

**Funding to Support Non-governmental Organisations to Operate
Plastic Waste and Waste Electrical and Electronic Equipment Processing Centres
at EcoPark Phase II in Tuen Mun**

Purpose

This paper seeks Members' agreement in principle to provide Environment and Conservation Fund (ECF) funding support to facilitate the operation of plastic waste and waste electric and electronic equipment (WEEE) processing centres by non-governmental organisations (NGOs) at EcoPark Phase II in Tuen Mun to sustain the community waste recovery and recycling of these two categories of recyclables..

The Problem

2. Collection and recycling of plastic waste and WEEE are subject to major challenges. In respect of plastics, its collection and recycling fluctuates sharply according to the market situation. As regards WEEE, its collection and local recycling is unlikely to be commercially viable and a mandatory Producer Responsibility Scheme (PRS) is under development for public consultation. We need to introduce additional measures to tide over the current downturn in collection and recycling of plastic waste under the financial tsunami and to expand the current WEEE programme pending the implementation of the mandatory PRS on WEEE.

Plastic Waste

3. It is estimated that some 200 tonnes per day of plastic waste have previously been recovered from estates and buildings under the source separation programme. Recently due to the economic downturn, prices of recyclable materials have dropped substantially. While exports of recyclable materials such as paper and metals are still maintained due to their relatively higher tolerance to price fluctuations, export of plastic waste is seriously affected. The high transportation and processing costs involved in recovery of plastic waste, which is bulky and heterogeneous in nature, make it unattractive for stakeholders upstream (collectors of recyclable materials, cleansing workers, scavengers, residents, etc.) to collect and recycle the plastic waste source separated from domestic, commercial and industrial premises throughout the territory. Currently plastic waste, even if collected, is mostly being stockpiled at recycling depots in urban and rural areas waiting for prices to rise again. However, given the uncertain economic outlook, there are concerns that more and more recyclable plastic waste would end up in landfills if the

market for plastic waste is left to operate on its own without Government moderation. It would seriously undermine our efforts in promoting source separation of plastic waste over the years.

WEEE

4. It is estimated that over 50,000 tonnes (or 4 million units) of WEEE (excluding computer products) are discarded from households each year. Whilst most of the WEEE are reused or collected by second-hand dealers, there are still about 20% of these ending up in landfills. Of the WEEE disposed of at landfills, most are small electrical appliances with little commercial values and therefore not recovered by the dealers. In this connection, EPD has engaged an NGO to implement a territory-wide recycling programme for WEEE since 2003 and operate a recycling workshop at Kowloon Bay Waste Recycling Centre (KBWRC). This programme has been well received by the public and the number of electrical appliances processed has tripled, indicating a clear demand from the public for expansion of the service. The processing centre would also provide an environmentally sound outlet for the public to dispose of their WEEE before the PRS on WEEE is in place. However, due to site constraint, the processing capacity of the recycling workshop at KBWRC cannot be expanded beyond its existing limit of 130 tonnes per year.

The Proposed Solution

5. In order to maintain local recovery of plastic waste so that the source separation of waste programme can be sustained, and to recycle more WEEE to pave the way for PRS, the EPD plans to include the provision of land at EcoPark Phase II in Tuen Mun to accommodate the operation of two processing centres, one for plastic waste and one for WEEE. It is proposed that socially/environmentally oriented and charitable NGOs be engaged in the form of a partnership with the EPD to operate the centres with ECF funding support on a time-limited basis. The ECF Waste Recovery Projects Vetting Subcommittee (WRPVSC) discussed and agreed to the establishment of the two waste processing centres at the meeting held on 20 May 2009. The proposed projects can serve the following purposes:

- (a) foster community participation in source separation and recovery of waste initiatives using the NGOs' existing extensive community networks with housing estates, schools and other community organizations;
- (b) create jobs and provide training opportunities for the underprivileged and unemployed low-skilled workers, especially for the local community in the Northwest New Territories area, including Tuen Mun and Tin Shui Wai;
- (c) sustain the source separation and recycling of plastics and WEEE during the unstable market environment and develop a circular economy in the longer term where recyclable materials collected locally are reprocessed into value-added recycled products or raw materials for products;

- (d) increase the quantity of recyclables collected through community promotion and/or other incentives; and
- (e) echo ECF's objective in promoting individual behavioural and lifestyle changes to protect the environment and achieve sustainable development.

