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MULTILATERAL INVESTMENT FUND

BOLIVIA

**e-WASTE RECYCLING: CIRCULAR ECONOMY FOR URBAN SUSTAINABILITY
IN THREE CITIES OF BOLIVIA**

(BO-T1272)

DONORS MEMORANDUM

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PROJECT SUMMARY

e-WASTE RECYCLING: CIRCULAR ECONOMY FOR URBAN SUSTAINABILITY IN THREE CITIES OF BOLIVIA

Bolivia generates four kilograms of electric and electronic equipment waste (EEEW), or e-waste, per inhabitant per year. The country's three main departments (La Paz, Cochabamba, and Santa Cruz) generate 30,000 metric tons of e-waste per year. e-Waste disposed of improperly poses a major risk to the environment and to health.

In Bolivia, the management of e-waste is still in its early stages, in terms of both operational systems and legislation. Operating companies are few, small, weak as far as processes and use of industrial safety protocols, and are just getting into selling activities. The recently passed Integrated Solid Waste Management Law includes the principle of extended producer responsibility (EPR)¹ for e-waste. Under this principle, producers and distributors are responsible for the integrated management of their products all the way through the post-consumer phase, when they become waste.

The project's objective is to develop a model for integrated e-waste management in three cities of Bolivia: La Paz, Cochabamba, and Santa Cruz. The project is based on a circular economy that is meant to preserve and improve natural capital by controlling finite assets (precious metals and water) and optimizing the use of products, components, and materials through the collection and recycling of EEEW by formalized small businesses. In addition to generating revenue and creating jobs, these businesses will offer an alternative to solve environmental problems. This project will strengthen small businesses to become e-waste management and operating companies (for collection, dismantling, sorting, and storage); raise public awareness about e-waste and its proper disposal; and develop partnerships with public and private actors for e-waste management.

Fundación Estás Vivo, an arm of the Bolivian telephone company Nuevatel PCS-VIVA, will execute this project. Other stakeholders will be the municipal governments of La Paz, Cochabamba, and Santa Cruz, which are responsible for refuse collection, as well as Swisscontact, GIZ, and the chambers of industry and commerce of the three cities, which will promote the project among their members.

The project will contribute to the development of EEEW regulations, in order to put safe procedures for waste disposal into practice, reduce environmental pollution by recovering tons of EEEW (for reuse or proper final disposal), and create business opportunities for small recycling companies under a circular economy model. The project will also contribute to climate change mitigation by reducing the energy consumption associated with the extraction, processing, and transportation of commodities.

¹ As of the date of project preparation, there were no regulations governing e-waste.

ANNEXES

Annex I	Results Matrix
Annex II	Summary Budget

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Proposed resolution

INFORMATION AVAILABLE IN THE TECHNICAL DOCUMENTS SECTION OF THE MIF PROJECT INFORMATION SYSTEM

Annex III	Itemized Budget
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Annex V	Project status reports, fulfillment of milestones, fiduciary agreements, and institutional integrity

ABBREVIATIONS

EPR	Extended producer responsibility
EEEW	Electric and electronic equipment waste
INE/WSA	Infrastructure and Energy Sector, Water and Sanitation Division

BOLIVIA
e-Waste RECYCLING: CIRCULAR ECONOMY FOR URBAN SUSTAINABILITY IN THREE CITIES OF
BOLIVIA
(BO-T1272)

