Ministry of Finance (MOF) through its Fiscal Policy Department (FPD)

The Lao PDR Public Financial Management Reform Project (P179016)

Draft

E-Waste Management Plan

March 7, 2023

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1. Introduction

The Government of Lao PDR (GoL) has requested the WB to prepare the Lao PDR Public Financial Management Reform Project (hereafter "the Project"). The Project will be funded by a trust fund financed by the European Union and Australia's Department of Foreign Affairs and Trade (DFAT). The instrument used will be a small Recipient-Executed Trust Fund (RETF) of US$3 million. The Ministry of Finance (MoF) will be the implementing agency of the fund. The project aims to support GoL to improve the management of its public financial and human resources, achieving five targets: i) Improving Budget Preparation and Public Expenditure Management; ii) Enhancing Domestic Revenue Mobilization; iii) Improving Public Procurement; iv) Modernizing Human Resources Management in the Civil Service; and v) Project Implementation, Analytics and Just-In-Time Support. The Project will help improve the management of public finances and MOF's internal processes, as well as the processes for public procurement, which can deliver a wide range of benefits for GoL.

The Project is required to comply with the World Bank's Environmental and Social Framework (ESF), which was launched in October 2018**.** The ESF objective goes beyond the traditional "do not harm" approach to maximize development gains and its compliance is measured through the compliance with the 10 Environment and Social Standards (ESS). Specifically, among which are:

- ESS 1 Assessment and Management of Environmental and Social Risks and Impacts requires the borrower to carry out environmental and social risks and impacts assessment, and develop mitigation measures to avoid, minimize, mitigate or otherwise compensate the anticipated impacts. Following the ESS1 requirement, the potential environmental risks of e-waste generation from ICT equipment procurement is identified, and the development of an e-waste management plan is committed by client in the ESCP; and

- ESS3 Resource Efficiency and Pollution Prevention and Management requires the borrower to apply technically, and financially feasible pollution prevention measures proportionate to the risks and impacts levels associated with Project and consistent with World Bank Group Environment, Health and Safety Guidelines (EHSGs) and Good International Industrial Practice (GIIP). The World Bank Group EHSGs provides guidelines on general solid waste and hazardous waste management measures, as well as health and safety measures related to the waste management.

The Project is expected to have low environmental and social risks rating because its plans and activities will not engage civil works that can cause risks and/or negative

environmental and social impacts on biodiversity, land uses, culture, and broader livelihoods of local communities. Anticipated and foreseen impacts related to project consist of (i) lack of stakeholder engagement; (ii) risks related to the labour and working conditions of project workers; (iii) risks of sexual exploitation and abuse and sexual harassment (SEA/SH). Based on the Terms of Reference (TOR) for National Environmental and Social Consultant (NESC) and the technical meeting with WB E&S specialists on 17 January 2023, the Project is required to develop five ESF instruments: 1) Environmental and Social Commitment Plan (ESCP), 2) Labour Management Procedure (LMP), 3) Stakeholder Engagement Plan (SEP), and 4) E-waste Management Plan (EMP).

This document presents a brief discussion of E-waste management plan for the Project. The project PIU has initially planned to purchase some computers and necessary equipment and installation of IT systems to support implementation of the Project. However, the purchase will engage only for a small quantity. Thus, the potential risks and impacts associated with e-waste would be low.

2. Relevant Laws and Legislations

There is not any specific legislative document on e-waste management in Lao PDR. The country's key national legislation such as Environmental Protection (2012) also does not mention this type of waste. However, there are several national legislations in relation to management of general and hazardous wastes. These legislations are listed in Table 1 below.

