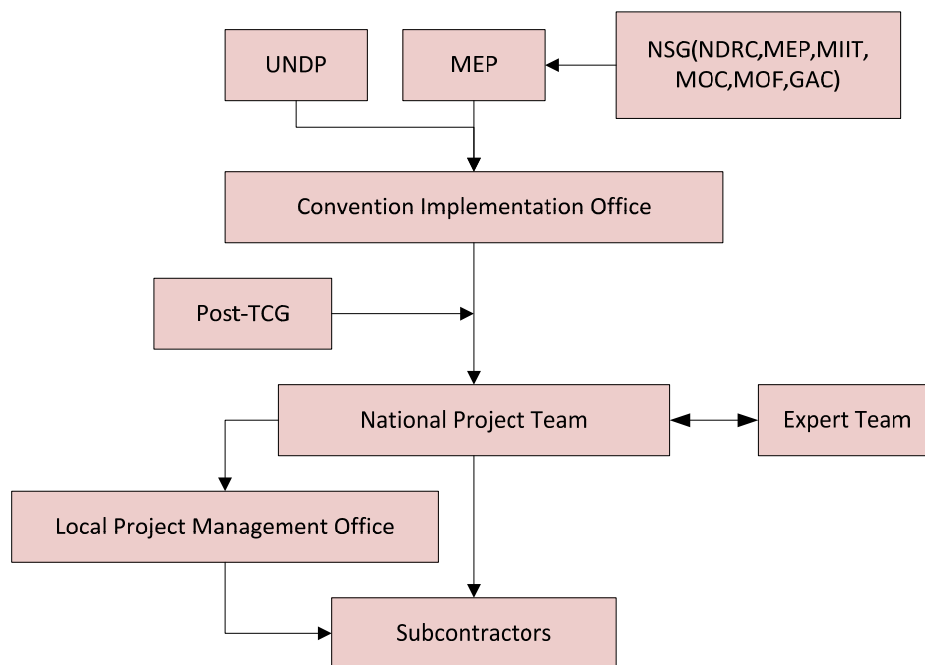


Figure 1: Project Institutional Arrangement

- a. **Ministry of Environmental Protection (MEP).** As the administrative authority on environmental protection, is designated by the State Council as the core agency for coordination of all POPs related activities in China and the focal point for the implementation of the POPs Convention in China. MEP is national implementing agency for this project. Its responsibilities will include (1) responsible for the project in general and ensure its successful implementation and quality; (2) to provide political direction and guidance to CIO; (3) coordination with

stakeholders, including GEF, donors, IAs, and relevant domestic ministries and agencies, including the member commissions and ministries of the NCG; (4) development/issuance/implementation of national policy and standards to regulate environmental performance of the WEEE management system; (5) Identification of BAT/BEP technology requirements; (6) qualification and permitting of WEEE processing facilities; (7) supervision of the enforcement of environmental policies and performance requirements applied to WEEE management; (8) supervision the disclosure of environmental information; and (9) supervision of the day-to-day management of the project.

- b. **Ministry of Industry and Information Technology (MIIT).** MIIT is most relevant to the electronics manufacturing industry, as it is responsible for encouraging cleaner production and eco-design of electrical and electronic equipment. It provides technical and policy support to MOF, MOC, NDRC and MEP on development and implementation of the WEEE management system including identification of technology requirements.
- c. **Ministry of Commerce (MOC).** MOC is the overall regulatory authority over waste management, responsible for the establishment of WEEE collection channels.
- d. **Ministry of Finance (MOF).** As the country's GEF Operational Focal Point, MOF has the overall responsibility for national GEF programme. It reviews, endorses and supervises preparation and implementation of GEF funded projects, receives and supervises use of the GEF grant. MOF is responsible for defining the subsidies and the collection, administration and disbursement of WEEE EPR Treatment Fund.
- e. **National Development and Reform Committee (NDRC).** NDRC is responsible for developing macroeconomic plans and pilot projects related to the socially-, economically- and environmentally-responsible treatment of e-waste. It undertakes policy level scope definition of WEEE management system and input into the design of the WEEE EPR Treatment Fund and its application.
- f. **General Administration of Customs (GAC).** GAC is responsible for port control, checking containers, registration and reporting of shipments, and monitoring of illegal activities.
- g. **National Steering Group (NSG).** An inter-ministerial steering group consists of NDRC, MEP, MIIT, MOC, MOF and GAC to provide overall guidance and coordination for the implementation of relevant activities and legislative measures, to ensure the committed inputs and contributions are available as needed. The NSG will meet twice per year or as needed.
- h. **Convention Implementation Office (CIO).** The CIO is an inter-departmental coordination unit of MEP and acts as the secretariat of the NSG. It is responsible for day-to-day compliance with the Stockholm Convention in China. CIO's responsibilities include: (i) provision of technical support for international negotiations and policy studies on the Stockholm Convention, (ii) provision of support to the development and implementation of corresponding policy and regulations, as well as coordination of key governmental stakeholders, (iii) mobilize co-financing for the project from bilateral and domestic governmental and private sources, (iv) collecting data and information, compiling reports, organizing trainings, and publishing information. In this project, CIO will represent MEP to provide political guidance to the implementation of this project, coordinate with various stakeholders with post-TCG and other appropriate approaches, and to ensure that the project produces the results specified in the project document, to the required standard of quality and within the specified constraints of time and cost.
- i. **National Project Team (NPT).** The project team, composing of staff from MEP and possibly staff from other ministries with respective responsibilities on WEEE management and legislative activities, is administratively managed by Foreign Economic Cooperation Office (FECO) of MEP. FECO is a professional office with more than 15 years experiences for the implementation of international environmental cooperation programs and for the follow-up implementation of international environmental conventions. In general, the team is responsible for the day-to-day management, coordination and implementation of the proposed project under the guidance of CIO and with the support of the consultants recruited. Its responsibilities include (i) to manage project procurement and financial resource in accordance with UNDP's procedures, prepare and amend

as necessary the Annual Work Plan and relevant progress and financial report; (ii) to organize and convene project coordination and review meeting, including the Annual Review Meeting and prepare Project Review Report; (iii) to prepare TORs under this project; (viii) to select and contract with individual consultants and sub-contractors, supervise the implementation of contractors to ensure the smooth implementation of the contracts; (v) to provide guidance to the local Project Management Offices (LPMOs); and (ix) to organize the inspections and verifications related to the project achievement.

- j. **Post-technical Coordination Group Meeting (Post-TCG).** During NIP development, CIO established a coordination mechanism for stakeholder involvement, called TCG. Relevant domestic stakeholders, international IAs and EAs, as well as potential bilateral donors, private sectors, NGOs etc. would be informed about the progress and further needs for Convention implementation, invited to advise on its design and encouraged to be involved and co-fund some of the activities. They would be briefed on the implementation progress and impacts at the TCG meetings. CIO will continue to convene TCG meetings at interval of around once per year. The coordination on the implementation of this project will be one of the important components of the TCG meetings.
- k. **Local Project Management Office (LPMO).** LPMO is established for routine management under this project. The staff of CIU will come from the member bureaus. The Units will be response for (i) organization of IPM implementation; (ii) supervision of local pesticides distributions and applications; (iii) organization of joint inspections to ensure the effective implementation of related regulations; and (iv) collection of information needed for M&E and preparation of the required progress reports.
- l. **Expert Team.** Consultants will be engaged to provide technical support for the implementation of the project. (i) international expert(s) will be recruited as needed to introduce international experience on EPR and WEEE management, and to provide overall technical direction and guidance for the application of BAT/BEP technology demonstration; and (ii) national technical experts with experience and knowledge in EPR, WEEE management and BAT/BEP technology demonstration will be recruited to work with the international experts and assist CIO and LPMOs for the demonstration activities.
- m. **Provincial, Local Governments, Local Development and Reform Commission and Local Environmental Protection Bureaus.** At the provincial and city level, corresponding departments that are subordinate to the national ministries, to fulfill the same administrative duties locally and report to the national ministries.
- n. **Enterprises producing and importing products subject to EPR charges (including sectoral associations).** Producers are required to follow the WEEE management system established by central government through national e-waste legislation. Producers and importers of electrical and electronic products are obligated to pay the recycling fee (EPR Treatment Fund) set by the government and carry out obligations under EPR.
- o. **Private Sector Investors and Operator of WEEE Facilities.** They provide financing, business planning and detailed design on the development and operation of WEEE processing facilities, and participate in BAT/BEP identification and the demonstration activities.
- p. **Local Communities hosting WEEE management operations (formal and informal).** They provide input into initiatives to integrate participants in informal WEEE processing into the formal WEEE management system and development of local collection and dismantling facilities. They also participate in impact mitigation initiatives addressing traditional WEEE processing practices.
- q. **General Public.** As consumers of electrical and electronic products, they are important actors in the e-waste disposal chain because they choose the disposal channel and destination for their household e-waste. Their disposal behaviour determines whether the WEEE will be collected by the informal or formal collection system and subsequent destination of (formal or informal) WEEE processing. By doing so, they exercise public's right to influence environmental performance in the processing of WEEE. As purchaser of electrical and electronic products, they make payment into the EPR system through an advanced recycling fee or equivalent mechanism.

- r. **Public Interest NGOs (International/National/Local/Community Levels).** The activity and influence of NGOs has been generally limited in China. However their in-depth investigations had led to increased attention on the health and environmental risks and the working conditions of local workers in the informal e-waste recycling activities. They assist in communication activities at the local level and support awareness raising at community level.
- s. **Sub-contractors:** Qualified subcontractors will be selected competitively to provide various consulting and technical services needed for the project implementation. This will take advantage of their respective expertise, simplifies and yet strengthens day-to-day management and monitoring responsibilities.

Oversight of project activities will be the responsibility of the NSG. Day-to-day operational oversight will be ensured by UNDP, through the UNDP Country Office, and strategic oversight by the UNDP/GEF Regional Technical Advisor (RTA) responsible for the project. This oversight will include ensuring that the project practices due diligence with regard to UNDP's Environmental and Social Screening Procedure.

MEP/FECO will take overall responsibility for the project execution, and the timely and verifiable attainment of project objectives and outcomes. FECO will provide support to, and inputs for, the implementation of all project activities, and recruitment of project staff and contracting of consultants and service providers with the advice from and involvement of the UNDP. FECO will designate personnel to serve as the Project Coordinator (PC) for project implementation. The PC will be responsible for providing government oversight and guidance to the project implementation.

The NSG will serve as the project's coordination and decision-making body. It will meet according to necessity, but not less than once in 6 months, to review project progress, approve project work plans and approve major project deliverables. The NSG is responsible for ensuring that the project remains on course to deliver products of the required quality to meet the outcomes defined in the project document. The PSC's role will include: (i) overseeing project implementation; (ii) approving annual project work plans and budgets, at the proposal of the Project Manager (PM), for submission to UNDP; (iii) approving any major changes in project plans or programs; (iv) providing technical input and advice; (v) approving major project deliverables; (vi) ensuring commitment of resources to support project implementation; (vii) arbitrating any conflicts within the project and/or negotiating solutions between the project and any parties beyond the scope of the project; (viii) overall project evaluation and (ix) ensuring that UNDP Environmental and Social Screening Procedure safeguards are applied to project implementation.

#### *Project management at the provincial/municipality demonstration site level*

The day-to-day administration of the project will be carried out by a National Project Team (NPT) comprised of a Project Coordinator (PC), a Project Assistant, and additional support staff. The project staff will be recruited following UNDP and MEP/FECO recruitment procedures. The PC will, with the support of the Project Assistant, manage the implementation of all project activities, including: (i) preparation/updates of project work and budget plans, record keeping, accounting and quarterly and annual progress reporting; (ii) drafting of terms of reference, technical specifications and other documents as necessary; (iii) identification, proposal of project consultants to be approved by the NSG, coordination and supervision of consultants and suppliers; (iv) organization of duty travel, seminars, public outreach activities and other project events; and (v) maintaining working contacts with project partners at the central and local levels.

The NPT for the national-level project will be responsible for coordinating with each provincial projects and providing guiding. The PC will also liaise and work closely with all partner institutions to ensure good coordination with other complementary national programmes and initiatives. Under the supervision of the National Project Team, project management for the implementation of activities at the selected demonstration sites (Tianjin City, Jiangsu and Hebei Provinces) will be coordinated through the local Project Management Office established at each of the three demonstration locations.

The PC is accountable to the NPT and the NSG for the quality, timeliness and effectiveness of the activities carried out, as well as for the use of funds. The PC will produce Biennial Work Plan and



Budget Plans to be approved by the NSG. These plans will provide the basis for allocating resources to planned activities. The PC will further produce quarterly operational reports for consolidation into the Annual Progress Reports (APR) for submission to the PSC. These reports will summarize the progress made by the project versus the expected results, explain any significant variances, detail the necessary adjustments and be the main reporting mechanism for monitoring project activities. The PC will also be technically supported by contracted national and international service providers. Recruitment of specialist services for the project will be done by the NPT in consultation with the UNDP. The organigram for project management under Management Arrangements illustrates the working relationship between all main project implementing parties or bodies.

### **Coordination with other related initiatives**

The project is an integral part of China's overall GEF-5 Chemical Focal Area Program developed jointly with the GEF and key implementing agencies. Within this program it represents one of three projects directed to reduction of POPs releases thus in the context will be coordinated through MEP so that a consistent overall program result against the key indicator of PCDD/F release reduction is reported through the POPs tracking tool.

One of these projects is World Bank Municipal Solid Waste (MSW) Project recently approved by the GEF council that includes provisions for the segregation of e-waste that enters the MSW stream (rather than being diverted at source as is the primary route that it takes) and a specific initiative in Ningbo City. Overall, this Project will coordinate its activities such that synergies between the development of MSW infrastructure and programs under the World Bank project and WEEE/e-waste specific initiatives under this project will be ensured. The mechanisms for this coordination, including the involvement of private sector operators involved in both types of operations will be explored.

In terms of bilateral initiatives, a number of programs have and continue in China and regionally that the Project will link to where synergies exist, and which could potentially provide co-financing. These include any continuation of the study/information exchange/capacity building programs undertaken by the Swiss Development Agency, and the development of high technology WEEE related processing facilities being pursued by GTZ.