EXECUTIVE SUMMARY

Country and geographic location	Bolivia. La Paz, Cochabamba, and Santa Cruz.		
Executing agency:	Fundación Estás Vivo ²		
Focus area:	Inclusive Cities		
Coordination with other donors/Bank operations:	This project was prepared in coordination with the Water and Sanitation Division of the IDB's Infrastructure and Environment Sector (INE/WSA). The Climate Change and Sustainability Division (CSD/CCS) reviewed whether the project could properly be included as part of Climate Finance Tracking.		
Beneficiaries:	The project will benefit 30 small businesses that dismantle waste; 500 informal collectors and dismantlers; 3 municipal governments (La Paz, Cochabamba, and Santa Cruz); the Office of the Vice Minister for Solid Waste as sector steward; and 40,000 people who will participate in the e-waste management system.		
Financing:	Technical cooperation funding:	US\$500,000	50%
	Counterpart:	US\$500,000	50%
	TOTAL PROJECT BUDGET:	US\$1,000,000	100%
Execution and disbursement periods:	36 months for execution and 42 months for disbursement.		
Special contractual clauses:	Selection of the project coordinator will be a condition precedent to the first disbursement.		
Environmental and social impact review:	This operation was prescreened and classified pursuant to the requirements of the IDB's Environment and Safeguards Compliance Policy (Operational Policy OP-703) on 3 October 2016. Given the limited impacts and risks, the proposed classification for this project is category "C."		

² Financed by the Bolivian telephone company Nuevatel PCS-VIVA.

I. THE PROBLEM

- 1.1 Bolivia generates four kilograms of electric and electronic equipment waste (EEEW),³ or e-waste, per inhabitant per year. The country's three main departments (La Paz, Cochabamba, and Santa Cruz) generate 30,000 metric tons of e-waste per year.⁴ e-Waste disposed of improperly poses a major risk to the environment and to health.⁵
- 1.2 EEEW is the fastest-growing type of waste because computer and communication equipment becomes obsolete so quickly. It also contains metals and other hazardous materials that, if mishandled, can have major adverse impacts on health, climate change, and the environment. These problems are exacerbated by the fact that the population does not know how to dispose of these products correctly, and usually do so in an inappropriate manner.
- 1.3 In Bolivia, the management of e-waste is still in its early stages, in terms of both operational systems and legislation. Operating companies are few, small, weak as far as processes and use of industrial safety protocols, and are just getting into selling activities. They also have difficulty identifying markets and meeting environmental requirements to obtain the certifications allowing them to operate. There are also many informal, single-person initiatives to dismantle electronics and sell or customize them for reuse, which do not follow safe handling techniques and are unaware of the environmental risks.
- 1.4 The recently passed Integrated Solid Waste Management Law establishes that the operational management of hazardous waste, which includes EEEW, will be subject to differentiated requirements, so the first studies are being done for its regulation in Bolivia. The law also includes the principle of extended producer responsibility (EPR) for e-waste. Under this principle, producers and distributors are responsible for the integrated management of their products all the way through the post-consumer phase, when they become waste.
- 1.5 This legal change offers a great opportunity for the emergence of small businesses (microenterprises) around this waste, whether for repair, dismantling of components, or selling for recycling/reuse. These microenterprises have a great opportunity to grow and solve the environmental problem posed by EEEW.
- 1.6 It is imperative to implement a model for integrated solid waste management that includes processes ranging from raising public awareness to generation, separation, differentiated collection, transport, bulking, sorting, disassembly, sale of parts, and final disposal, in order to prevent pollution problems in cities and seize the economic opportunities opened up to small businesses.
- 1.7 Several different operators are involved in the e-waste recycling chain and will be beneficiaries of the project: existing small businesses with limited resources that are

³ EEEW, or e-waste, includes all the components, consumables, and subassemblies that are part of a product at the time it is discarded ("e-Waste data in Latin America: Statistical analysis and policy recommendations." United Nations University, November 2015). For the purposes of this project, e-waste includes general electric and electronic equipment, audiovisual reproduction devices, cellular telephones, computers and peripherals, etc.; does not include household appliances.

⁴ Law 755 on Integrated Solid Waste Management.

⁵ e-Waste contains halogenated compounds, heavy metals, inks, and radioactive substances that the country is unable to process or discard.

unable to achieve sustainability; the municipal governments of the three cities; the Solid Waste Office; and indirectly, the population of La Paz, Cochabamba, and Santa Cruz.