Table 1: Lao national regulations relevant to e-waste management

No	**National Legislation**	**Date**	**Status**
1	The Ministerial Decision on landfill management, No. 521/PWT	23 Feb 2007	In force
2	Law on Environmental Protection, No. 29/NA	18 Dec 2012.	In force
3	Ministerial Instruction on Hazardous Waste Management	13 Jun 2015	In force
4	Industrial Waste Discharge Regulation No. 180/MIH	3 Nov 1994	TBC
5	The Decree on the Control of Import, Export and Consumption of Ozone Depleting Substances, No. 162/PMO	13 Oct 2003	In force
6	The Regulation on Control of Import, Export and Consumption of Ozone Depleting Substances, No. 2358/STEA-PMO	16 Nov 2004	In force

Law on Environmental Protection

Article 39 of this law presents a provision on management of toxic and hazardous wastes. The article defines that "Importation of toxic and hazardous wastes that are contaminated with chemicals and radiation into Lao PDR shall be prohibited, except specific regulations stipulating about them. Persons, legal entities and organizations producing toxic and hazardous wastes due to its own production and business operations shall be liable with compliance to the law and shall keep, eliminate, bury and treat the waste in accordance with the standards and regulations. The management of toxic and hazardous wastes shall be stipulated by the specific regulations". While, Hazardous Waste Management has been formulated as listed in Table 1 above, no specific regulation on electronic waste management has been formulated or existed.

Ministerial Instruction on Hazardous Waste Management

This instruction defines principles and management of hazardous wastes (albeit no specifying e-waste). The instruction requires hazardous waste generator to keep, label, and transfer hazardous wastes in a proper and safe standard. The waste generators are also required to take a responsibility for delivery of hazardous wastes to an entrepreneur who has the related environmental compliance certificate in consuming, recycling, keeping, transporting or final treatment.

The Lao PDR has also been a signatory to international conventions:

- Vienna Convention on the Protection of the Ozone Layer (1998);
- Montreal Protocol on Substances the Deplete the Ozone Layer (1998); and
- The Stockholm Convention on Persistent Organic Pollutants (signed March 5, 2002 & ratified June 20, 2006.

Given the limited national legislation on e-waste management, international standards and policies on e-waste will be applied to the Project, as discussed in subsequent sections.

3. Electronic Waste: Potential Impacts and Proposed Management

E-waste poses a significant threat to human health. This may include birth defects, infant mortality, blood diseases, malfunctioning of organs and immune system anomalies (ILO report, 2012). On the other hand, there is evidence that the improper treatment of this waste has a negative impact on the environment and the public health of both the workers exposed and the population living nearby. Different types of e-waste bring different degrees of damage. For example, the treatment of electric cables, that does not have an intrinsic hazardous character (except for cables containing heavy metals), has a primary

damage on human health (due to the dioxins released during the uncontrolled combustion of the coating rubber) and a secondary damage on the environment. The Hazardous contents in the electronic equipment include:

- Lead
- Brominated Flame Retardants
- Chromium
- Mercury
- Beryllium
- Cadmium
- Barium
- Carbon Black
- Phosphor

Regarding the impacts on the environment, e-waste treatment produces leachates, particle matters, ashes and effluents that contribute to the loss of agriculture land fertility, the pollution of soils, of surface waters, of the air and, on the long term, of ground waters. Considering that the sector brings a non-negligible financial resource to local residents, there is an urgent need to adopt flexible methods to ensure, as much as possible, the separation between the hazardous and non-hazardous components and to apply modern and safe treatment processes. Another issue is the gap of knowledge about the source, the amount, the processing and end points, which makes the tracking and the quality/ quantity/type monitoring of this type of waste difficult to achieve.

E-waste management procedures shall be adopted at all stages of phases and will follow and comply with the ESS 3 of the Environmental and Social Framework of the World Bank, all national regulations, the World Bank EHSGs and relevant GIIP. This will cover electrical and telecommunication waste, that could occur during the upgrade or renewal of computer installations and infrastructure, as well as during operation and replacement of electrical equipment (computers, servers, cables, etc.) and the equipment end of life.

4. E-waste Inventory for the Project

The Project is 3rd Public Financial Management Reform Program, and the PIU will purchase some office furniture and ICT equipment for the PIU office, MOF or MOHA. The ICT equipment would include computers, scanners, printers, data storage and backup facilities, networking and connecting (LAN/VAN), and other facilities, to support components of the Project. ICT equipment would become E-waste after the end of their effective lifetime. Table 2 provides list of ICT equipment to be purchased for the Project.