USEPA and MEP have collaborated on environmental issues for over three decades and began working on e-waste in 2011 at the U.S.-China Strategic and Economic Dialogue. USEPA's collaboration with MEP on e-waste supports the U.S. Government's National Strategy on Electronics Stewardship, in particular, the recommendation that the U.S. government "[p]rovide technical assistance and establish partnerships with developing countries to better manage used electronics." This recommendation supports the overarching goal of "Reduc[ing] Harm from US Exports of E-Waste and Improv[ing] Safe Handling of Used Electronics in Developing Countries" in the Strategy. In addition, "Cleaning Up E-Waste" is one of USEPA's six global priorities that guide the Agency's international work.

In 2012, USEPA and MEP cooperated with the United Nations University – Solving the E-waste Problem (StEP) Initiative and the Basel Convention Regional Center in Beijing (BCRC-Beijing) to organize an international stakeholder meeting in Beijing. This meeting enabled organizations from around the world who are engaged in electronics stewardship in China to share their ongoing activities and identify mutual priorities for future coordination. Following this meeting, EPA, MEP and BCRC-Beijing organized a provincial-level stakeholder dialogue in Shenzhen, which also enabled local participants to identify shared priorities. EPA, MEP and BCRC-Beijing also established an online platform for sharing information on e-waste management. In 2013, UNU-StEP and Tsinghua University published "E-Waste in China: A Country Report" with support from EPA. The goal of this report is to enable better understanding of the e-waste system in China, including actors, projects, policies and other factors, and to facilitate further discussion, project initiation and communication among organizations working on e-waste in China. EPA and MEP will continue to collaborate on environmentally sound management of e-waste in China in 2014.

Another international linkage that the Project will maintain a close consultative and synergistic relationship with is the Basel Convention Regional Centre for Asia and the Pacific located at

Tsinghua University. The staff of the Centre has been a substantive resource in developing and is anticipated to be active in its detailed preparation and implementation. This cooperation and through this Centre onward to other Basel regional centres will be maintained as an important part of the Project's information exchange efforts.

## VI. MONITORING AND EVALUATION PLAN AND BUDGET

### Monitoring and Reporting

Project monitoring and evaluation (M&E) will be conducted in accordance with established UNDP and GEF procedures and will be provided by the project team and the UNDP Country Office (UNDP-CO) with support from UNDP-GEF Regional Coordination Unit in Bangkok. The Results and Resources Framework under Section III provides performance and impact indicators for project implementation along with their corresponding means of verification. These indicators, together with the POPs Tracking Tool will be used as instruments to monitor progress in POPs reduction management effectiveness and form the basis for the M&E system under this project. The M&E plan includes: inception report, project implementation reviews, quarterly and annual review reports, and mid-term and final evaluations. The following sections outline the principal components of the Monitoring and Evaluation Plan and indicative cost estimates related to M&E activities. The project's Monitoring and Evaluation Plan will be presented and finalized in the Project's Inception Report following a collective fine-tuning of indicators, means of verification, and the full definition of project staff M&E responsibilities.

The Ministry of Environment (MEP) as the national implementing agency will designate the National Project Team (NPT) to be responsible for the organization of the M&E activities as stated in Table 3.

**Table 3 - Indicative Monitoring and Evaluation Work Plan, Budget and Time Frame**

Type of M&E Activity	Responsible Parties	Budget GEF	Budget Co-financing	Budget US\$ (Excluding project team staff time)	Time frame
Initiate the project by Inception Workshop (IW)	National Project Team (NPT)	30,000	60,000	90,000	Within first three months of project start up
Prepare Inception Report	NPT			Included in IW	Submit draft two weeks before IW, finalize two weeks after IW
Verify impact indicators, project progress and performance by field visits, questionnaires, interviews and monitoring as appropriate	NPT, Project Manager to oversee and designate responsibilities	170,000	340,000	510,000	Annually, prior to APR/PIR as defined in AWP
Prepare Quarterly Progress Reports	NPT			None	Quarterly
Prepare Annual Project Reports (APR) and Project Implementation Reviews (PIR)	NPT in collaboration with UNDP-CO and UNDP-GEF	20,000	40,000	60,000	Annually, before ARM

Convene Annual Review Meetings (ARM)	Project Coordinator in collaboration with UNDP-CO	80,000	160,000	240,000	Annually
Prepare minutes for Annual Review Meetings	UNDP-CO			Included in ARM	Two weeks after meeting
Carry out annual project financial audits	Independent Audit Entity	20,000	40,000	60,000	Annually
Carry out Mid-Term Review and Terminal Evaluation	PT, UNDP-CO, External Consultants	120,000	240,000	360,000	Mid and End of the project
Prepare Terminal Report, with social and economic impact assessment	PT, UNDP-CO, local consultants	40,000	80,000	120,000	Two months after project completion
Lessons Learned	PT, UNDP-CO, UNDP-GEF	10,000	20,000	30,000	Annually
Visits to field sites (UNDP staff travel costs to be charged to IA fees)	UNDP-CO, UNDP-GEF (as appropriate), Government Representatives	10,000	20,000	30,000	Annually as required
<b>TOTAL indicative Cost Excluding expenses of NPT and UNDP</b>		<b>500,000</b>	<b>1,000,000</b>	<b>1,500,000</b>	

#### *Project Inception Phase*

A Project Inception Workshop (IW) will be conducted with the full project team, relevant government counterparts, co-financing partners, the UNDP-CO and representative from the UNDP-GEF Regional Coordinating Unit, as well as UNDP-GEF (HQs) as appropriate to inform the key stakeholders the goal, objectives and management arrangement of the project, mobilize them to actively participate in the implementation of this project. A fundamental objective of the Inception Workshop will be to assist the project team to understand and take ownership of the projects goal and objective, as well as to finalize preparation of the project's first annual Work Plan (AWP) on the basis of the Results and Resources Framework, along with M&E plan, with concise and measurable performance indicators and in a manner consistent with the expected outcomes of the project. Additionally, the purpose and objective of the Inception Workshop will be to: (i) introduce project staff to the UNDP-GEF team which will support the project during its implementation, namely the CO and responsible Regional Coordinating Unit staff; (ii) detail the roles, support services and complementary responsibilities of UNDP-CO and RCU staff vis à vis the project team; (iii) provide a detailed overview of UNDP-GEF reporting and monitoring and evaluation (M&E) requirements, with particular emphasis on the Annual Project Implementation Reviews (PIRs) and related documentation, the Annual Review Report (ARR), Annual Review Meetings, audited financial statements, as well as mid-term and final evaluations. Equally, the IW will provide an opportunity to inform the project team on UNDP project related budgetary planning, budget reviews, and mandatory budget rephasings. The IW will also provide an opportunity for all parties to understand their roles, functions, and responsibilities within the project's decision-making structures, including reporting and communication lines, and conflict resolution mechanisms. The Terms of Reference for project staff and decision-making structures will be discussed again as needed, in order to clarify for all, each party's responsibilities during the project's implementation phase. NPT will prepare the Inception Report to summarize the outputs and achievement of the workshop.

#### *Monitoring responsibilities and events*

A detailed schedule of project reviews meetings will be developed by the project management, in consultation with project implementation partners and stakeholder representatives and incorporated in the Project Inception Report. Such a schedule will include: (i) tentative time frames for Tripartite

Reviews, Steering Committee Meetings, (or relevant advisory and/or coordination mechanisms) and (ii) project related Monitoring and Evaluation activities.

Day-to-day monitoring of implementation progress will be the responsibility of the Project Coordinator based on the project's Annual Work Plan and its indicators. The National Project Team will inform the UNDP-CO of any delays or difficulties faced during implementation so that the appropriate support or corrective measures can be adopted in a timely and remedial fashion.

The Project Coordinator, the National Technical Advisor, and the Chief Technical Advisor will fine-tune the progress and performance/impact indicators of the project in consultation with the full project team at the Inception Workshop with support from UNDP-CO and assisted by the UNDP-GEF Regional Coordinating Unit. Specific targets for the first year implementation progress indicators together with their means of verification will be developed at this Workshop. These will be used to assess whether implementation is proceeding at the intended pace and in the right direction and will form part of the Annual Work Plan. The local project management offices will also take part in the Inception Workshop in which a common vision of overall project goals will be established. Targets and indicators for subsequent years would be defined annually as part of the internal evaluation and planning processes undertaken by the project team.

Measurement of impact indicators related to global benefits will be done according to the schedules defined in the Inception Workshop. The measurement of these will be undertaken through subcontracts or retainers with relevant institutions, or through specific studies that are to form part of the projects activities. Indicators of project goal, progress and performance will be continuously monitored and evaluated throughout the whole project life.

Periodic monitoring of implementation progress will be undertaken by the UNDP-CO through quarterly meetings with the project proponent, or more frequently as deemed necessary. This will allow parties to take stock and to troubleshoot any problems pertaining to the project in a timely fashion to ensure smooth implementation of project activities.

UNDP-CO and UNDP-GEF RCU as appropriate, will conduct yearly visits or more often based on an agreed upon schedule to be detailed in the project's Inception Report / Annual Work Plan to assess first hand project progress. Any other member of the Steering Committee can also accompany, as decided by the Steering Committee. A Field Visit Report will be prepared by the UNDP-CO and circulated no less than one month after the visit to the project team, all Steering Committee members, and UNDP-GEF.

Annual Monitoring will occur through the Tripartite Review (TPR). This is the highest policy-level meeting of the parties directly involved in the implementation of a project. The project will be subject to Tripartite Review (TPR) at least once every year. The first such meeting will be held within the first twelve months of the start of full implementation. The project proponent will prepare an Annual Project Report (APR) and submit it to UNDP-CO and the UNDP-GEF RCU at least two weeks prior to the TPR for review and comments.

The APR will be used as one of the basic documents for discussions in the TPR meeting. The project proponent will present the APR to the TPR, highlighting policy issues and recommendations for the decision of the TPR participants. The project proponent also informs the participants of any agreement reached by stakeholders during the APR preparation on how to resolve operational issues. Separate reviews of each project component may also be conducted if necessary.

The Terminal Tripartite Review (TTR) will be held in the last month of project operations. The project proponent is responsible for preparing the Terminal Report and submitting it to UNDP-CO and UNDP-GEF's Regional Coordinating Unit. It shall be prepared in draft at least two months in advance of the TTR in order to allow review, and will serve as the basis for discussions in the TTR. The Terminal Tripartite Review considers the implementation of the project as a whole, paying particular attention to whether the project has achieved its stated objectives and contributed to the broader environmental objective. It decides whether any actions are still necessary, particularly in relation to sustainability of project results, and acts as a vehicle through which lessons learnt can be captured to feed into other projects under implementation or formulation.

The TPR has the authority to suspend disbursement if project performance benchmarks are not met. Benchmarks will be developed at the Inception Workshop, based on delivery rates, and qualitative assessments of achievements of outputs.

#### *Verify performance indicators*

During the implementation of the project, NPT, in collaboration with UNDP-CO and with assistance by the LPMOs, will organize the activities for verifying performance indicators. Detailed M&E schedule will be developed simultaneously with and as part of the Annual Work Plan.

UNDP-CO and UNDP-GEF RCU as appropriate, will conduct yearly visits or more often based on an agreed upon schedule to be detailed in the project's Inception Report / Annual Work Plan.

#### *Project Reporting*

The Project Manager in conjunction with the UNDP-GEF extended team will be responsible for the preparation and submission of the following reports that form part of the monitoring process. The first six reports are mandatory and strictly related to monitoring, while the last two have a broader function and the frequency and nature is project specific to be defined throughout implementation.

A Project Inception Report (IR) will be prepared immediately following the Inception Workshop. It will include a detailed work plan divided in quarterly time-frames detailing the activities and progress indicators that will guide implementation during the first year of the project. This work plan will include the dates of specific field visits, support missions from the UNDP-CO or the Regional Coordinating Unit (RCU) or consultants, as well as time-frames for meetings of the project's decision making structures. The Report will also include the detailed project budget for the first full year of implementation, prepared on the basis of the Annual Work Plan, and including any monitoring and evaluation requirements to effectively measure project performance during the targeted 12 month time-frame. The Inception Report will include a more detailed narrative on the institutional roles, responsibilities, coordinating actions and feedback mechanisms of project related partners. In addition, a section will be included on progress to date on project establishment and start-up activities and an update of any changed external conditions that may affect project implementation. When finalized, the report will be circulated to project counterparts who will be given a period of one calendar month in which to respond with comments or queries. Prior to this circulation of the IR, the UNDP Country Office and UNDP-GEF's Regional Coordinating Unit will review the document.

An Annual Project Report (APR) shall be prepared by the Project Manager and shared with the Project Steering Committee. As a self-assessment by the project management, it does not require a cumbersome preparatory process. As minimum requirement, the Annual Project Report shall consist of the Atlas standard format for the Project Progress Report (PPR) covering the whole year with updated information for each element of the PPR as well as a summary of results achieved against pre-defined annual targets at the project level. As such, it can be readily used to spur dialogue with the Project Steering Committee and partners. An APR will be prepared on an annual basis prior to the Project Steering Committee meeting to reflect progress achieved in meeting the project's Annual Work Plan and assess performance of the project in contributing to intended outcomes through outputs and partnership work. The APR should consist of the following sections: (i) project risks and issues; (ii) project progress against pre-defined indicators and targets and (iii) outcome performance.

The Project Implementation Review (PIR) is an annual monitoring process mandated by the GEF. It has become an essential management and monitoring tool for project managers and offers the main vehicle for extracting lessons from ongoing projects. Once the project has been under implementation for a year, a Project Implementation Report must be completed by the CO together with the project team. The PIR should be participatorily prepared in July and discussed with the CO and the UNDP/GEF Regional Coordination Unit during August with the final submission to the UNDP/GEF Headquarters in the first week of September.

Quarterly progress reports: Short reports outlining main updates in project progress will be provided quarterly to the local UNDP-Country Office and the UNDP-GEF RCU by the project team.

UNDP ATLAS Monitoring Reports: A Combined Delivery Report (CDR) summarizing all project expenditures, is mandatory and should be issued quarterly following the finalization of the quarterly. The Project Manager should send it to the Project Steering Committee for review and the Implementing Partner should certify it. The following logs should be prepared: (i) The Issues Log is used to capture and track the status of all project issues throughout the implementation of the project. It will be the responsibility of the Project Manager to track, capture and assign issues, and to ensure that all project issues are appropriately addressed; (ii) the Risk Log is maintained throughout the project to capture potential risks to the project and associated measures to manage risks. It will be the responsibility of the Project Manager to maintain and update the Risk Log, using Atlas; and (iii) the Lessons Learned Log is maintained throughout the project to capture insights and lessons based on good and bad experiences and behaviours. It is the responsibility of the Project Manager to maintain and update the Lessons Learned Log.