6. The plastic waste processing centre will collect and process plastic waste into value-added flakes or chips and sorted plastic materials for subsequent recycling into useful products. It is more desirable than simple baling of the plastic waste for export as in the majority of existing operations as plastic waste can be processed into value-added materials locally before export. The centre will operate initially for three years under ECF funding with a capacity of at least 20 tonnes of plastic waste per day. After three years, the centre may cease to operate when the market for plastic waste recovers, and the EPD may let out the plant infrastructure, machinery and equipment to commercial operators through open tendering. Alternatively, the NGO may continue to operate the centre on a self-sustained basis on the site through appropriate leasing arrangements in line with the EcoPark policies. As it is anticipated that the 20 tonnes of plastic waste per day will only account for some 10% of the 200 tonnes per day of plastic waste recovered from estates and buildings under the source separation programme (the normal quantity before the economic downturn), the centre can co-exist with commercial operators, similar to the existing NGO operations on recovery of used clothing.

7. The WEEE processing centre will collect and refurbish WEEE for donation to the needy or charitable sale, or dismantle the WEEE into useful recyclable components in an environmentally acceptable manner for sale to recyclers/dealers. It will initially operate for a period of three years. The future mode of operation will be subject to review, depending, inter alia, on the progress of the implementation of PRS. It will have an initial processing capacity of 150 tonnes per year and gradually build up to 250 tonnes, which is nearly double the existing capacity of the recycling workshop at KBWRC. It is not envisaged that the proposed centre will create competition with commercial operators as the NGO operation will mainly serve housing estates. Moreover, the proposed centre will only handle 250 tonnes out of the 50,000 tonnes of WEEE discarded each year and hence will not have a significant impact on commercial market operation. On the other hand, it can achieve synergy with existing market operations by selling recyclable components dismantled from WEEE, such as printed circuit boards, plastics and metals, to commercial operators for subsequent recovery of useful materials and recycling into useful products.

Mode of Operation

8. For the plastic waste processing centre, the NGO will acquire locally produced plastic waste (in baled or loose form) from social institutions as well as domestic, commercial and industrial sources, either by direct collection services or through partnership with collectors, and

transport the plastic waste to the processing centre. The collected plastic waste will first undergo washing/disinfection and preliminary sorting before being fed onto a conveyor belt where the plastic waste will be sorted manually by workers according to resin type and colour. The higher-valued plastic materials will be processed into flakes or chips by shredding, washing, drying, extruding, pelletising and packaging. The lower-valued plastic materials will be directly baled to reduce volume. The flakes/chips and the baled plastics will be sold to recyclers/dealers through open tendering. The revenue generated from the sale of processed plastic materials will be ploughed back to offset the operating cost of the centre.

9. For the WEEE processing centre, the NGO will provide collection service to over 300 housing estates, as well as set up about 15 public collection points. Registered electricians will be employed to inspect and refurbish the usable electrical appliances at the centre. The refurbished WEEE will be donated to the needy or sold through charitable sale by the NGO. For those WEEE that are beyond repair, proper handling procedures and methods will be adopted to dismantle the WEEE into fine components as far as possible to improve the resale values of the recyclable materials. A licensed recycler will be engaged to process hazardous components dismantled from the WEEE, such as cathode ray tubes, printed circuit boards, batteries and mercury lamps. The revenue generated from the sale of refurbished WEEE and recyclable materials will be ploughed back to offset the operating cost of the centre.