Table 2: Procured inventory of ICTs

No	Items	Quantity
1	Server	2
2	Pocket wifi	16
3	Printer	30
5	Scanner	27
6	Projector	9
7	Notebook	21
8	External hard disk	6
9	desktop	59
10	UPS	6
11	Refrigerator TOSHIBA 2 door 7 Q/ gray	1
12	Drinking water tank Imarflex (Hot and Cool)/ gray	1
13	Coffee machine Duchess/red	1
14	Camera	1
15	Accounting software	1
16	Video Conference Logitech Rally	1
17	router	1
18	Nutanix NX-8235-G7, 2 Node configuration (Server)	1
19	Oracle Database Standard Edition 2 - Named User Plus Perpetual (Software)	10
20	Cisco switch WS-C3850-24XS-E (L3 Manage Switch)	2
21	Brand & Model: HPE DL380 Gen 10 with Sengfor software (server)	1
22	Software-Licence	1
23	Brand & Model: Cisco catalyst 3650 (Switch)	4
24	Software upgrade of the debt management system to version 6	1

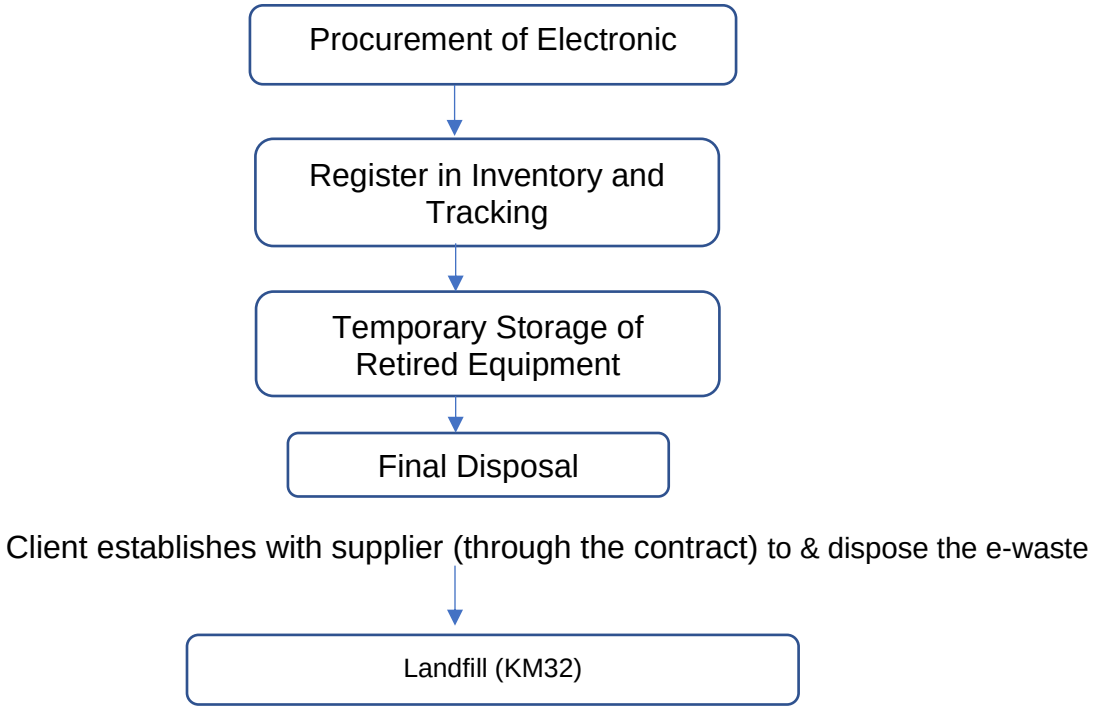
4. E-Waste Management Procedures

The Deputy Head of Project Implementation Unit (PIU) with the technical support from E&S consultants will be responsible for planning, supervision, training/capacity building, coordination, monitoring and reporting of this E-waste management plan. The E&S focal person, line ministries and statistical centres at the provincial level will be responsible for implementation and regular reporting of this E-waste management plan to PIU.