Project Terminal Report: During the last three months of the project the project team will prepare the Project Terminal Report. This comprehensive report will summarize all activities, achievements and outputs of the Project, lessons learnt, objectives met, or not achieved, structures and systems implemented, etc. and will be the definitive statement of the Project's activities during its lifetime. It will also lay out recommendations for any further steps that may need to be taken to ensure sustainability and replicability of the Project's activities.

Periodic Thematic Reports: As and when called for by UNDP, UNDP-GEF or the Implementing Partner, the project team will prepare Specific Thematic Reports, focusing on specific issues or areas of activity. The request for a Thematic Report will be provided to the project team in written form by UNDP and will clearly state the issue or activities that need to be reported on. These reports can be used as a form of lessons learnt exercise, specific oversight in key areas, or as troubleshooting exercises to evaluate and overcome obstacles and difficulties encountered. UNDP is requested to minimize its requests for Thematic Reports, and when such are necessary will allow reasonable timeframes for their preparation by the project team.

Technical Reports are detailed documents covering specific areas of analysis or scientific specializations within the overall project. As part of the Inception Report, the project team will prepare a draft Reports List, detailing the technical reports that are expected to be prepared on key areas of activity during the course of the Project, and tentative due dates. Where necessary this Reports List will be revised and updated, and included in subsequent APRs. Technical Reports may also be prepared by external consultants and should be comprehensive, specialized analyses of clearly defined areas of research within the framework of the project and its sites. These technical reports will represent, as appropriate, the project's substantive contribution to specific areas, and will be used in efforts to disseminate relevant information and best practices at local, national and international levels.

Project Publications such as knowledge products and compilations of lessons learned will form a key method of crystallizing and disseminating the results and achievements of the Project. These publications may be scientific or informational texts on the activities and achievements of the Project, in the form of journal articles, multimedia publications, etc. These publications can be based on Technical Reports, depending upon the relevance, scientific worth, etc. of these Reports, or may be summaries or compilations of a series of Technical Reports and other research. The project team will determine if any of the Technical Reports merit formal publication, and will also (in consultation with UNDP, the government and other relevant stakeholder groups) plan and produce these Publications in a consistent and recognizable format. Project resources will need to be defined and allocated for these activities as appropriate and in a manner commensurate with the project's budget.

### **Independent Evaluations, Audits and Financial Reporting**

The project will be subjected to at least two independent external evaluations as follows: An independent Mid-Term Review will be undertaken at exactly the mid-point of the project lifetime. The Mid-Term Review will determine progress being made towards the achievement of outcomes and will identify course correction if needed. It will focus on the effectiveness, efficiency and timeliness of project implementation; will highlight issues requiring decisions and actions; and will present initial lessons learned about project design, implementation and management. Furthermore, it will

review and update the ESSP report. Findings of this review will be incorporated as recommendations for enhanced implementation during the final half of the project's term. The organization, terms of reference and timing of the mid-term review will be decided after consultation between the parties to the project document. The Terms of Reference for this Mid-term review will be prepared by the UNDP-CO based on guidance from the UNDP-GEF Regional Coordinating Unit.

An independent Final Evaluation will take place three months prior to the terminal Project Steering Committee meeting, and will focus on the same issues as the mid-term evaluation. The final evaluation will also look at impact and sustainability of results, including the contribution to capacity development and the achievement of global environmental goals. The Final Evaluation should also provide recommendations for follow-up activities. The Terms of Reference for this evaluation will be prepared by the UNDP-CO based on guidance from the UNDP-GEF Regional Coordinating Unit.

### **Learning and Knowledge Sharing**

Results from the project will be disseminated within and beyond the project intervention zone through a number of existing information dissemination networks and forums. New channels will be created to strengthen the knowledge sharing among the public. Knowledge sharing will support the development of national policies, guidelines, regulations, financial mechanisms.

The project will identify and participate, as relevant and appropriate, in scientific, policy-based and/or any other networks, which may be of benefit to project implementation through lessons learned. The project will identify, analyze, and share lessons learned that might be beneficial in the design and implementation of similar future projects. Identification and analysis of lessons learned is an ongoing process, and the need to communicate such lessons as one of the project's central contributions is a requirement to be delivered at least once in every 12 months. UNDP-GEF shall provide a format and assist the project team in categorizing, documenting and reporting on lessons learned.

### **Audit Clause**

The Government will provide the Resident Representative with certified periodic financial statements, and with an annual audit of the financial statements relating to the status of UNDP (including GEF) funds according to the established procedures set out in the Programming and Finance manuals. The Audit will be conducted according to UNDP financial regulations, rules and audit policies by the legally recognized auditor of the Government, or by a commercial auditor engaged by the Government.

## **VII. LEGAL CONTEXT**

This Project Document shall be the instrument referred to as such in Article I of the Standard Basic Assistance Agreement (SBAA) between the Government of the People's Republic of China and the United Nations Development Programme, signed by the parties on 29 June 1979. The host country implementing agency shall, for the purpose of the Standard Basic Assistance Agreement, refer to the government co-operating agency described in that Agreement.

The UNDP Resident Representative in China is authorized to effect in writing the following types of revision to this Project Document, provided that he/she has verified the agreement thereto by the UNDPGEF and is assured that the other signatories to the Project Document have no objection to the proposed changes:

- a) Revision of, or addition to, any of the annexes to the Project Document;
- b) Revisions which do not involve significant changes in the immediate objectives, outputs or activities of the project, but are caused by the rearrangement of the inputs already agreed to or by cost increases due to inflation;
- c) Mandatory annual revisions which re-phase the delivery of agreed project inputs or increased expert or other costs due to inflation or take into account agency expenditure flexibility; and

- d) Inclusion of additional annexes and attachments only as set out here in this Project Document.

## **VIII. ANNEXES**

- I. National Institutional and Legal Framework
- II. Evaluation and Selection of Demonstration Locations
- III. Evaluation and Selection of Demonstration Enterprises and Processing Technology
- IV. Evaluation and Selection of Demonstration Enterprise in Eco-Design
- V. UNDP Environmental and Social Screening Report
- VI. GEF POPs tracking tool



## Annex I National Institutional and Legal Framework

### Institutional structure

In China, in addition to governmental agencies, there are various key stakeholders who are involved in waste electrical and electronic equipment (WEEE) issues. The key stakeholders include civil society organizations, institutions, agencies, researchers, private sector, industrial groups, local and indigenous communities. The respective roles of key stakeholders and their areas of expertise are described below.

At the national level, six governmental agencies play the key roles in legislation, management, monitoring and communication of e-waste issues, namely, the National Development and Reform Committee (NDRC), Ministry of Environmental Protection (MEP), Ministry of Industry and Information Technology (MIIT), Ministry of Commerce (MOC), Ministry of Finance (MOF) and General Administration of Customs (GAC). NDRC is responsible for developing macroeconomic plans and pilot projects related to the socially-, economically- and environmentally-responsible treatment of e-waste. MEP is the agency with the greatest role in defining treatment standards, emissions and pollution controls, licensing for recyclers, transboundary shipment controls and monitoring related to e-waste. MIIT is most relevant to the electronics manufacturing industry, as it is responsible for encouraging cleaner production and eco-design of EEE. MOC is responsible for the establishment of e-waste collection channels. MOF is responsible for defining and managing subsidies on logistics, collection and recycling of e-waste. Customs is responsible for port control, checking containers, registration and reporting of shipments, and monitoring of illegal activities. Collectively, these institutions work to tackle the complex challenges of e-waste management.

In the industry, the responsible parties are producers, e-waste collection and treatment enterprises, associations (China Household Electrical Appliances Association; Executive Committee of Foreign Investment enterprises; China Resources Recycling Association; and China Electronics Energy Saving Technology Association). Consumers are important actors in the e-waste disposal chain because they choose the disposal channels and destinations for their household e-waste.

Then, there are the research institutions which comprise of Tsinghua University, Basel Convention Regional Center for the Asia and Pacific Region in China (BCRC Beijing), Chinese Academy of Science, China National Electric Apparatus Research Institute, China Household Electric Appliance Research Institute, E-waste Recycling Technology and Equipment Institute, Chinese Research Academy of Environmental Sciences, Engineering Centre for e-waste Resource Recycling in Jiangsu, other domestic research institutes, and Overseas researchers.

Finally, there are the NGOs whose activity and influence on illegal export of e-waste to China and the consequences of informal e-waste recycling in China, the livelihoods and working conditions of local workers were brought forward for global attention, as a result of the NGO's in-depth investigations and untiring efforts in bringing the issues forward.

### Legislation on e-waste

The Chinese government has issued a variety of environmental laws, regulations, standards, technical guidance and norms related to e-waste over the past decade.

Main environmental protection laws, regulations and rules related with POPs administration are as shown in Table 1.

Table 1 Main Environmental Protection Laws and Regulations on POPs Administration in China

Law/Regulation Name	Issuing Institution	Implementation Date	Applicable Scope
<i>Environmental Protection Law of the People's Republic of China</i>	NPC Standing Committee of PRC	Revised in 1989	Basic environmental protection law
<i>Law of the People's</i>	NPC Standing	Revised in 1995	Pollution prevention of surface

<i>Republic of China on Prevention and Control of Water Pollution</i>	Committee of PRC		water, e.g. river, lake, canal, channel and reservoir, etc. as well as groundwater
<i>Law of the People's Republic of China on the Prevention and Control of Atmospheric Pollution</i>	NPC Standing Committee of PRC	Revised in 2000	Prevent atmospheric pollution, protect and improve living environmental and ecological environment
<i>Law of the People's Republic of China on Prevention of Environmental Pollution Caused by Solid Waste</i>	NPC Standing Committee of PRC	1996	Prevention of environmental pollution caused by solid waste and hazardous waste
<i>Law of the People's Republic of China on Prevention and Control of Pollution From Environmental Noise</i>	NPC Standing Committee of PRC	1996	Preventing and controlling environmental noise pollution, protecting and improving the living environment, ensuring human health and promoting economic and social development.
<i>Law of the People's Republic of China on Conserving Energy</i>	NPC Standing Committee of PRC	1997	Promote energy conservation by all sectors of the society, increase the efficiency in the use of energy and its economic results, protect the environment, ensure national economic and social development, and meet the people's needs in everyday life.
<i>Marine Environment Protection Law of the People's Republic of China</i>	NPC Standing Committee of PRC	Revised in 1999	Protect marine environment as well as resources and prevent pollution and damage
<i>Regulations on the Administration of Construction Project Environmental Protection</i>	State Council of PRC	November 1998	Environmental administration of chemical industry and other construction projects
<i>Provisions on Environmental Administration of the First Import of Chemicals and the Import and Export of Toxic Chemicals</i>	State Environmental Protection Administration of China, etc.	May 1994	Import & export of toxic chemicals forbidden or strictly restricted by China
<i>Interim Provisions for the Administration of Environmental Protection regarding the Import of Waste Materials</i>	State Environmental Protection Administration of China, etc.	1996	Environmental supervision and administration regarding the import of waste materials
<i>Law of the People's Republic of China on the Promotion of Clean Production</i>	NPC Standing Committee of PRC	2002	Promote cleaner production, increase the efficiency of the utilization rate of resources, reduce and avoid the generation of pollutants, protect and improve environments, ensure the health of human beings and promote the sustainable development of the economy and society.

China has set up a series of national and local standards on environmental quality, pollutant discharge as well as safety of hazardous chemicals to control discharge of hazardous chemicals including POPs as well as other environmental pollutants. POPs control limits in various effective standards of China are as shown in Table 2.

Table 2 POPs Control Limits in Various Effective Standards of China

Standard Name and Number	POPs Control Limits
<i>Integrated Wastewater Discharge Standard</i> (GB8978-96)	Maximal permissible discharge concentration of 69 pollutants, of which, for chlorobenzene: 0.2mg/l (water Category I ); 0.4mg/l (water Category II ); 1.0mg/l (water Category III); sodium pentachlorophenol: 5.0mg/l (water Category I ); 8.0mg/l (water Category II ); 10mg/l (water Category III). No discharge concentration for other POPs substances.
<i>Integrated Emission Standard of Air Pollutants</i> (GB16297-1996)	Discharge thresholds for 33 air pollutants, of which, for chlorobenzene: 0.5mg/m <sup>3</sup> (existing pollution sources); 0.4mg/m <sup>3</sup> (new pollution source), but no discharge thresholds for other POPs substances.
<i>Water Quality Standard for Fisheries</i> (GB11607-89)	In water of fisheries, DDT≤0.001mg/l, no control standards for other POPs
<i>Sea Water Quality Standard</i> (GB3067-1997)	DDT≤0.00005mg/l(sea Category I ); DDT≤0.0001mg/l(sea Category II ~IV); no control standards for other POPs
<i>Environmental Quality Standard for Surface Water</i> (GHZB1-1999)	Standards for concentration of organics in three categories of water quality, of which BHC: 0.05mg/l; PCB: 8.0×10 <sup>-6</sup> mg/l; DDT: 0.001mg/l; PCP: 0.00028mg/l. No concentration standards for other POPs
<i>Environmental Quality Standard for Soils</i> (GB15618-95)	DDT: ≤0.05mg/kg(soil Category I ); ≤0.50mg/kg(soil Category II ); ≤1.0mg/kg(soil Category III); No standards for other POPs pollutants
<i>Quality Standard for Ground Water</i> (GB/T14848-1993)	DDT: not inspection(groundwater Category I); ≤0.005μg/l(Category II); ≤1.0μg/l(Category III, IV); >1.0μg/l(Category V), No control standards for other POPs substances
<i>Sanitary Standard for Drinking Water</i> (GB5749-85)	DDT: 1μg/l; No water quality standards for other POPs pollutants
<i>Pollution control standard for hazardous wastes incineration</i> (GB18484-2001)	Incinerator air pollutants emission limit value: dioxin≤0.5 TEQ ng/m <sup>3</sup> , No concentration standards for other POPs
<i>Pollution Control Standard of BHC and DDT in Food</i> (GB2763-81)	DDT: ≤0.2mg/kg(food provisions and tea); ≤0.1mg/kg(vegetable and fruits); ≤1mg/kg(fish and eggs); No standards for other POPs substances
<i>Hygienic Standard for Cosmetics</i> (GB7916-87)	Forbid to use 359 matters in cosmetics, including hexachlorobenzene, endrin and DDT, etc.
<i>Occupational Exposure Limit for Hazardous Agents in the Workplace</i> (GBZ2-2002)	DDT: 0.6mg/m <sup>3</sup> for short term exposure limit (time weighted mean value), no contact limits for other POPs
<i>Hygienic Standards for the Design of Industrial Enterprises</i> (TJ36-79)	Permissible concentration of hazardous substances in air of workplace: DDT 0.3mg/m <sup>3</sup> . No permissible concentration for other POPs substances.
<i>Control standard on polychlorinated biphenyls for waste</i> (GB13015-91)	PCB: 50 mg/kg. No permissible concentration for other POPs substances.