II. THE SOLUTION

Project description

- 2.1 The project's objective is to develop a model for integrated e-waste management in three cities of Bolivia: La Paz, Cochabamba, and Santa Cruz.
- 2.2 The project is based on a circular economy model that is meant to preserve and improve natural capital by controlling finite assets (precious metals and water) and optimizing the use of products, components, and materials through the collection and recycling of EEEW by formalized small businesses. In addition to generating revenue and creating jobs, these businesses will offer an alternative to solve environmental problems. By reducing the energy consumption associated with the extraction, processing, and transportation of commodities, the project will be contributing to mitigate the effects of climate change.
- 2.3 The model for integrated e-waste management includes producers (manufacturers and importers/distributors), users, and municipal governments responsible for refuse collection, as well as the Solid Waste Office, a central government agency responsible for sector regulation and policy-making. It spans all processes along the chain: waste generation, onsite separation, raising public awareness, sorting, disassembly, decontamination, selling of recyclables, and the safe final disposal of nonrecyclable materials.
- 2.4 An e-waste management system will be established in La Paz, Cochabamba, and Santa Cruz through partnerships with the municipal governments to promote the participation of small businesses in EEEW management. The project will strengthen microenterprises and small businesses and train them on dismantling safely and explore market opportunities for recyclable materials, as well as other mechanisms to make them sustainable. It will support entrepreneurs in building their businesses around EEEW. Waste producers and importers will be included, and the role of each actor will be analyzed against EPR models. In addition, the project will include programs to raise awareness among the population and train informal recyclers.
- 2.5 **Innovation.** EEEW management is a relatively recent concept for the sustainability of cities. There are also no initiatives in Bolivia (and very few in the region) to address it where small businesses with growth potential are engaged within a framework for environmentally friendly management and use. EEEW can be regarded as a higher-value market within waste, because it contains precious metals that are nevertheless polluting and so require special handling. The project is innovative in harnessing a circular economy model to optimize the use of resources, as well as generate revenue and create jobs.
- 2.6 **Component I: Creation and strengthening of EEEW management and operating companies,** to handle and dismantle e-waste safely and engage small private enterprises in integrated e-waste management. A diagnostic assessment will be done on the conditions of individuals/companies engaged in EEEW management, in order to implement an improvement plan. The conceptual design

will be developed for the integrated EEEW management system, and the processes will be determined for its safe implementation, preparing manuals, protocols, and operational requirements. Support will be provided for the selling of materials to be recycled, both domestically and those requiring export for treatment and final disposal. Administrative, business management, and industrial safety capabilities will be developed at companies and startups, for their sustainability. An innovation fund will be created to promote the engagement of microenterprises and small businesses in EEEW,⁶ with funding awarded by competition. Advisory support and training will be provided all along the EEEW chain, including to informal recyclers.

- 2.7 **Component II: Public awareness and education**, through the development of a communication and education strategy to inform the population of the participating cities via multiple media outlets, about the characteristics and hazards of e-waste, as well as the differentiated collection system and drop-off locations. The support will be in the form of publicity materials, organizing events, and other communication and outreach actions.
- 2.8 **Component III: Public-private partnerships with value chain actors.** Agreements will be entered into with value chain actors, whereby they commit to participate in the e-waste management system in three cities, as well as support the drafting of public policies and regulations. The project will also work with companies that generate waste (both producers and importers/distributors), to bring them into the EPR system and obtain their commitment to protect the environment in the cities and finance the cost of the final disposal of their products, making the integrated management model being proposed more sustainable. Contacts will be made with e-waste buyers, to facilitate market access for small businesses and intermediaries.⁷ Efforts will be made to make it easier for public and private entities to safely discard electronic equipment recorded as assets on financial statements. Additionally, the creation of a national EEEW recycling network will be promoted by expanding and consolidating working groups on these issues and participating international networks.