Role of NGOs

10. Interested NGOs will apply for funding support from ECF. They will prepare and submit ECF applications, oversee project planning and implementation, hire and manage the necessary manpower, operate the processing centre, oversee project accounts, and submit regular progress reports and audited accounts to the ECF Secretariat. The NGOs will also need to fulfill requirements such as minimum plant throughputs, minimum wage for workers, and relevant environment, health and safety standards. In addition, the NGOs will organise community-based education and promotion activities to enhance public awareness on the recovery and recycling of plastic waste and WEEE. As reimbursements from ECF for the funded items would be made based on the actual tonnage of plastic waste processed/actual number of workers employed and that the processed plastic materials may be sold after a certain period of operation, the NGO will need to make available sufficient cash resources to cover daily cash flow requirements of the processing centre before the ECF reimbursements are made and revenues from the sale of processed plastic materials are realized, even though an initial sum of start-up funding may be provided to ease off part of the NGOs' cash flow demand.

Role of EPD

11. The EPD is prepared to provide technical support and advice to the NGOs as well as the necessary infrastructures and hardware at EcoPark. Specifically, the EPD will:

- (a) Provide a 10,000-square metre concrete paved land within EcoPark Phase II - 5,000 square metres each for the plastic waste and WEEE processing centres respectively; associated infrastructures such as power supply, water supply, storm drain, foul sewer, chemical toilets, electrical & mechanical installations, etc.;
- (b) Design and build the processing centres with the necessary machinery and equipment; and
- (c) Provide technical support to the NGOs as necessary on the operations of the centres, such as training of workers, acquisition and collection of plastic waste and WEEE, plant process control, maintenance, quality control and selling of processed materials to recyclers/dealers; and at the same time gather and analyse cost and market data from the operations of the centres for reference in future policy making.

Expected Environmental and other Public Benefits

12. The proposed projects will have the following benefits:

- (a) Provide secure and environmentally sound outlets for source separated plastic waste and WEEE, as well as an incentive for various stakeholders and the public to recover more plastic waste and WEEE for recycling.
- (b) Create over 70 jobs for the underprivileged low-skilled workers particularly in the Northwest New Territories area, including Tuen Mun and Tin Shui Wai.
- (c) Facilitate local processing of plastic waste and WEEE into useful products at the EcoPark.
- (d) Enlist more people to participate in source separation of waste for social wellbeing in addition to environmental protection.

13. In addition, the WEEE processing centre can help complement the future implementation of the mandatory PRS on WEEE now being proposed. Depending on the outcome of the public consultation, the PRS should be devised to encourage reuse and may have to meet certain refurbishment targets. After the implementation of the PRS on WEEE, the processing centre will be in a position to support the future PRS Management Organization by serving as the WEEE refurbishment and donation centre. The PRS may be implemented in phases with major electrical appliances and computer equipment being controlled first. The WEEE processing centres can also serve as the dismantling centre for household WEEE not yet subject to control under the PRS.

Invitation of NGOs

14. Two briefing sessions with NGOs arranged through The Hong Kong Council of Social Service were held on 27 March 2009 and 23 April 2009 to sound out the plastic waste project to potential NGOs and solicit their interests. A similar briefing for green groups was held on 11 May 2009. More briefing sessions are being arranged. We also plan to brief the NGOs about the WEEE project in early June 2009. With the expected benefits the proposed projects will bring to the community, it is anticipated that ECF applications will be received from a number of interested NGOs. Several NGOs have in fact expressed preliminary interest and are in active discussion with the EPD.

15. Upon receiving the ECF applications from the NGOs, it is proposed that Members of WRPVSC will assess the merits of individual applications according to the marking schemes set out in Annexes 1 and 2 and select the most suitable NGOs to undertake the projects, with technical assistance from the EPD. For the assessment of applications for the plastic waste project, NGO's general experience in material collection and processing is evaluated as currently there is no NGO in the territory running the value-added plastic waste processing operations as proposed; whereas for the assessment of applications for the WEEE project, experience in WEEE handling and processing is relevant.