Since 1986, the country has also issued a series of safety standards and technical specifications for classification, storage, transport, package and labels, etc. of hazardous chemicals (see Table 3).

Table 3 Main National Standards Involved in Safety of Hazardous Chemicals (including POPs)

Standard Name and Number	Issuing Institution	Applicable Scope
<i>Classification and Labels of Dangerous Chemical Substances Commonly Used</i> (GB 57-92)	China State Bureau of Quality and Technical Supervision	Classification of danger and packaging label of dangerous substances
<i>General Rules for Preparation of Precautionary Label for Dangerous Industrial Chemicals</i> (GB/T 15258-94)	China State Bureau of Quality and Technical Supervision	Contents, format, print and application of safety label
<i>List of Dangerous Goods</i> (GB 12268-90)	China State Bureau of Quality and Technical Supervision	Name and No. of dangerous chemical substances
<i>Classification of Health Hazard Levels from Occupational Exposure to Toxic Substances</i> (GB 5044-85)	China State Bureau of Quality and Technical Supervision	Classification of health hazard levels from occupational exposure to toxic chemical substances
<i>The Principle of Classification of Transport Packaging Groups of Dangerous Goods</i> (GB/T 15089-94)	China State Bureau of Quality and Technical Supervision	Class and classification of packages of dangerous goods
<i>Labels for Packages of Dangerous Goods</i> (GB 190-90)	China State Bureau of Quality and Technical Supervision	Label type, name, size and color, etc. of packages of dangerous goods
<i>Rule for Storage of Chemical Dangers</i> (GB15603-1995)	China State Bureau of Quality and Technical Supervision	Storage method, warehousing and warehouse-out management as well as waste disposal
<i>General Specifications for Transport Packages of Dangerous Goods</i> (GB12463-90)	China State Bureau of Quality and Technical Supervision	Technical requirement for packages of dangerous goods in transport
<i>Classification and Labels of Dangerous Chemical Substances Commonly Used</i> (GB13690-92)	China State Bureau of Quality and Technical Supervision	Classification and labels of dangerous chemical substances commonly used
<i>Occupational Exposure Limit for Hazardous Agents in the Workplace</i> (GBZ 2-2002)	Ministry of Health of PRC	Allowable concentration of hazardous agents, e.g. DDT and chlorobenzene, etc. in the air of workplace
<i>Standard for Safety Application of Pesticides</i> (GB4285-89)	State Environmental Protection Administration of China	Safety application of pesticides used for pest control of crops
<i>Guideline for Safety Application of Pesticide</i> (1- 5) (GB8321.1-5,87-97)	China State Bureau of Quality and Technical Supervision	Standard for safety application of pesticide
<i>General Rules for Preparation of Chemical Safety Data Sheet</i> (GB16483-2000)	China State Bureau of Quality and Technical Supervision	Format and content requirement for preparation of chemical safety data sheet
<i>Guideline on Labels for Pesticide Products</i> (NY608-2002)	Ministry of Agriculture of PRC	Contents and requirements of labels on pesticide products

In order to protect human health and ecological environment and administrate safety of hazardous chemicals, in line with the guidelines of “Safety First, Prevention First”, China’s government has also

formulated a series of special laws, regulations and department rules aiming to pesticides and hazardous chemicals specially. Special laws and regulations related with hazardous chemicals, pesticides and POPs administration in China are as shown in Table 4.

Table 4 Special Administrative Laws and Regulations on WEEE in China

Law/Regulation Name	Issuing Institutions	Implementation Date	Applicable Scope
<i>The Circular on Strengthening Environmental Management of Waste Electrical and Electronic Equipment</i>	State Environmental Protection Administration	2003	Encourage eco-design and cleaner production of e-product. Ban on the environmental harmful technology for e-waste disposal
<i>Technical Policy on Pollution Prevention of Waste Batteries</i>	State Environmental Protection Administration	2003	Stipulate guidance of production, collection, transport, storage, recycling and disposal of battery. Prohibit production and sale oxidation mercury batteries. Encourage environmentally friendly technology for battery production
<i>Law of People's Republic of China on Prevention of Environmental Pollution caused by Solid Waste (2004 revision)</i>	NPC Standing Committee of PRC	1 April 2005	Regulations on pollution prevention and control in WEEE recycling and treatment
<i>Technical Policy on Pollution Prevention of Discarded Appliances and Electronic Products</i>	State Environmental Protection Administration, Ministry of Science and Technology, Ministry of Industry and Information Technology, Ministry of Commerce	2006	Encourage the establishment of multivariate recycling system of e-waste. Set forth the "3R" principle and "polluter pays" principle. Stipulate general rules of eco-design and information disclosure of toxic substances contained in e-products
<i>Measures for Administration of the Pollution Control of Electronic Information Products</i>	Ministry of Industry and Information Technology	1 March 2007	Restrict the use of hazardous substance (including POPs) in the design and production of electronic information products (corresponding to the EU RoHS Directive)
<i>Renewable Resources Recycling Management</i>	Ministry of Commerce	1 May 2007	Provisions on management and supervision of renewable resources, including waste electrical and electronic products. Encourage environmentally friendly processing of renewable resources recycling and relevant technological innovation. Qualified certification for recycling enterprises. Establish modern renewable resources recycling system
<i>Administrative Measures on the Prevention and Control of</i>	Ministry of Environmental	1 February 2008	Provision on the supervision and management responsibilities by

<i>Environmental Pollution by Waste Electric and Electronic Products (SEPA, No. 40)</i>	Protection		relevant parties on the dismantle, use and disposal of waste electric and electronic products
<i>Circular Economy Promotion Law of the PRC</i>	NPC Standing Committee of PRC	1 January 2009	Principle requirements on the development of waste electrical and electronic recovery and recycling industry
<i>The catalogue of disposal of Waste Electrical and Electronic Equipment (The first batch),</i>	Ministry of Environmental Protection	10 September 2010	Establishment of WEEE treatment catalogue
<i>Notice on the Formation of the Development Plan of the Treatment and Disposal of Waste Electrical and Electronic Products</i>	Ministry of Environmental Protection, NDRC, MIIT, MOC	10 September 2010	Guide the provinces and municipalities under the scientific and reasonable planning and development of WEEE treatment industry
<i>The Regulations on the Administration of the Recycling and Treatment and Disposal of Waste Electrical and Electronic Products (No. 551)</i>	State Council of PRC	1 January 2011	Provisions targeting the recycling and related activities of waste electrical and electronic products, not to engage in trading of second hand products. Establishment of WEEE treatment catalogue, certification, funds, and development plans
<i>Administrative Measures on Qualification License of the Treatment and disposal of Waste Electrical and Electronic Products</i>	Ministry of Environmental Protection	1 January 2011	Standardize the WEEE products processing qualification licensing work
<i>Administrative Measures on Collection and Use for Treatment Fund of Waste Electrical and Electronic Equipment</i>	MOF, MEP, NDRC, MIIT	1 July 2012	Standardize and promote the management of WEEE products treatment fund, including collection, use and range.

The main national standards covering safety of WEEE are outlined in Table 5 below.

Table 5 Main National Standards involved in safety of WEEE

<b>Standard Name and Number</b>	<b>Issuing Institution</b>	<b>Applicable Scope</b>
<i>Code for design of the waste electrical and electronic equipment processing engineering (GB 50678-2011)</i>	China State Bureau of Quality and Technical Supervision	This specification applies to the waste electrical and electronic equipment processing projects of construction, reconstruction and expansion engineering design.
<i>General technical specifications of recovering for waste electrical and electronic equipment (GBT 23685-2009)</i>	China State Bureau of Quality and Technical Supervision	Applicable to waste electric and electronic equipment in the collection, transport, storage, dismantling and deal with the pollution control in the process of management.
<i>Technical specifications of pollution control for processing waste electrical and electronic equipment</i>	Ministry of Environmental Protection	Applicable to waste electric and electronic equipment in the collection, transport, storage, dismantling and deal with the pollution control in the process of

<i>(HJ527-2010)</i>		management.
<i>Standard of noise at boundary of industrial enterprises</i>	Ministry of Environmental Protection	This standard applies to the industrial noise emission management, evaluation and control.

## **Annex II Evaluation and Selection of Demonstration Locations**

To ensure appropriate and smooth implementation of the project activities, in particular, the demonstration activities, to successfully achieve the project results and project objectives, during project formulation and the Project Preparation Grant (PPG) stage, the Executing Agency, Foreign Economic Cooperation Office of the Ministry of Environmental Protection (FECO/MEP), has undertaken extensive research, investigations and consultations with key stakeholders, interacted with provinces, municipalities and cities with significant volume of WEEE recorded, and charged the provincial and local level Environmental Protection Bureaus/Departments to carefully investigate, identify, review and analyze localities and enterprises as suitable and capable candidates to participate in demonstration activities. Potential demonstration localities were first identified and evaluated for selection. Simultaneously, the provinces/municipalities identified as potentially selected candidate demonstration locations interacted and cooperated with FECO/MEP to begin the selection of potential candidate enterprises and potential collection and processing technologies for demonstration.

### **I. Criteria for Selection of Demonstration Province**

As part of the Project Preparation Grant (PPG) activities, research was carried to select demonstration sites by analyzing the principle and criteria of selection for the proposed locations and candidate enterprises to carry out recycling and disposal of WEEE and demonstration of processing technologies, as well as criteria of selection for the demonstration locations of the enterprises that carry out recycling and disposal of WEEE. The Project will select three types of typical provinces and cities: one municipality directly under the central government, one from the eastern coastal provinces and one from the midwestern provinces that best represent the current WEEE processing industry in the country.

Taking into consideration of project objectives, project cycle, scope of implementation and other considerations, the main factors to select the demonstration provinces include the following aspects:

- a. Ability to manage a significant volume of WEEE generated and handle the enormous demand for treatment and processing
- b. Existence of recovery efficiency and a fundamental effective recycling network
- c. Contain enterprises that possess typical WEEE dismantling and processing technology and capacity to conduct environmentally sound disposal of Waste Printed Circuit Board
- d. Capacity to undertake high quality WEEE monitoring and supervision activities
- e. Committed to provide co-financing and possess international cooperation management experience

### **II. Database**

At present, distribution data on the quantity of e-waste disposal needs further improvement. The project concentrates on the data from the printed circuit board industry which generates the highest concentration of POPs. The 2011 national level data on Waste Printed Circuit Boards (WPCBs) disposal and the number of enterprises which received subsidies from the EPR Treatment Fund in China is therefore used as reference to select the demonstration locations.

a) Table 1 below shows the situation of WPCBs permitted enterprises and the treatment technologies in 2011. Through the "Hazardous Waste Business Permit" notice issued by the provincial Environmental Protection Bureau/Department, it shows that among the more developed eastern coastal provinces and cities, Jiangsu Province ranked first and has the most (more than 10) qualified waste printed circuit boards processing enterprises. Hubei Province is ranked first among the midwest provinces and it has the higher quantity of WPCBs disposal by one permitted enterprise, even though the quantity is less than the provinces in the eastern coastal region. The numbers highlight the demand for WPCB processing and the higher management capacity needed for the WEEE processing enterprises. Furthermore, the current disposal technologies utilized in these three



provinces/municipality cover the major dismantling and processing technologies in the country, which will positively contribute to the technology demonstration activities.

Table 1 The situation of WPCBs permitted enterprises and treatment technologies in 2011

Location	Number of Enterprises	Treatment Capacity (ton)	Actual treatment (ton)	Treatment Technology		
				Physics crushing	Wet treatment	Incinerator
<b>Jiangsu</b>	<b>50</b>	<b>195,300</b>	<b>57,868</b>	<b>X</b>		<b>X</b>
<b>Tianjin</b>	<b>1</b>	<b>23,600</b>	<b>23,600</b>		<b>X</b>	
Zhejiang	7	39,800	7,819	X		
Shandong	3	17,000	6,660.95	X		
Beijing	2	3,500	2,733.61	X		
<b>Hubei</b>	<b>1</b>	<b>20,000</b>	<b>1,280</b>		<b>X</b>	
Guangdong	2	4,000	1,166		X	X
Shanghai	4	17,200	1,043	X		X
Hunan	1	10,000	997.69	X		
Hebei	2	3,000	489.63	X		
Jiangxi	4	6,300	305	X	X	
Sichuan	2	4,680	295.55	X		
Liaoning	1	1,500	105			X
Shanxi	1	15,000	0	X		

\*Data from MEP/EMSW

b) In recent years, survey of national WEEE dismantling and recycling enterprises has been conducted and government support was extended. The Table 2 below listed the name of enterprises that received subsidies from the EPR Treatment Fund as of July 2012, in accordance with the Notice “Levy, Administration and Management of Waste Electrical and Electronic Products Treatment Fund” issued jointly by the Ministry of Finance, Ministry of Environmental Protection, National Development and Reform Commission, Ministry of Industry and Information Technology, General Administration of Customs, and the State Administration of Taxation. Table 2 reflects the extent and results of WEEE dismantling and recycling efforts in various provinces and cities nationwide. Tianjin Municipality, Jiangsu and Hubei Provinces own the most number of enterprises among the eastern coastal provinces and the central and western provinces. That means the WEEE recycling network construction in the three provinces and cities have foundation in recycling, dismantling, disposal, and infrastructure and capacity for EPR Treatment Fund management,

Table 2 Name of Enterprises that received subsidies from the EPR Treatment Fund in China

Number	Location	Name of Enterprise
1	Beijing	Beijing Huaxing Green Spring Environmental Co. Ltd.

