

# POTENTIAL OF THE CIRCULAR ECONOMY FOR SUSTAINABLE AND INCLUSIVE DEVELOPMENT IN LATIN AMERICAN COUNTRIES: THE CASE OF THE ELECTRICAL AND ELECTRONIC EQUIPEMENT

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# Research Project Team

Potential of the circular economy for sustainable and inclusive development in Latin American countries: the case of the electrical and electronic equipment

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Research Team :---->>>>

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# Objective of the study

**PROBLEM :** EEE chain & WEEE in the developing countries of Latin America and proposals based in the design and dissemination of **circular business models** .



**APPROACH :** the entire production-consumption-post-consumption chain; No only the final phase (Waste). Importance of design , production and marketing strategy of the big global companies that dominate the GVCs of AEE, that condition obsolescence, rate of renewal / replacement of the products and their reparability .



**SPECIFIC FOCUS :** countries of Latin America .

- The problems and challenges to overcome are different to that of countries industrialized , which control the EEE production .
- Selecting 4 LA countries with similarities and differences to analyze the specificities : **Mexico, Cuba, Ecuador and Argentina** .



**OBJECTIVE:** analysis of the **pre-conditions and the possible strategies** to contribute to the implementation of the **Circular Economy**, and contribute to sustainable and socially inclusive development, in line with the 2030 Agenda.

# Methodology and phases of the study

01

1. **Diagnosis** :  
A) Statistics on production and trade of EEE, WEEE, WEEE management, etc.;  
B ) Study of current legislation and policies ; C ) Review of academic and grey literature

02

2. Delimitation of 12 **activities or circular models**

03

3. SWOT of each country

04

4. Systematization of the **prerequisites** fulfilled

05

5. Design **policy packages** to boost CE and Circular Business Models in this sector, adapted to the specific conditions of each country.

# AEE Chain: EEE consumer countries with low production

An analysis of the specific reality of Latin American countries reveals its secondary role in the global EEE production, consumption, and post-consumption chain.

The four countries are characterized by a **limited production capacity of EEE** and, consequently, its consumption depends on imports for almost all types of EEE products.

Only Mexico and Argentina have a small production capacity, especially as assemblers.

**EEE consumption** (measured in kg/ inhabitant ) in these countries is considerably lower than in more industrialized countries and has grown moderately over the last decade, depending on the economic situation in each country. It increased slightly in Mexico and Ecuador and has stagnated in Argentina and Cuba.

All countries have a **EEE repair business sector, both within the formal and informal economies**, although reliable and homogeneous figures are not available for either of the two EEE repair sectors.

# Weaknesses in WEEE (1):

## Increase in WEEE, poor management infrastructure, informality and imports

This countries have experienced a significant increase in the volume of WEEE generated over the last decade (with levels ranging from 5.1 kg/inhabitant in Ecuador to 9.7 kg/ inhabitant in Mexico in 2019)

The main concern is that the **collection and recycling rate is very low** in all these countries, standing at 3-4%, well below the world average of around 17%.

In no case is there a significant amount of management and treatment of POPs contained in WEEE. This means that only a tiny fraction of the waste is documented and can be recycled by exploiting **valuable secondary resources** (aluminum, iron, copper, cobalt, palladium, gold, etc. ) or that other **hazardous waste** containing heavy metals, POPs, and CFCs is properly treated and processed .

Particularly **dangerous is the incineration** of these products, including plastics containing "brominated flame retardants" (BFRs), which emit large amounts of carcinogenic dioxins and furans, as well as CO<sub>2</sub>.

In the countries studied (with the exception of Cuba) it is important he **informal sector** , alongside the formal sector, in waste collection, which constitutes a risk due to the high proportion of hazardous waste (heavy metals, POPs and CFCs) handled without adequate technical conditions and training.

## Weaknesses in WEEE (2): Insufficient infrastructure, Insufficient regulation and limited capacity for compliance

These data on the sector and the limited capacity for collecting and processing WEEE are in line with the **limited development of infrastructure and legislation** related to this issue.