Funding Required

16. While the EPD will provide the required land and infrastructures, design and build the processing centres, as well as provide technical support for the operation of the centres, it is proposed that the NGOs will apply for ECF funding to support the operating costs of the centres.

17. The funding support to the NGO will be provided to meet the cash flow requirements of the operation, subject to a cap of not more than \$10M over the three year operating period. As regards the plastic waste processing centre, it is estimated that the operating cost of the centre will be about \$14-17M per year, which includes costs of acquisition and collection of plastics, salaries for 50 or more workers, utilities charge, maintenance, insurance, etc. At the same time, it is anticipated that \$13-16M of revenue per year generated from the sale of processed plastic materials, which will be required to be ploughed back to the operating account of the centre. Depending on various factors such as changes in plastic prices, the operation of the centre can result in a deficit of some \$3 to 4 M per year or a surplus of some \$2M per year with a possibility that the operation of the centre can become self-sustained in the long run. Upon the conclusion of the three year project, any surplus to the operating account will have to be ploughed back to the ECF.

18. For the WEEE processing centre, it is estimated that the operating cost of the centre will be about \$3.5M on average per year, which includes \$2.8M on utilities charge, wages for workers and insurance, and \$0.7M on collection cost. The revenue generated from the sale of refurbished WEEE and recyclable materials is estimated to be \$0.1M to \$0.3M, which can be used to offset part

of the operating cost. It is unlikely that the operation of the centre can become self-sustained in the long run. Notwithstanding, it will be included as a condition of the funding approval that the surplus upon conclusion of the three year project will be ploughed back to the ECF.

19. A summary of the estimated expenditures for the two processing centres is as follows:

Expenditure	Plastic waste processing centre (\$)	WEEE processing centre (\$)
Capital cost	17.3M	16.4M
Operating cost per year	14M - 17M*	2.8M – 4.2M (average 3.5M)
Revenue per year	13M - 16M	0.1M – 0.3M
Net amount to be funded from ECF per year	up to some 3 -4M	2.7 M – 3.9M (average 3.3M)

* equivalent to \$2,000 - \$2,500 per tonne of plastic waste processed.

Action Time Table

20. A tentative action time table for the plastic waste processing project is shown below:

Task	Action Party	Target Date
Submission of ECF application	NGO	June/July 2009
Vetting and approval by ECF Waste Recovery Projects Sub-committee/ECF Committee	ECF Secretariat	July/August 2009
Plant design and construction; machinery and equipment procurement	EPD	July – September 2009
Hire and training of sorting workers	NGO/EPD	August/September 2009
Setting up of sorting area	EPD	August/September 2009
Setting up of machinery and equipment	EPD	September - November 2009
Hire of other operational personnel	NGO	October 2009
Completion of plant set-up	EPD	November 2009
Testing and commissioning of plant	EPD	November 2009
Commencement of plant operation	NGO/EPD	December 2009

To address the imminent crisis on plastic waste recovery, it is proposed that collection and sorting of plastic waste can commence in August/September 2009 before the commencement of plant operation in December 2009.

21. A tentative action time table for the WEEE project is shown below:

Task	Action Party	Target Date
Submission of ECF application	NGO	June/July 2009
Vetting and approval by ECF Waste Recovery Projects Vetting Sub-committee/ECF Committee	ECF Secretariat	July/August 2009
Plant design and construction; machinery and equipment procurement	EPD	July 2009- January 2010
Hire of workers and operational personnel	NGO	January 2010
Training of workers	NGO/EPD	February 2010
Completion of plant set-up	EPD	January 2010
Testing and commissioning of plant	EPD	February 2010
Commencement of collection service	NGO	January 2010
Commencement of dismantling operation	NGO/EPD	March 2010

Advice Sought

22. Members are invited to approve the implementation of the proposed projects and endorse the proposed operational arrangements for approving applications received as set out in paragraphs 3 to 21 above.

Environmental Protection Department
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