2	<b>Tianjin</b>	TCL Aobo (Tianjin) Environmental Protection Development Co. Ltd.
3		Tianjin Dowa Green Angle Recycling Resources Co. Ltd.
4		Taiding (Tianjin) Environment Technology Co. Ltd.
5		Tianjin Hechang Environment Technology Co. Ltd.
6	<b>Shanxi</b>	Yangquan Tianyuan WEEE Recycling Co. Ltd.
7		Linfen Yongjun Recycling Resources Co. Ltd.
8		Hongyang Seagull WEEE Recycling Co. Ltd.
9	<b>Jilin</b>	Jilin Sanhe WEEE Recycling Co. Ltd.
10		Jilin Jinzai WEEE Recycling Co. Ltd
11	<b>Heilongjiang</b>	Heilongjiang China Re3cycling Resources Development Co. Ltd.
12	<b>Shanghai</b>	Shanghai Xinjinqiao Environmental Protection Co. Ltd.
13		Weicheung Environmental Protection Science and Technology Development (Shanghai) Co. Ltd.
14		Senlan Environmental Protection (Shanghai) Co. Ltd
15		Jinguang Recycling Resource Co. Ltd.
16	<b>Liaoning</b>	Liaoning Muchang International Environmental Protection Industry Group
17	<b>Shandong</b>	Shandong Zhonglv Eco-Recycle Co. Ltd.
18		Xinguang Lvhuang Recycling Resource Co. Ltd.
19		Qingdao New World Ecological Cycle Technology Co. Ltd.
20		Yantai Zhongqi Environmental Technologies Co. Ltd.
21	<b>Jiangsu</b>	Nanjing Kai Yan Electronic Co. Ltd.
22		Suzhou Dowa Recycling Resources Co. Ltd.
23		Jiangsu Subei Old Car Home Appliance Disassembling Recycling Co. Ltd.
24		Wei Cheung Environmental Protection Science and Technology Development (Suzhou) Co. Ltd.
25		Yangzhou Ningda Noble Metal Cp. Ltd.
26		Nantong Selot Environment and Recycling Co. Ltd.
27		Changzhou Xiangyu Recycling Resources Co. Ltd.
28		Nanjing Huanwu Recycling Resource Technology Co. Ltd.
29	<b>Zhejiang</b>	Zhejiang Yuhuan Recycling Resources Technology Co. Ltd.

30		Zhejiang Shengtang Environment and Recycling Co. Ltd.
31		Zhejiang Blue Sky WEEE Recycling Co. Ltd.
32		Taizhou Dafengye Noble Metal Cp. Ltd.
33	Fujian	Xiamen Oasis Environmental Protection Industry Co. Ltd.
34		Ujian Quantong Resource Recycling Industrial Co. Ltd.
35	Jiangxi	Jiangxi Green Eco-Manufacturer Co. Ltd.
36		Jiangxi Dowa Recycling Resource Co. Ltd.
37		Jiangxi China Recycling Resource Development Co. Ltd.
38		Ganzhou Dragon Recycling Resource Co. Ltd.
39	Henan	Luoyang China Recycling Resource Development Co. Ltd
40	Hubei	Jingmen Green Eco-Manufacturer Co. Ltd.
41		Hubei Jinke Electric Appliance Co. Ltd.
42		Hubei Xinfeng Waste Household Appliances Recycling Co. Ltd.
43		Wuhan Bowang Xingyuan Group Co. Ltd.
44		Daye Nonferrous Boyuan Environmental Protection Co. Ltd
45	Hunan	Hunan Green Recycling Resource Co. Ltd
46		Hunan Vary Tech Co. Ltd.
47		Hunan Tongli WEEE Recycling Resource Co. Ltd
48		Zhuzhou Kaitian Environmental Protection Tech Co. Ltd.
49	Guangdong	Foshan Shunde Xinhuanbao Recycling Resource Co. Ltd.
50		Guangdong Yingja Environmental Protection Industry Co. Ltd.
52		Huizhou Dingchen Industry Development Co. Ltd.
52		Qingyuan Dongjiang Environmental Protection Tech Co. Ltd.
53	Guangxi	Guangxi Guiwu Resources Circulation Industry Co. Ltd.
54	Sichuan	Loyalty Electronic Wastes Resource Recycling Co. Ltd.
55		Sichuan Changhong Electric Appliance Co. Ltd.
56		Sichuan China Recycling Resource Development Co. Ltd.
57		Shifang Daaiganen Ecotech Co. Ltd
58		Sichuan Zhongming Environmental Protection Co. Ltd.

59	Chongqing	Chongqing Zhongtian WEEE Recycling Co. Ltd
60		Chongqing Zhongjia Environmental Protection Co. Ltd.
61	Guizhou	Zunyi Lvhuan WEEE Recycling Co. Ltd.
62		Guiyang Material Recycling Resource Co. Ltd.
63	Gansu	Lanzhou Hongyi WEEE Recycling Co. Ltd
64	Xinjiang	Xinjiang Jinta Colored-Metal Co. Ltd.

\* Data from Ministry of Environmental Protection website

c) Although many provinces meet the criteria for demonstration site, the underdeveloped economic situation is a barrier for them to provide financial support for the project. Poor technical capability will be a difficulty for them to implement the project. To ensure proper evaluation and selection, some additional criteria were set: the strength of support provided by the local government; the history and management experience in international cooperation; and the willingness to participate and properly manage the project activities.

### III. Situation of the proposed selection for WEEE demonstration locations

Based on the comprehensive criteria above, Tianjin Municipality, Jiangsu and Hubei Province were preliminarily selected as the key demonstration locations. The situations of these three proposed WEEE demonstration locations are described below.

#### a) Jiangsu Province

*Electronic information industry is highly developed, with large quantity of WEEE generated.* Jiangsu is located in the eastern coastal area, is economically more developed, as is its electronic information industry. Jiangsu Province is the country's largest production base of circuit board, with largest production in the City of Suzhou.

*E-waste sources can be ensured.* Jiangsu Province has an established recycling network infrastructure. The “old for new” pilot program implemented from June 2009 to December 2011 has fixed locations for accepting WEEE for dismantling, for the eastern region it was mainly concentrated in Jiangsu, Shanghai, Shandong, Zhejiang (> 500 million units). Up to the end of November 2010, the five designated enterprises received 6.019 million units of used home appliances, completed dismantling of 5.9 million units, reaching dismantling rate of 98%.

*The WEEE Development Plan of Jiangsu Province includes plan to establish a regional recycling network with designated processing enterprises.* Three enterprises were selected among directory of existing dynamic WEEE processing enterprises as the backbone establishments to build up telephone exchange, online exchange, and centralized collection, transportation, and home collection services.

*Enterprises with strong WEEE processing technology and experience.* Enterprise such as Suzhou Weixiang Electronic Technology Co., Ltd. was designated one of the business units of the Jiangsu WEEE Development Plan. Through its own independent research and cooperation with other research institutes, Weixiang developed and mastered the e-waste dismantling and classification of key technologies, hydrometallurgical technology on printed circuit boards and other key disposal technologies, to achieve innovative breakthrough in e-waste utilization. Weixiang has now reached annual WEEE processing of 50,000 tons, including capacity to dismantle 1.6 million units of waste household appliances.

Jiangsu Province's WEEE Development Plan also includes carrying out downstream environmentally sound WEEE disposal demonstration projects. It aims to speed up the introduction, incorporation and adaptation of appropriate international and domestic WEEE utilization, best available treatment technology and best management practices.

b) Tianjin City

Tianjin is one of the four autonomous municipalities, with rapid economic growth and fast growth in WEEE generation.

*Fast WEEE growth ensures WEEE generation.* In the “old or new” pilot program implemented June 2009 to December 2011, Beijing, Tianjin in the northern regions (> 1 million units) are designated focus areas for WEEE recycling and dismantling of used home appliances.

*Using the establishment of circular economy industrial park model to promote industrial development.* Based on the City's "Opinions on Accelerating the Circular Economy Industrial Zone Development of Tianjin Ziya Industrial Park" (Tianjin Policy Issue No. 089 [2008]) which includes the requirements to "promoting centralized location for resources reutilization industry" to achieve the orderly and large scale development of resources reutilization industry, to encourage the City's WEEE processing enterprises to gradually relocate to the Ziya Circular Economy Industrial Zone.

*The Tianjin WEEE Development Plan cultivates development of WEEE recycling network,* promoting collective sorting, processing and recycling capabilities, and forming a comprehensive hub for leading pilot demonstration enterprises.

*The Tianjin WEEE Development Plan includes development plan for WEEE processing enterprises* that Includes TCL Aobo's renewable resource recycling system establishment project, Tianjin City Taiding's WEEE sorting and processing project, Tianjin City Tonghe Green Angel Dingfeng Renewable Resources Co. Ltd.'s WEEE recycling and processing project 他.

c) Hubei Province

Wuhan is the largest city in central China and an important consumer of electrical and electronic products. WEEE recycling and processing enterprises are scattered in Wuhan with selective collection, a chaotic business model and difficult to control and manage issues. According to an announcement by the Hubei Provincial Environmental Protection Bureau in 2009, the first WEEE processing center in central China would be established and opened in Wuhan. Upon completion, the nine cities within Wuhan would be centrally sorted, dismantled and processed. GEM from Shenzhen High-Tech Co. Ltd. planned an initial investment of RMB 100 million to set up an e-waste processing center covering an area of about 150 acres with the entire processing equipment imported from Germany. The center was projected to handle 10,000 to 20,000 tons of e-waste. By then, the public can deposit WEEE directly into the recycle bin, large home appliances and other large recycling items can be sent to the recycling supermarkets. The WEEE will then be sent to processing center for uniformed classification, dismantling and processing.

According to some references materials, public awareness on e-waste pollution and harms to human health in Wuhan is fairly strong, and the public is aware of the need to address the environmental issues with scientific approaches and techniques, and that all parties in the society should bear corresponding responsibilities. However, the understanding of the public on scientific approaches and how to quantify standard and specifications is relatively vague, and will need strong educating and advocacy efforts.

#### **IV. Selection Results**

Following the selection procedures and applying the selection criteria, the project selected Tianjin City, Jiangsu Province and Hubei Province, three locations that are more representative of the provincial and municipal city level. The demonstration locations do not only include top provincial level with large scale and comprehensive long range WEEE developing planning, but also a top city level with smaller scale planning. The demonstration locations not only cover the more developed eastern region where more advanced technologies and transformation can be offered and adopted, but also the central and western regions with newly established enterprises where new technologies and equipment can be introduced to speed up their further development.

## **Annex III Evaluation and Selection of Demonstration Enterprises and Processing Technologies**

### **I. Selection of Demonstration Enterprises**

To ensure appropriate and smooth implementation of the project activities, in particular, the demonstration activities, to successfully achieve the project results and project objectives, during project formulation and the Project Preparation Grant (PPG) stage, the Executing Agency, Foreign Economic Cooperation Office of the Ministry of Environmental Protection (FECO/MEP), has undertaken extensive research, investigations and consultations with key stakeholders, interacted with provinces, municipalities and cities with significant volume of WEEE recorded, and charged the provincial and local level Environmental Protection Bureaus/Departments to carefully investigate, identify, review and analyze localities and enterprises as suitable and capable candidates to participate in demonstration activities. Potential demonstration localities were first identified and evaluated for selection. Simultaneously, the provinces/municipalities identified as potentially selected candidate demonstration locations interacted and cooperated with FECO/MEWP to begin the selection of potential candidate enterprises and potential collection and processing technologies for demonstration.

#### **Principles of Selecting Demonstration Enterprises in Tianjin City**

Tianjin City is one of China's four municipalities. Tianjin generates large amount of WEEE that demands large and special processing needs. Tianjin City has four existing enterprises qualified to process WEEE, namely, TCL Aobo (Tianjin) Environmental Protection Co. Ltd., Taiding (Tianjin) Environment Technology Co. Ltd., Tianjin Dowu Green Angel Recycling Resources Co. Ltd. and Tianjin Hechang Environment Technology Co. Ltd. These four enterprises were registered in the List of WEEE processing enterprise of the EPR Treatment Fund. Currently, Tianjin has not yet implemented a permit system of market access for WEEE recycling enterprises, and intends to use three years to cultivate a network of leading recycling enterprises, with sorting and processing capabilities of WEEE recycling and comprehensive processing to undergo demonstration activities. It is expected that in five years, a specialized and skilled WEEE recycling system will be established and functioning in Tianjin City with these demonstration enterprises and from different economic sectors as lead partners.

Tianjin City Environmental Protection Bureau, as the municipality selected as one of the demonstration locations, and the local government wishes to participate in the WEEE recycling and disposal technology demonstration and promotion activities. To ensure smooth implementation of the demonstration activities, it is necessary to select among the four WEEE enterprises one most representative and suitable enterprise to participate in the demonstration activities. To achieve this objective, the following principles were used to select the demonstration enterprise:

- possess an established infrastructure of a recycling network and capable of innovation ;
- has the capacity to process a large volume of WEEE recycling;
- possess stable processing capacity of waste printed circuit boards (including electronic components) of not less than 3,000 tons per year);
- has established treatment facilities for waste printed circuit boards or the capacity and capital to construct such facilities;
- has the capacity/capital to support the demonstration activities with required co-financing funding;
- willing to cooperate with the project team to undertake research and development on the generation, control and emission of POPs/PTS during the life cycle of electrical and electronic products.

Applying the above selection principles and after careful and extensive review and analysis, it is noted that both Tianjin Dowu Green Angel Recycling Resources Co. Ltd. and Tianjin Hechang Environment Technology Co. Ltd. do not have the processing facility nor the ability to construct such facility to process waste printed circuit board. In 2012, under the implementation of EPR Treatment Fund system, TCL Aobo (Tianjin) Environmental Protection Co. Ltd. successfully collected 30,000 units of

WEEE, accounting for 55.27% of the total collection in Tianjin City, is enterprise with the largest volume of WEEE collection. Through publicity conducted by the Tianjin City EPB, and with a thorough understanding of the enterprise, TCL (Aobo) (Tianjin) Environmental Protection Co. Ltd. is also willing to participate in the demonstration activities and has committed to support the project with co-financing resources. Based on these conditions, TCL (Aobo) (Tianjin) Environmental Protection Co. Ltd. was selected as the most qualified and suitable enterprise to participate as the demonstration enterprise in Tianjin City.