There is no policy/guideline specifically for the e-waste management in Lao PDR so, the disposal of small-scale e-wastes anticipated under the project would be handled as part of properly disposed municipal waste stream. Although, KM32 site is not designated a sanitary landfill, a zone of the KM32 landfill is designated for general hazardous wastes disposal so it will be used for disposal of the e-waste under the project.

The client with the ICT equipment supplier will establish toxic and hazardous wastes (include e-waste) management procedures include collection of damaged and expired ICT equipment, separation, recycling, storage, transport and dispose of the residual parts at the designated site. Considerations of toxic and hazardous wastes (including e-waste) management procedures will be incorporated in the procurement documents and contract of the ICT equipment suppliers. Figure 1 below summaries the procedure that would be applied to the e-waste management related to the ICT equipment installation under the Project.

Figure 1: *E-waste Management Flowchart*



Inventory Register of the ICT Equipment

Once the ICT equipment is procured, PIU shall establish an electronic equipment inventory, with detailed information of equipment name, model, serial number, assigned user, location of use. This registration shall be co-signed by the PIU inventory staff and the user and be kept as part of the PIU archive.

Tracking Use of ICT Equipment for the project

PMU shall keep tracking the use of these equipment on an annually basis to update the current users, locations and any malfunction.

Avoidance and minimization of e-waste

1. Develop and implement a procurement policy for electrical and electronic equipment that:
    a. requires products to be in compliance with EU Directive 2002/95/EC on the restriction of the use of certain hazardous substances in electrical and electronic equipment. With certain exemptions, this EU directive requires that new electrical and electronic equipment put on the market does not contain lead, mercury, cadmium, hexavalent chromium, polybrominated biphenyls (PBB) or polybrominated diphenyl ethers (PBDE).
    b. requires products to be in compliance with EU Directive 2009/125/EC on establishing a framework for setting of eco-design requirements for energy-related products. To be considered, the product should have the CE marking as required by the Directive, whereby the manufacturer or its authorised representative ensures and declares that the product complies with all relevant provisions of the applicable implementing measure of the Directive.
2. Appoint an officer responsible for determining when an electrical or electronic equipment has reached its end-of-life.
3. Develop methods to extend the life of electrical or electronic equipment. This could include handing over to other users. This should include a procedure to check if the equipment could be used in another department, training institute or job centre – or handed over to students for use at their home/accommodation. Electronic equipment that has been handed over should be tracked so that once the end-of-life has been reached, the equipment will be recycled/disposed of appropriately.
4. Purchase printer cartridges from suppliers that will take back the used cartridges for remanufacturing. In this way, the entire shell of the cartridge, which is made of plastic is used again instead of being recycled or disposed of at a landfill.

Temporary Storage of E-waste

5. E-waste should be stored in a well-ventilated room with impervious surface in a dry atmosphere at room temperature, not exposed to sunlight or rainfall. The equipment should be stored on pallets or shelves.

6. Fragile equipment such as computer monitors (Cathode Ray Tube, CRT) and fluorescent lamps should be carefully handled and stored to avoid damages (e.g., put in the original packing).
7. E-waste should not be stored together with other waste types.
8. Batteries should be disconnected from the products.
9. Lithium batteries should be stored in a way that ensures that the battery terminals do not get in contact with any metals or other battery terminals.
10. There should be no dismantling of electronic or electrical products.
11. E-waste should be stored for as short a period as practicable.