Outcomes, impact, monitoring, and evaluation

- 2.9 The project will contribute to reduced environmental pollution by recovering tons of EEEW and creating business opportunities for small recycling companies under a circular economy model. Economic opportunities will be created, increasing the revenues of 30 new and existing small-scale operators.
- 2.10 The project will contribute to the development of EEEW and EPR regulations, in order to put safe procedures for waste disposal into practice.
- 2.11 The project is expected to reach 1.5 million citizens, making them aware of the risks of improper handling of e-waste, and encourage them to recycle EEEW, in order to favor the sustainability of the cities La Paz, Cochabamba, and Santa Cruz.
- 2.12 The project will have a monitoring system based on the profile and established indicators, collecting data on the microenterprises and small businesses and integrated e-waste management processes on an ongoing basis, to generate project

⁶ Details on operation will be included in specific rules governing the innovation fund.

⁷ Preliminary talks are underway with DOWA (Japan) for its involvement in the project.

status reports. An outside consultant retained by the Bank will conduct a final evaluation of project outcomes.

III. ALIGNMENT WITH THE IDB GROUP, SCALABILITY, AND RISKS

Alignment with the IDB Group

- 3.1 The IDB country strategy with Bolivia 2016-2020 will contribute to the country's medium- and long-term development by supporting the policies advanced in the Economic and Social Development Plan for 2016-2020. One of the priority areas is increasing productivity and diversification in the economy, with an emphasis on business formalization and growth. These areas coincide with this proposal to improve EEEW management through legally established small businesses.
- 3.2 The project shares the objectives of the IDB's Water and Sanitation Division (INE/WSA) for the management of recyclable solid waste. The Bank has a solid waste loan operation in Bolivia (loan BO-L1073). In the future, work can also be done jointly with the Inter-American Investment Corporation (IIC) to provide loans to companies that meet the IIC's requirements.
- 3.3 **Coordination with the Regional Initiative for the Economic and Social Inclusion of Recyclers (RG-M1179).** This initiative, which was approved by the Donors Committee on 4 May 2011 and modified on 15 December 2015, is a platform for multisector strategic partnerships among the various stakeholders in the recycling business (public and private sectors, civil society, research and knowledge institutions, and recyclers), so as to achieve greater scale and impact with specific initiatives. Its objective is to test and disseminate good practices and effective models for the economic inclusion of recyclers. The initiative is a joint effort between the MIF and Fundación AVINA, with technical and financial support from INE/WSA, and is intended to generate systemic change in three areas: (i) in the economic and social conditions of recyclers and their families, by upgrading their skills and making their activities more profitable and secure; (ii) in public policies, by improving municipal capacities to work with informal recyclers and to develop inclusive waste management systems; and (iii) in the private sector, by including recyclers in the value chain. This project will coordinate all efforts with the Regional Initiative for the Economic and Social Inclusion of Recyclers and is perfectly aligned, seeking to improve recycler incomes and working conditions by connecting cooperatives with EEEW recycling markets, while establishing partnerships with municipalities and companies, all under a circular economy model.
- 3.4 The project contributes to the IDB Group's goal of doubling financing for climate change by 2020 by reducing emissions and the energy consumption associated with the extraction, processing, and transportation of commodities.

Scalability

- 3.5 As part of the scalability strategy, the project will support the Solid Waste Office of the Ministry of the Environment and Water in the preparation of legal and regulatory instruments governing EEEW and EPR.
- 3.6 Additionally, working directly with municipal governments, which are responsible for waste disposal, guarantees the project's scalability since it develops a feasible

model that can be adopted in other cities for reducing the amount of EEEW for final disposal, therefore prolonging the useful life of sanitary landfills.

- 3.7 Lastly, the project will promote the creation of a national EEEW recycling network, expansion and consolidation of working groups on the issue, and participation in international networks. These activities will clear the way for adoption of the EEEW management model in different locations around the country.