### **Principles of Selecting Demonstration Enterprises in Hubei Province**

Hubei Province has 5 WEEE processing enterprises qualified to receive subsidies under the EPR Treatment Fund, namely Jingmen Green Eco-Manufacturing Co. Ltd., Hubei Jinke Electric Appliance Co. Ltd., Hubei Xinfeng Waste Household Appliances Recycling Co. Ltd., Wuhan Bowang Xingyuan Group Co. Ltd., Daye Nonferrous Boyuan Environmental Protection Co. Ltd. Two enterprises are under construction. Among them, two enterprises have the qualification to process waste printed circuit board, namely Jingmen Green Eco-Manufacturing Co. Ltd. and Wuhan Bowang Xingyuan Group Co. Ltd. Hubei Province will undertake demonstration activities in community recycling, dismantling of WEEE, printed circuit boards wet processing and thermometallurgical processing. The selection of demonstration enterprises in Hubei Province has been conducted by applying selection principles, after careful and extensive review and analysis.

#### **2. Selection of demonstration enterprise in community recycling**

From the recycling capacity of the five WEEE processing enterprises, the top 3 enterprises with the largest recycling volume during July – December 2012 are: Jingmen Green Eco-Manufacturing Co. Ltd., Hubei Xinfeng Waste Household Appliances Recycling Co. Ltd., and Wuhan Bowang Xingyuan Group Co. Ltd. Among them, Jingmen Green Eco-Manufacturing Co. Ltd. was awarded as National Recycling Economy Distinguished Units, the National Recycling Economy Education Demonstration Base, and the National "Urban Mining" Demonstration Base. The awards were bestowed because, first, the enterprise initiated a waste battery recycling system, a WEEE recycling system, a 3R cycle consumption community supermarket chains, a cooperation between public institutions and large enterprise group to establish waste product recycling and renewable resource recycling systems. Compared with the other two enterprises, Jingmen Green Eco-Manufacturing Co. Ltd. has better capacity and more strength to meet project requirements.

#### **3. Selection of enterprises for dismantling demonstration activities**

One of the important basic principles of demonstration enterprises in WEEE dismantling must possess some advanced processing technology. Jingmen Green Eco-Manufacturing Co. Ltd. is a leading domestic dismantling enterprise with advanced level of technology and equipment. As the equipment was imported with larger investment costs than the purchase of domestic equipment, it operates with higher processing costs. The other four enterprises use domestic equipment, with low investment costs, and their processing costs are lower. Due to consideration of the project cycle, the two enterprises under construction are not considered.

#### **4. Selection of demonstration enterprises for printed circuit board wet processing**

Currently, only two enterprises in Hubei Province are qualified to process printed circuit board disposal, namely Jingmen Green Eco-Manufacturing Co. Ltd. and Wuhan Bowang Xingyuan Group Co. Ltd. Among them, the Wuhan Bowang Xingyuan Group Co. Ltd. has been issued hazardous waste operating license by Hubei Environmental Protection Department to handle hazardous waste disposal after processing the printed circuit board. The enterprises intends to build a processing line that will use the chloride-free hydrometallurgical technologies for physical crushing, sorting metal particles for further depth treatment after processing, to extract the precious metals, thus exercise truly resource processing of waste printed circuit board, with no pollutants emissions. Jingmen Green Eco-Manufacturing Co. Ltd. is required to entrust qualified enterprises, to reduce the risk of leakage during transport of pollutants.

## 5. Selection of demonstration enterprises for thermometallurgical processing

Daye Nonferrous Boyuan Environmental Protection Co. Ltd. is a large state-owned copper smelting enterprise, and is also the only enterprise in Hubei Province that has a rare, precious metals comprehensive recycling advance technology. The demonstration activities can cooperate with the enterprise's 200,000 tons of scrap copper recycling programs to achieve environmentally sound disposal of WEEE, to promote the demonstration of WEEE (printed circuit board) processing and disposal.

### **Principles of Selecting Demonstration Enterprises in Jiangsu Province**

There are currently eight WEEE treatment and processing enterprises in Jiangsu Province that have been qualified to apply for subsidies under the EPR Treatment Fund, namely: Changzhou Xiangyu Recycling Resource Technology Co. Ltd., Nanjing Kai Yan Electronics Co. Ltd., Suzhou Dowa Recycling Resource Co. Ltd., Jiangsu Subei Old Car Home Appliance Dismantling Recycling Co. Ltd., Wei Cheung Environmental Protection Science and Technology Development (Suzhou) Co. Ltd., Yangzhou Ningda Precious Metal Co. Ltd., Nantong Selot Environmental and Recycling Co. Ltd., and Nanjing Huanwu Recycling Resource Technology Co. Ltd.. Taking into consideration of the project cycle and its influence on demonstration activities, the selection of the demonstration enterprises is carried out after applying the selection principles indicated below, and through careful and extensive review and analysis of the 8 enterprises in the province.

1. The adaptability of the demonstration enterprises and the project cycle, with strong research capabilities

Demonstration activities involve dismantling, treatment and disposal activities of printed circuit board technology demonstration and other activities, the enterprises will need to have a certain ability to undertake research. A comprehensive comparison of the eight WEEE processing enterprises in the province, and from the viewpoint of the factory's hardware conditions, the dismantling process technology, staffing and technological innovation, at present, Changzhou Xiangyu Recycling Resource Co. Ltd. has concluded research cooperation agreements with Nanjing University, Sichuan University and other famous universities, and has gathered and attracted a number of outstanding technical experts, built a Resource Recycling Research Institute with the Jiangsu Polytechnic Institute, has extensive scientific and technological cooperation with Germany, Japan, United States and Taiwan and other countries and regions. It has established a provincial level Engineering Center, 2 key laboratories, a municipal level Engineering Technology Research Center, and has the support of a strong technology research team, as the nation's lead entity to undertake research in WEEE dismantling and processing technologies, will have ample time to achieve the research objectives within the timeframe of the project cycle. The other 7 processing enterprises do not have the "production, learning and research" capabilities, and no supporting research laboratories.

2. The capacity to promote province-wide emission reduction technology of POPs/PTS in WEEE

Southern Jiangsu Province, including the five cities of Nanjing, Suzhou, Wuxi, Changzhou, Zhenjiang are economically developed, to select enterprises in the southern region of Jiangsu Province with strong economic strength, can play a strong role in promoting technology promotion. There are five WEEE dismantling and processing enterprises located in the southern region of the province that can easily achieve project objectives. Changzhou Xiangyu Recycling Resource Co. Ltd. is located in Changzhou, situated in the middle of Shanghai-Nanjing, in the center of Changzhou Wujin District, cooperates with the Changzhou municipal government and several institutions of higher education, has organized many events for students to participate in environmental advocacy promotion, penetrates various neighborhoods covering southern region Jiangsu Province, promotes WEEE recycling, dismantling and disposal through on-site, Internet, and other means of publicity. It has the ability to establish standardized and refined WEEE dismantling and processing program, and has built up knowledge, experience and research in refined printed circuit board dismantling standards, tin annealing processing standards, resin powder recycling standards, and POPs testing and analysis standards. It gradually promotes provincial wide POPs/PTS emissions reduction technologies. The



remaining four WEEE processing enterprises in the southern region of the province are weak in undertaking and promoting the demonstration activities as compared to the selected enterprise.

### 3. Capacity to demonstrate the recycling of WEEE

From the eight WEEE enterprises in the province, the capacity in WEEE recycling for the period of January to November 2013, the top four enterprises with the largest recycling volume are: Jiangsu Subei Old Car Home Appliance Dismantling Recycling Co. Ltd. (567,900 units), Nanjing Kai Yan Electronics Co. Ltd. (504,200 units), Changzhou Xiangyu Recycling Resource Co. Ltd. (485,400 units), Wei Cheung Environmental Protection Science and Technology Development (Suzhou) Co. Ltd. (450,600 units). Changzhou Xiangyu Recycling Resource Co. Ltd. was ranked third, with recycling volume closed to the first two enterprises, and has the ability to meet project requirements.

### 4. Capacity to participate actively in the various stage of project preparation and implementation

Jiangsu Province has undertaken comprehensive investigation and research at the early stage of project preparation, and has consulted with the eight WEEE processing enterprises in the province their willingness to participate in the project. As compared with the other seven enterprises, Changzhou Xiangyu Recycling Resource Co. Ltd. showed strong motivation and commitment during the consultation period. The enterprise is also actively involved in various meetings relating to the project and the preparatory work, and has undertaken preliminary investigation and already undertaken retrofit and upgraded parts of its dismantling and processing equipment, completed the preparatory work and established work plan to fully prepare for the implementation of the demonstration activities.

In summary, after applying the selection principles, Jiangsu Province selected Changzhou Xiangyu Recycling Resource Co. Ltd. as the demonstration enterprise to participate in the demonstration activities.

## II. Selection of Demonstration Technologies

The goal of the project is to maximize the reduction of the release of the global environmental concerned pollutants POPs/PTS during the life cycle of the electrical and electronic products based on China's WEEE management system and the concept of Extended Producer Responsibility (EPR) to protect local and global ecological environment and human health.

In order to effectively implement the project, demonstration activities are needed to achieve this goal. FECO has engaged relevant and experienced national experts to provide consulting services for the project. This report is for the processing of WEEE

### Processing technology and resource reutilization of waste printed circuit board

The waste printed circuit board indicated here included discarded circuit boards containing various electronic components and other components, but not contain batteries, mercury switches, polychlorinated biphenyls (PCBs) series capacitors (these should also be taken out in advance). Such products contain complex material composition, waste printed circuit boards (board without components), parts, components and a variety of material combined together, post enormous challenges for treatment, regardless it is for renewable resources utilization or pollution control technology.

For treatment of domestic waste printed circuit boards, it is generally divided into three categories: physical treatment, heat treatment, and chemical treatment. Each category can be further subdivided into various treatment categories their characteristics and treatment performance are compared in the table below:

Characteristics and Treatment Performance for Various Treatment Technologies

Treatment Method		Economic Viability	Resource Performance	Second Pollution	Industrial Usage
Physical Treatment		Middle	High	Low	High
Chemical Treatment	Acidic Solution	Middle	High	High	Low
	Dissolution	Middle	High	High	Middle
Heat Treatment	Incineration	Low	Low	High	Low
	Pyrolysis	Middle	High	Low	Middle
	Microwave	Low	High	Middle	Middle

The following is the analysis of the three treatment methods:

#### Physical treatment technology

For waste printed circuit boards, the current international commonly used technique is the physical crushing, sorting methods, mainly because no substance is added to the waste, and the waste is not heated, and does not change the physical and chemical properties of the e-waste, thus minimizing the adverse impact on the environment. In order to achieve environmentally friendly treatment of e-waste (including waste printed circuit boards) and resources reutilization, the research and application of the vast majority of technologies used in the international communities aim at achieving environmentally sound treatment, high recycling and reuse.

The figure below indicated the physical process widely used aboard to handle e-waste (including waste printed circuit board), and can meet the requirements stipulated in the State Encouraged Recycling Economy Technology, Processes and Equipment List (First Batch) jointly issued by NDRC, MEP, Ministry of Science and MIIR, 2012 No. 13, Item 29).

The process uses advanced "physical separation" technology, represents today's modern, standardized and specialized treatment process. The "physical separation" technology separates the metal and non-treated (including plastic), to both avoids the metal during smelting to mix with the organic matters in the plastic, and brominated flame retardants produced during combustion, to produce dioxins and furans, the pollution carcinogens presenting health risks, it also avoids the use of chemical cyanide leaching process in wastewater generated, a problem that is difficult to deal with.

After the e-waste is carried through the conveyor belt into the feed hopper pre-crushing system, pre-crushing system crushes the e-waste into large chunks, the first stage magnetic sorter sorts the iron particles in the e waste and the metal particulars are isolated. The remaining e-waste is transported by conveyor belt to the second stage shredders and further crush the, e-waste, the second stage magnetic sorting machine will crush the e-wastes during the second stage and the iron particles are further separated. The remaining e-waste is transported by conveyor to the feeder, and through repeated grinding by the closed grinding to reach the required specified size particles

After removal of the second stage magnetic iron particles, the remaining e-waste containing mainly mixed plastics and non-ferrous metals are sorted through over-flow separator. The final products will be relatively pure metals (copper, aluminum, etc.) and light materials (such as plastic, mixed powder).

For the environmentally sound treatment of the above process technology it is necessary to control noise, dust, and other harmful factors mixed powder. From resources reutilization point of view, it is necessary to solve the crushing angle separation and sorting techniques to improve resource utilization.

### **Incineration treatment technologies**

The main reason for using the incineration treatment method for processing e-waste (including waste printed circuit board) is due to the complex component containing toxic and hazardous substances. It is difficult to use other treatment methods to treat the toxic and hazardous substances. If it is treated in accordance with incineration, it can achieve an environmentally sound processing, and if pre-treated with pre-metal smelting, the toxic and hazardous substances can be minimized.

In foreign countries (such as Japan) for waste printed circuit boards (including the above containing various components) also uses incineration technology in the pretreatment. The main reason is that by incinerating the waste printed circuit board, the basic burning of the organic and inorganic substances will produce the remaining main substance that is non-ferrous and precious metals (mainly copper, aluminum, gold, silver, palladium, etc.), then the various metals, precious metals is separated by different methods of refining.

As to the fume produced through incinerator smoke, it is treated according to hazardous waste incineration system and involves large investment. Therefore, few enterprises will treat e-waste through this treatment method. Furthermore the enterprises will also need the capacity to continue refining of various non-ferrous metals and precious metals.

### **Chemical treatment techniques**

Commonly used chemical treatment of e-waste is due to the main reason extract the precious metals (Au, Ag, Pt, Pd, Se, etc.) can be effectively extracted through chemical reaction. Through the smelting or refining method, the extraction of the higher purity metal can be flexibly set according to the processing target and scale. Another advantage is that the technology can fit the small-scale processing enterprises. However, the use of chemical treatment of e-waste has a variety of precious metals chemical liquid extract, processes, working conditions systems. The process will also produce gas and waste water, waste gas, that must take appropriate measures in wastewater treatment system to address the sludge produced.