E-Waste Recycling and Disposal

12. Identify and categorize the various e-waste types that are likely to be generated under the Project.
13. Under this project, the client will establish with supplier a toxic and hazardous wastes (include e-waste) management procedure include collection of damaged and expired ICT equipment, separation, recycling, storage, transport and dispose of the residual parts at the designated site.
14. Carry out inspections of supplier firm to check that the management of the e-waste is environmentally sound, in accordance with health and safety standards and in compliance with relevant requirements. This should include checking:
    a. that data storage equipment is physically destroyed;
    b. that e-waste is stored and handled under weatherproof cover;
    c. that the operator keeps a record of final disposal of waste from the dismantling and recycling process;
    d. that final disposal of waste is only done at sites with the required authorization;
    e. that there is appropriate fire prevention and fire-fighting equipment;
    f. that any final disposal is consistent with end-of-life handling instructions in the product declaration;
    g. compliance with restrictions on export of hazardous waste under the Basel Convention;
    h. that emissions and discharges from the operations are monitored for content of hazardous substances and that relevant emission/effluent limit values are complied with;
    i. that the work area is clean and free of dust;
    j. that there is no burning or heating of e-waste components;

k. that workers are wearing appropriate PPE (protective helmets, protective footwear, protective gloves, eye and face protection, hearing protectors, respirators); and
l. that dust levels are controlled by local exhaust ventilation.

Data security

15. Before being taken out of use or handed over to other users, all data will be permanently erased from hard drives in computers, smartphones, printers, scanners, copiers and any other electronic equipment that may store data.
16. The IT managers of LSB and MOLSW with technical assistance from the Project will develop the specific procedures for erasing data from electronic equipment.

Training and Awareness Raising

17. Training and awareness raising on proper management of e-waste will be carried out as part of regular office meetings for personnel and at training sessions for project staffs working for the project.
18. Key do's and don'ts include:
    a. Do's:
        - Always dispose e-waste in the designated bins or containers marked "E-Waste" and as specified in the e-waste management plan
        - Sent discarded electronic equipment only to authorized collection center so they could be properly recycled or disposed off
    b. Don'ts:
        - Do not give e-waste to informal recyclers or unorganized scrap dealers.
        - Do not dispose e-waste in garbage bins for municipal waste.

Institutional Arrangement and Reporting

PIU shall assign a staff who is responsible for creation and management of the equipment inventory throughout the project implementation. This designated staff will be monitoring and updating the inventory according to the above procedures and prepare relevant reporting for PIU. PIU shall provide the update on the e-waste management situation in the project progress report to the Bank on an annual basis, throughout the project implementation period. The assigned staff should be appointed prior to appraisal.

ANNEX 1

1. Based on the above guidelines, develop a site-specific E-Waste Management Plan with the following general content:

Table 3: List and Description of E-Waste

E-Waste Description	Anticipated quantity	**Potential Hazards**	**Temporary Storage**	**Transport**	**Reuse**	**Recycling Company**	**Final Waste Destination**
CRT Monitors							
LCD/LED Displays							
Keyboards							
CPUs							
Laptops							
Batteries							
Cell phones							
Printers/scanners							
Printer Cartridges							
Copy Machines							
Lamps containing mercury							
Audio/Video Equipment							
Wiring							
Package waste							

ANNEX 2: Material Handling Information[1]

Material from Table 2
On-Site Storage and Handling. Describe any special pollution prevention procedures for use or handling of this material.
Describe how material will be stored, protected from rainwater, etc. Identify sensitive site areas or special measures that will be undertaken to protect the environment.
Identify Supplier's contact responsible for management of material on-site.
Name and phone number
Identify Supplier's contact responsible for removal of this material from site.
Name and phone number
Proposed Destination (landfill, clean fill site, recycling center, etc.).
Name, Address, Contact Information and facility waste permit number if applicable. If hauling to an established, commercial materials recovery facility or waste disposal facility, document how all hauling will comply with established haul routes, respective traffic laws, and will commence only during the disposal facility's hours of operation. If hauling to an off-site land disturbing activity, document how hauling will comply with established haul routes, traffic laws and any restrictions imposed by the affected locality (e.g., only on certain days or times).

[1] This will be prepared for each waste item.