Risks

- 3.8 The following risks have been identified: (i) mineral prices may continue to fall, negatively influencing the selling price of metals for recycling, which could affect the sustainability of operating companies. To mitigate this risk, other types of revenue are being added for operating microenterprises and small businesses, so that they can support themselves until prices stabilize; and (ii) the cost of exporting recyclable materials that cannot be processed in Bolivia rises, which could impact the revenue of microenterprises and small businesses. This may require negotiation of selling prices or potentially subsidies from the national and municipal governments.

IV. COST AND FINANCING

- 4.1 The project has a total cost of US\$1,075,600. Of that amount, US\$500,000 (46%) will be contributed by the MIF as nonreimbursable technical cooperation funding, and US\$575,600 (54%) will be contributed by the counterpart, in cash and in kind.
- 4.2 **Retroactive recognition of counterpart funds.** Expenditures of up to US\$25,000 made on or after 18 July 2016 to implement activities included in the budget will be recognized against the counterpart contribution, provided that they have complied with procurement processes satisfactory to the Bank.

Project components	MIF	Counterpart	Total
Component 1: Creation and strengthening of EEEW management and operating companies	326,650	300,920	627,570
Component 2: Public awareness and education	30,000	159,920	189,920
Component 3: Public-private partnerships with value chain actors	26,600	20,204	46,804
Scalability strategy activities	2,000	10,000	12,000
Administration	70,560	82,956	153,516
Monitoring and evaluation	26,000	1,600	27,600
Ex post reviews	9,000	-	9,000
Contingencies	9,190	-	9,190
Grand total	500,000	575,600	1,075,600
% of Financing	46%	54%	100%

V. EXECUTING AGENCY AND IMPLEMENTATION STRUCTURE

Description of the executing agency

- 5.1 Fundación Estás Vivo will be the project executing agency and sign the technical cooperation agreement with the Bank. As the philanthropic arm of the Bolivian telephone company Nuevatel PCS–VIVA, it focuses on the intensive use of telecommunications to improve the quality of life of Bolivians, partnering with the three levels of government, as well as civil society.
- 5.2 Since 2013, Fundación Estás Vivo has worked on a project for the collection, sorting, recycling, reuse, and disposal of EEEW. In 2014 and 2015, it conducted awareness and education campaigns on social networks to promote EEEW collection, approaching the recycling process in coordination with REEcicla, a company dedicated to recycling these materials. Thus far, approximately 10 tons of EEEW have been processed, with 90% of these materials collected through activations at the International Fair in Cochabamba and EXPOCRUZ Fair in Santa Cruz.
- 5.3 The foundation will partner with the municipal governments of La Paz, Cochabamba, and Santa Cruz, which are responsible for refuse collection. It will also coordinate with Swisscontact and GIZ, which are already working in this area. Chambers of industry and commerce will be encouraged to get involved and promote the project among their members.

Structure and implementation mechanism

- 5.4 Fundación Estás Vivo will establish the structure necessary to execute the project activities and manage project resources efficiently and effectively. It will also be responsible for delivering status reports on project implementation.
- 5.5 The foundation's director will be in charge of the project's overall management, and the foundation's program officer will be responsible for technical management. An outside consultant retained with contribution resources will be responsible for project coordination. The administrative structure of the VIVA telephone company, which provides support to the foundation, will also take on the responsibility of project administrative management, with the support of an administrative assistant hired for that purpose. The status report requirements are given in Annex V of the technical files of this operation.
- 5.6 Regular meetings will be held for interagency coordination, to determine action and implementation strategies, as well as bilateral meetings with the different stakeholders to perform the joint activities required. Project representatives will participate in sector coordination forums to report on progress. The MIF will support the executing agency in project development and may be involved in strategic decision-making.

VI. FULFILLMENT OF MILESTONES AND SPECIAL FIDUCIARY ARRANGEMENTS

- 6.1 **Results-based disbursements and fiduciary arrangements.** The executing agency will adhere to the standard MIF arrangements for results-based disbursements, procurement, and financial management, as specified in Annex V.