Chemical methods are difficult to control and process contaminants. We saw some of the e-waste enterprises using chemical treatment method, but without the related equipment or system to address waste gas and wastewater, thus creates an inappropriate operating condition. Thus, in foreign countries, it generally restricts the use of chemical technology similar to incineration. Enterprises utilizing chemical treatment must have a large and stable supply of e-waste, otherwise it will be not be a viable operation.

## **Annex IV Evaluation and Selection of Demonstration Enterprise in Eco-Design**

### **Achieving reduction of POPs/PTS release in the life cycle of electrical and electronic products through product eco-design**

Through document research, analysis of the electronic industry, the product characteristics and the current situation of the industry, the principles and the procedures for the selection of the demonstration enterprise were developed. By applying the principles and procedures, selection of the demonstration enterprise is suggested.

#### **6. Background**

In 2012, China's electrical and electronic manufacturing enterprises realized total sales of RMB 8,504.4 billion. Production of major products such as mobile phone, computer, and television amounted to 1.18 billion units, 350 million units and 150 million units respectively, accounting for more than 50% of global sales volume. China is the world's number 1 producer of such products.

However, at the same time, the number of waste electrical and electronic products (WEEE) increased annually. For 2012 only, the number of WEEE was more than 80 million units. If disposal is not undertaken in an environmentally sound manner, the POPs/PTS release after recycling and processing will bring pollution to the environment, and ultimately impact on the health of residents.

Unfortunately, although China has promulgated a series of standardized WEEE collection and processing activities laws, regulations and standards, such as for electrical and electronic products "Regulations on the Administration of the Recovery and Disposal of Waste Electrical and Electronic Products," but in fact, due to objective economic aspects, the existing recycling system cannot guarantee the flow of WEEE is directed to qualified pilot enterprises for environmentally sound processing. WEEE in almost all communities is collected by travelling traders who penetrated all communities. They can offer a "higher" price to collect WEEE at about 30 -60% of the selling price of the recovered materials after dismantling, and then sell the WEEE in the second hand market or dismantling workshop. Because the formal WEEE processing enterprises have to undertake environmentally sound dismantling and disposal of both reusable or un-reusable parts, their processing costs are high, therefore cannot compete with the informal processing workshops.

To solve this problem, it is logical to reduce the POPs/PTS content in the products at product design stage. However, according to this line of thinking to solve the problem, it needs to identify the right products as a pilot. Because of the wide range of electrical and electronic products that are closely related to everyday life such as mobile phones, computers, televisions, air conditioners, refrigerators and washing machines, to determine what are the best types of products to be select for demonstration is an important question, The project considers:

First, to consider products with large production quantity, popular ownership, and with high sales volume. In order of rank, it will be mobile phones, computers, televisions, air conditioners, refrigerators, and washing machines.

Second, consider products with high, or possibly high, content of POPs/PTS and that the waste products will not be normally directed to the recycling channels for environmentally sound treatment. The ranking order will be computers, televisions, refrigerators, air conditioners, washing machines, and mobile phones.

Third, consider the complexity of the products' structure and composition, with long production chain, that will generate high impact for the electrical and electronic industry through reducing POPs/PTS contents. The order will be computers, mobile phones, televisions, air conditioners, refrigerators, and washing machines.

Finally, consider products that have fast replacement rate, short product waste cycles. The order will be mobile phones, computers, televisions, air conditioners, refrigerators, and washing machines.

From the ranking, computers and mobile phones are the more suitable products for selection as priority demonstration product categories. However, the mobile phone's size and weight as compared with the computer is too small, the effects that the demonstration products can achieve will be very

limited. Therefore the selection of computer products for demonstration in the project has the most significant effects.

## **7. Criteria for Selection of Enterprises**

Taking into considering the project cycle, implementation and promotion, selection of demonstration enterprises should consider the following factors:

### **2.1 Industry Leadership**

The computer industry contains more than 10 up-scale enterprises. Up-scale enterprise implies a certain degree of supply chain control and bargaining power, the stronger the enterprise, the larger the control, only with a strong supply chain control can they carry out design requirements of the industry, and guide the computer industry's transformation to green sustainable development. Therefore, in selecting the demonstration enterprise in the computer industry, it must take into account the size of the enterprise that could achieve a higher standard, and be able to control the behavior of the supply chain constraints.

### **2.2 Strong Technology Research & Developing Capability**

Currently, there are three business models in the computer industry: 1) in-house design and in-house production; 2) in-house design, outsourced production, and 3) outsourced design and outsourced production. Model 1) and model 2) are enterprises that design on its own, develop and design components or the entire machine on their own, with the entire development and design process under the enterprises' own control; while for model 3), the development and design of the entire machine or the components are subcontracted and controlled by manufacturers (such as Foxconn). As the independent research and development requires large investment resources, the small profit margin of the computer industry drives more and more enterprises to turn to OEM (model 3). Generally speaking, independent R & D capability determines the level of product performance and product quality. Generally, the higher the enterprise's independent R & D capability, the stronger control over the supply chain, the easier it is to transform the whole industry to environmentally sound improvement, the easier to meet eco-design requirements. Therefore to select the demonstration computer enterprises, it must take into account the strong independent R & D capability of the selected enterprises.

### **2.3 Committed to the Responsibility of Green Sustainable Development**

In addition to being larger size, industry leadership, and strong independent R & D capabilities, demonstration enterprises need to have awareness of green and sustainable development, launched a green eco-design of products, and constant practice of corporate social responsibility to improve the enterprise's "green power" A Clear green strategy, an effective organization infrastructure, strong and committed execution will guarantee the enterprises' continuous green innovation, and the driving force for sustainable development.. Green and sustainable development of the computer industry includes many aspects, such as energy conservation, recycling and reuse, hazardous substances control and reduce the environmental footprint of the product life cycle etc. Any green innovation projects do not need to be guided by government policy, but will need more resources investment by the enterprise. Through scientific and rational design and development by environmentally aware professional and talented designers, will ultimately turn into a sustainable supply chain of products by the manufacturers and made available to the market.

To practically implement these suggested principles for selection, and if a tendering and evaluation process is required, will need to consider the following further quantitative refinements:

## **8. Selection Process**

After deciding on the principles of selection principle, and considering the current status of the computer industry, the required project investment resources and technical capacity, it is recommended to select one typical enterprise to undergo demonstration activities. The proposed selection procedures are as follows:

Step 1: National experts recommend the candidate manufacturers;

Step 2: The Project Management Office invites relevant experts to review and screen the candidates and submit the list of candidates to the Senior Management for approval;

Step 3: If there is only one recommended candidate, go to Step 7;

Step 4: Invite the top 2 candidates to submit the project proposal;

Step 5: Candidates to submit application and required materials;

Step 6: Experts review and evaluate application materials and project proposal;

Step 7: Conform selection, submit to Senior Management for approval;

Step 8: The selected candidate is invited to join the Project Team and start demonstration activities.

## **9. Select the project proposal**

Accordance to the above principles and procedures of selection, and after the review and analysis of the current top five domestic and international computer manufacturers, Lenovo is selected to undertake the demonstration activities based on the following reasons:

### **4.1 Industry Influence**

From Tables 1 and 2, it shows that Lenovo is not only number 1 in the domestic market, but is also listed as number 1 in the global market. Particularly in the domestic market, Lenovo's market share exceeds the market share of the number 2 to 6 manufacturers combined. Lenovo is both the domestic and international market leader in the computer industry. It has decisive influence especially in the domestic computer industry. This is unlike the household electrical appliance enterprises which are in a vicious low price competition. Lenovo's status fortified its voice in the industrial chain, the ability to ensure product life cycle through eco-design, generates impact and transformation towards green supply chain, low-carbon and sustainable development approach. Therefore, from point of industrial influence, Lenovo is recommended as candidate to undertake eco-design demonstration to ensure achievement of maximum project results.

Table 1 Market Shares in China (in 1,000 units)

	<b>Outputs of second quarter 2013</b>	<b>Market share of second quarter 2013</b>
Lenovo	5,583	35.8%
Dell	1,048	6.7%
Acer	1,001	6.4%
Asus	937	6.0%
Hewlett Packard	911	5.8%
Tongfang	659	4.2%
Top 6	1,014	65.0%
Others	5,457	35.0%

- IDC latest Data, 7 August 2013

Table 2 Global Market Shares (in 1,000 units)

	<b>Outputs of second quarter 2013</b>	<b>Market share of second quarter 2013</b>
Lenovo	14,136	17.3%
Hewlett Packard	13,992	17.1%
Dell	9,519	11.7%
Acer	5,467	6.7%
Asus	4,208	5.2%
Top 5	47,322	58.0%
Others	34,287	42.0%

- IDC latest data, 9 October 2013

#### 4.2 Strong Independent R & D Capability

In the current global trend of outsourcing R&D to OEM manufacturers, Lenovo continues to strengthen its in-house computer independent design, development and manufacturing capabilities, which is the secret of success for Lenovo. In the desktops, notebooks, monitors and even mobile phones, television products, Lenovo possess strong overall R & D capabilities with R & D centers in Yamato, Japan; Beijing and Shanghai, China, and Raleigh in the US with R & D personnel totaled 3,000 (about 1,000 in China). The two R & D structures continue to promote technological innovation. Lenovo also holds over 10,000 patents in the computer field, and continues to lead in technological innovation in the computer industry. In in-house manufacturing, in addition to the Lenovo's original manufacturing facilities in Beijing, Shanghai, Chengdu, Huiyang and Shenzhen, Pondicherry in India, and Monterrey in Mexico, Lenovo has established new manufacturing facilities in Hefei, China, Whitsett in the United States, and has successfully put into production.

In the computer industry, the HP and Dell have transition to information service, and have outsourced its computer business to OEM manufacturers. Acer and Tongfang started late and can only rely on OEM manufacturers. So far, only Lenovo and Asus insist on in-house independent design, development and manufacturing. Therefore, taking into account the larger technical challenges, the proposal is to select Lenovo as the demonstration enterprise.

#### 4.3 Green and Sustainable Development Responsibilities

Lenovo, Tongfang, HP and Dell all have a strong awareness of green and sustainable development, they also launched a green eco-design of products, and constantly practice corporate social responsibility activities. Lenovo, Hewlett-Packard and Dell have clear green strategy, with a sound organizational structure, as well as specialized trained personnel.

Since 2004, Lenovo did even better, Lenovo developed specific environmental philosophy (such as energy conservation, materials re-use and recycling etc.) and incorporate as part of the corporate strategy set up and implement. In the United States, Japan and China, Lenovo has corporate level environmental affairs management team to guide the implementation of the company's environmental activities and green product innovation. Inside Lenovo there are responsible more than 100 specially trained full time environmental specialists responsible for eco-design, green innovation, corporate social responsibilities activities. Among them, half of them have masters and doctoral degrees, with more than 30 years of rich working experience.

Lenovo is actively promoting the concept of life- cycle management and introduce eco-design into every aspect of its product development and design. Based on unverified statistics, from 2005 onwards, to practice green development strategy, Lenovo has launched a variety of 50 large and small green 50 projects, and invested resources over a billion RMB.

Meanwhile, Lenovo has actively participated in more than 300 domestic and international related environmental standards (such as energy efficiency series GB, recycling and processing regulations, computer carbon footprint standards. Many of the standards such as computer products carbon footprint calculation methods and series of benchmark standards, the development of which were led by Lenovo with participation of MIT, China National Institute of Standardization and some computer makers, leading the industry to low-carbon practices.

Base on above considerations, Lenovo is proposed as the enterprise to undertake eco-design demonstration.



## Annex V UNDP Environmental and Social Screening Report

### Environmental and Social Screening Checklist

#### QUESTION 1:

**Has a combined environmental and social assessment/review that covers the proposed project already been completed by implementing partners or donor(s)?**

Select answer below and follow instructions:

**x NO** → Continue to Question 2 (do not fill out Table 1.1)

**YES** → No further environmental and social review is required if the existing documentation meets UNDP's quality assurance standards, and environmental and social management recommendations are integrated into the project. Therefore, you should undertake the following steps to complete the screening process:

1. Use Table 1.1 below to assess existing documentation. (It is recommended that this assessment be undertaken jointly by the Project Developer and other relevant Focal Points in the office or Bureau).
2. Ensure that the Project Document incorporates the recommendations made in the implementing partner's environmental and social review.
3. Summarize the relevant information contained in the implementing partner's environmental and social review in Annex A.2 of this Screening Template, selecting Category 1.
4. Submit Annex A to the PAC, along with other relevant documentation.

**Note: Further guidance on the use of national systems for environmental and social assessment can be found in Annex B.**

<b>TABLE 1.1: CHECKLIST FOR APPRAISING QUALITY ASSURANCE OF EXISTING ENVIRONMENTAL AND SOCIAL ASSESSMENT</b>	<b>Yes/No</b>
1. Does the assessment/review meet its terms of reference, both procedurally and substantively?	
2. Does the assessment/review provide a satisfactory assessment of the proposed project?	
3. Does the assessment/review contain the information required for decision-making?	
4. Does the assessment/review describe specific environmental and social management measures (e.g. mitigation, monitoring, advocacy, and capacity development measures)?	
5. Does the assessment/review identify capacity needs of the institutions	

responsible for implementing environmental and social management issues?	
6. Was the assessment/review developed through a consultative process with strong stakeholder engagement, including the view of men and women?	
7. Does the assessment/review assess the adequacy of the cost of and financing arrangements for environmental and social management issues?	
<b>Table 1.1 (continued) For any “no” answers, describe below how the issue has been or will be resolved (e.g. amendments made or supplemental review conducted).</b>	

## QUESTION 2:

**Do all outputs and activities described in the Project Document fall within the following categories?**

- ☒ Procurement (in which case UNDP’s [Procurement Ethics](#) and [Environmental Procurement Guide](#) need to be complied with)
- ☒ Report preparation
- ☒ Training
- ☒ Event/workshop/meeting/conference (refer to [Green Meeting Guide](#))
- ☒ Communication and dissemination of results

Select answer below and follow instructions:

☒ **NO** → Continue to Question 3

**YES** → No further environmental and social review required. Complete Annex A.2, selecting Category 1, and submit the completed template (Annex A) to the PAC.

## QUESTION 3:

**Does the proposed project include activities and outputs that support *upstream* planning processes that potentially pose environmental and social impacts or are vulnerable to environmental and social change (refer to Table 3.1 for examples)? (Note that *upstream* planning processes can occur at global, regional, national, local and sectoral levels)**

Select the appropriate answer and follow instructions:

**NO** → Continue to Question 4.

☒ **YES** → Conduct the following steps to complete the screening process:

1. Adjust the project design as needed to incorporate UNDP support to the country(ies), to ensure that environmental and social issues are appropriately considered during the upstream planning process. Refer to Section 7 of this Guidance for elaboration of environmental and social mainstreaming services, tools, guidance and approaches that may be used.
2. Summarize environmental and social mainstreaming support in Annex A.2, Section C of the Screening Template and select "Category 2".
3. If the proposed project ONLY includes upstream planning processes then screening is complete, and you should submit the completed Environmental and Social Screening Template (Annex A) to the PAC. If downstream implementation activities are also included in the project then continue to Question 4.

<b>TABLE 3.1</b> EXAMPLES OF UPSTREAM PLANNING PROCESSES WITH POTENTIAL DOWNSTREAM ENVIRONMENTAL AND SOCIAL IMPACTS	Check appropriate box(es) below
<p>1. Support for the elaboration or revision of <b>global level</b> strategies, policies, plans, and programmes.</p> <p>For example, capacity development and support related to international negotiations and agreements. Other examples might include a global water governance project or a global MDG project.</p>	X
<p>2. Support for the elaboration or revision of <b>regional-level</b> strategies, policies and plans, and programmes.</p> <p>For example, capacity development and support related to transboundary programmes and planning (river basin management, migration, international waters, energy development and access, climate change adaptation etc.).</p>	
<p>3. Support for the elaboration or revision of <b>national-level</b> strategies, policies, plans and programmes.</p> <p>For example, capacity development and support related to national development policies, plans, strategies and budgets, MDG-based plans and strategies (e.g. PRS/PRSPs, NAMAs), sector plans.</p>	X
<p>4. Support for the elaboration or revision of <b>sub-national/local-level</b> strategies, policies, plans and programmes.</p> <p><i>For example, capacity development and support for district and local level development plans and regulatory frameworks, urban plans, land use development plans, sector plans, provincial development plans, provision of services, investment funds, technical guidelines and methods, stakeholder engagement.</i></p>	X

## QUESTION 4:

**Does the proposed project include the implementation of *downstream* activities that potentially pose environmental and social impacts or are vulnerable to environmental and social change?**

To answer this question, you should first complete Table 4.1 by selecting appropriate answers. If you answer “No” or “Not Applicable” to all questions in Table 4.1 then the answer to Question 4 is “NO.” If you answer “Yes” to any questions in Table 4.1 (even one “Yes” can indicated a significant issue that needs to be addressed through further review and management) then the answer to Question 4 is “YES”:

**x NO** → No further environmental and social review and management required for downstream activities. Complete Annex A.2 by selecting “Category 1”, and submit the Environmental and Social Screening Template to the PAC.

**YES** → Conduct the following steps to complete the screening process:

1. Consult Section 8 of this Guidance, to determine the extent of further environmental and social review and management that might be required for the project.
2. Revise the Project Document to incorporate environmental and social management measures. Where further environmental and social review and management activity cannot be undertaken prior to the PAC, a plan for undertaking such review and management activity within an acceptable period of time, post-PAC approval (e.g. as the first phase of the project) should be outlined in Annex A.2.
3. Select “Category 3” in Annex A.2, and submit the completed Environmental and Social Screening Template (Annex A) and relevant documentation to the PAC.

**TABLE 4.1: ADDITIONAL SCREENING QUESTIONS TO DETERMINE THE NEED AND POSSIBLE EXTENT OF FURTHER ENVIRONMENTAL AND SOCIAL REVIEW AND MANAGEMENT**

1. Biodiversity and <a href="#">Natural</a> Resources	Answer (Yes/No/ Not Applicable)
<b>1.1</b> Would the proposed project result in the conversion or degradation of <a href="#">modified habitat</a> , <a href="#">natural habitat</a> or <a href="#">critical habitat</a> ?	No
<b>1.2</b> Are any development activities proposed within a legally protected area (e.g. natural reserve, national park) for the protection or conservation of biodiversity?	No
<b>1.3</b> Would the proposed project pose a risk of introducing invasive alien species?	No
<b>1.4</b> Does the project involve natural forest harvesting or plantation	No

<b>TABLE 4.1: ADDITIONAL SCREENING QUESTIONS TO DETERMINE THE NEED AND POSSIBLE EXTENT OF FURTHER ENVIRONMENTAL AND SOCIAL REVIEW AND MANAGEMENT</b>	
development without an independent forest certification system for sustainable forest management ( <i>e.g. PEFC, the Forest Stewardship Council certification systems, or processes established or accepted by the relevant National Environmental Authority</i> )?	
<b>1.5</b> Does the project involve the production and harvesting of fish populations or other aquatic species without an accepted system of independent certification to ensure sustainability ( <i>e.g. the Marine Stewardship Council certification system, or certifications, standards, or processes established or accepted by the relevant National Environmental Authority</i> )?	No
<b>1.6</b> Does the project involve significant extraction, diversion or containment of surface or ground water? <i>For example, construction of dams, reservoirs, river basin developments, groundwater extraction.</i>	No
<b>1.7</b> Does the project pose a risk of degrading soils?	No
<b>2. Pollution</b>	<b>Answer</b> (Yes/No/ Not Applicable)
<b>2.1</b> Would the proposed project result in the release of pollutants to the environment due to routine or non-routine circumstances with the potential for adverse local, regional, and transboundary impacts?	No
<b>2.2</b> Would the proposed project result in the generation of waste that cannot be recovered, reused, or disposed of in an environmentally and socially sound manner?	No
<b>2.3</b> Will the proposed project involve the manufacture, trade, release, and/or use of chemicals and hazardous materials subject to international action bans or phase-outs? <i>For example, DDT, PCBs and other chemicals listed in international conventions such as the Stockholm Convention on Persistent Organic Pollutants, or the Montreal Protocol.</i>	No
<b>2.4</b> Is there a potential for the release, in the environment, of hazardous materials resulting from their production, transportation, handling, storage and use for project activities?	No
<b>2.5</b> Will the proposed project involve the application of pesticides that have a known negative effect on the environment or human health?	No
<b>3. Climate Change</b>	<b>Answer</b> (Yes/No/ Not Applicable)

<b>TABLE 4.1: ADDITIONAL SCREENING QUESTIONS TO DETERMINE THE NEED AND POSSIBLE EXTENT OF FURTHER ENVIRONMENTAL AND SOCIAL REVIEW AND MANAGEMENT</b>	
<b>3.1</b> Will the proposed project result in significant <sup>3</sup> greenhouse gas emissions? <i>Annex E provides additional guidance for answering this question.</i>	No
<b>3.2</b> Is the proposed project likely to directly or indirectly increase environmental and social vulnerability to climate change now or in the future (also known as maladaptive practices)? You can refer to the additional guidance in Annex C to help you answer this question. <i>For example, a project that would involve indirectly removing mangroves from coastal zones or encouraging land use plans that would suggest building houses on floodplains could increase the surrounding population's vulnerability to climate change, specifically flooding.</i>	No
<b>4. Social Equity and Equality</b>	<b>Answer</b> (Yes/No/ Not Applicable)
<b>4.1</b> Would the proposed project have environmental and social impacts that could affect indigenous people or other vulnerable groups?	No
<b>4.2</b> Is the project likely to significantly impact gender equality and women's empowerment <sup>4</sup> ?	No
<b>4.3</b> Is the proposed project likely to directly or indirectly increase social inequalities now or in the future?	No
<b>4.4</b> Will the proposed project have variable impacts on women and men, different ethnic groups, social classes?	No
<b>4.5</b> Have there been challenges in engaging women and other certain key groups of stakeholders in the project design process?	No
<b>4.6</b> Will the project have specific human rights implications for vulnerable groups?	No
<b>5. Demographics</b>	
<b>5.1</b> Is the project likely to result in a substantial influx of people into the affected community(ies)?	No
<b>5.2</b> Would the proposed project result in substantial voluntary or involuntary resettlement of populations? <i>For example, projects with environmental and social benefits (e.g.</i>	No

<sup>3</sup> Significant corresponds to CO<sub>2</sub> emissions greater than 100,000 tons per year (from both direct and indirect sources). Annex E provides additional guidance on calculating potential amounts of CO<sub>2</sub> emissions.

<sup>4</sup> Women are often more vulnerable than men to environmental degradation and resource scarcity. They typically have weaker and insecure rights to the resources they manage (especially land), and spend longer hours on collection of water, firewood, etc. (OECD, 2006). Women are also more often excluded from other social, economic, and political development processes.

<b>TABLE 4.1: ADDITIONAL SCREENING QUESTIONS TO DETERMINE THE NEED AND POSSIBLE EXTENT OF FURTHER ENVIRONMENTAL AND SOCIAL REVIEW AND MANAGEMENT</b>	
<i>protected areas, climate change adaptation) that impact human settlements, and certain disadvantaged groups within these settlements in particular.</i>	
<b>5.3</b> Would the proposed project lead to significant population density increase which could affect the environmental and social sustainability of the project?  <i>For example, a project aiming at financing tourism infrastructure in a specific area (e.g. coastal zone, mountain) could lead to significant population density increase which could have serious environmental and social impacts (e.g. destruction of the area's ecology, noise pollution, waste management problems, greater work burden on women).</i>	No
<b>6. Culture</b>	
<b>6.1</b> Is the project likely to significantly affect the cultural traditions of affected communities, including gender-based roles?	No
<b>6.2</b> Will the proposed project result in physical interventions (during construction or implementation) that would affect areas that have known physical or cultural significance to indigenous groups and other communities with settled recognized cultural claims?	No
<b>6.3</b> Would the proposed project produce a physical “splintering” of a community?  <i>For example, through the construction of a road, powerline, or dam that divides a community.</i>	No
<b>7. Health and Safety</b>	
<b>7.1</b> Would the proposed project be susceptible to or lead to increased vulnerability to earthquakes, subsidence, landslides, erosion, flooding or extreme climatic conditions?  <i>For example, development projects located within a floodplain or landslide prone area.</i>	No
<b>7.2</b> Will the project result in increased health risks as a result of a change in living and working conditions? In particular, will it have the potential to lead to an increase in HIV/AIDS infection?	No
<b>7.3</b> Will the proposed project require additional health services including testing?	No
<b>8. Socio-Economics</b>	
<b>8.1</b> Is the proposed project likely to have impacts that could affect women's and men's ability to use, develop and protect natural resources and other natural capital assets?  <i>For example, activities that could lead to natural resources degradation or depletion in communities who depend on these</i>	No

<b>TABLE 4.1: ADDITIONAL SCREENING QUESTIONS TO DETERMINE THE NEED AND POSSIBLE EXTENT OF FURTHER ENVIRONMENTAL AND SOCIAL REVIEW AND MANAGEMENT</b>	
<i>resources for their development, livelihoods, and well-being?</i>	
<b>8.2</b> Is the proposed project likely to significantly affect land tenure arrangements and/or traditional cultural ownership patterns?	No
<b>8.3</b> Is the proposed project likely to negatively affect the income levels or employment opportunities of vulnerable groups?	No
<b>9. Cumulative and/or Secondary Impacts</b>	<b>Answer</b> (Yes/No/ Not Applicable)
<b>9.1</b> Is the proposed project location subject to currently approved land use plans (e.g. roads, settlements) which could affect the environmental and social sustainability of the project? <i>For example, future plans for urban growth, industrial development, transportation infrastructure, etc.</i>	No
<b>9.2</b> Would the proposed project result in secondary or consequential development which could lead to environmental and social effects, or would it have potential to generate cumulative impacts with other known existing or planned activities in the area? <i>For example, a new road through forested land will generate direct environmental and social impacts through the cutting of forest and earthworks associated with construction and potential relocation of inhabitants. These are direct impacts. In addition, however, the new road would likely also bring new commercial and domestic development (houses, shops, businesses). In turn, these will generate indirect impacts. (Sometimes these are termed “secondary” or “consequential” impacts). Or if there are similar developments planned in the same forested area then cumulative impacts need to be considered.</i>	No



**ENVIRONMENTAL AND SOCIAL SCREENING SUMMARY**  
(to be filled in after Environmental and Social Screening Checklist has been completed)

**Name of Proposed Project:** Reduction of POPs and PTS Release by Environmentally Sound Management throughout the Life Cycle of Electrical and Electronic Equipment and Associated Wastes in Chinas

**A. Environmental and Social Screening Outcome**

Select from the following:

- x Category 1. No further action is needed  
The proposed project include activities and outputs that support *upstream* planning processes that potentially pose environmental and social impacts or are vulnerable to environmental and social changes (refer to Table 3.1) but as the proposed project ONLY includes upstream planning processes and not downstream planning processes then no further screening is needed
- ☐ Category 2. Further review and management is needed. There are possible environmental and social benefits, impacts, and/or risks associated with the project (or specific project component), but these are predominantly indirect or very long-term and so extremely difficult or impossible to directly identify and assess.
- ☐ Category 3. Further review and management is needed, and it is possible to identify these with a reasonable degree of certainty. If Category 3, select one or more of the following sub-categories:
- ☐ Category 3a: Impacts and risks are limited in scale and can be identified with a reasonable degree of certainty and can often be handled through application of standard best practice, but require some minimal or targeted further review and assessment to identify and evaluate whether there is a need for a full environmental and social assessment (in which case the project would move to Category 3b).
- ☐ Category 3b: Impacts and risks may well be significant, and so full environmental and social assessment is required. In these cases, a scoping exercise will need to be conducted to identify the level and approach of assessment that is most appropriate.

**B. Environmental and Social Issues** (for projects requiring further environmental and social review and management)

**C. Next Steps** (for projects requiring further environmental and social review and management):

**D. Sign Off**

<b>Project Manager</b>	<b>Wu Peng</b>	<b>Date</b> 12 December 2013
<b>PAC</b>		<b>Date</b>
<b>Programme Manager</b>		<b>Date</b>

**Annex VI GEF POPs tracking tool (attached separately at submission time in Excel)**