The existing **regulations** are too general and their development and implementation are clearly insufficient, although there are significant differences between the four countries studied.

Equally worrying is the importance, not always well reported and controlled, of the **import and export flows of WEEE** containing this entire range of components (flouting the Basel Convention).

# The lack of domestic production limits EC strategies

- Based on each country's SWOT analysis and the systematization of the prerequisites achieved, policy measures are designed to promote CE in this sector and Circular Business Models, adapted to the specific conditions of each country.
- The Limited capacity and experience **in the manufacture** of some EEE families conditions and **limits the formulation of ambitious EC strategies such as eco-design or the fight against obsolescence**
- **It also condition the capacity to adequately deal with the repair and life extension activities of EEE or the waste treatment and recycling strategies themselves .**
- Certainly, these basic conditions are fed back by other factors linked to the **social and institutional structure characteristic** of each country .



# Policy Package (list)

Industrial and technology policy to boost country production of AEE's

Regulation to promote repair , reuse and remanufacturing

Tax Policy ( benefits tax and subsidies ) to encourage repair , reuse and remanufacturing

Measures to encourage second hand and sharing consumption

Public Investment in WEEE collection , sorting and recycling infrastructure

Regulation and control of WEEE collection and management

Public Support to the recycling sector

Professionalization of WEEE management and WEEE recycling ( inclusion of informality )

Strict control and banning WEEE international flows

# Policy package (1)

**Domestic production:** It is recommended to adopt **industrial and technology policy measures aiming** at promoting the development of an **EEE production sector** both for its strategic interest and because it would create favorable conditions for CE and sustainability. On the one hand, it reduces the distance and the need for international transport and, on the other, it favors the development of knowledge and capabilities that **feed into repair, remanufacturing, and recycling activities**. It also helps to manage **extended producer responsibility** more effectively. Mexico and, to a lesser extent, Argentina have some experience in the manufacturing and, above all, assembly of certain types of EEE. Cuba has been building manufacturing capacity for some time, but is hampered by difficulties in sourcing components from abroad (Bloqueo).

- **Regulation and tax incentives for repair, reuse and remanufacturing:** Extending the useful life of EEE is the main measure of sustainability and circularity ( reducing the consumption of new equipment and reducing waste generation, in addition to reducing costs and expenses for buyers ). Tax measures and tax benefits ( e.g. , exemption or application of zero or reduced VAT rates), incentives, subsidies , etc.
- Also measures for training in repair and remanufacturing, support for collaboration and the establishment of agreements between interested parties (manufacturers, repair shops, remanufacturing, etc.).
- **Promote repair:** In all the countries analyzed there is a favorable culture of repair, but in many cases this is carried out informally.
- **Second-hand and sharing consumption :** Fiscal measures and the reinforcement of legal guarantees are proposed to encourage the consumption of second-hand EEE, as well as measures aimed at facilitating access to certain EEE by promoting public spaces for shared use or tax incentives for rental initiatives.

# P.P (2): WEEE collection, sorting and recycling infrastructure

- **Developing WEEE collection, sorting and recycling infrastructure** to increase collection and treatment capacity.
- Investment must be a key instrument, accompanied by various incentives for private companies. Some of these countries have been making efforts, but they are clearly insufficient.
- Legislation and regulation of the end-of-life processes for EEE, the treatment of WEEE waste in technically efficient and safe conditions, and managed by people with the appropriate knowledge to work with hazardous components,
- Argentina and Mexico have been taking steps toward establishing a detailed and demanding regulatory framework for these activities. However, although this regulation is still too generic, legislative projects are underway in this direction that are necessary to advance the specificity and detail. Above all, it is necessary **to develop effective monitoring and control instruments to guarantee effective compliance with the regulations and ensure the complete and correct management of WEEE** . Ecuador has begun to establish a legislative framework in this field. Cuba, for its part, has also been establishing regulations and developing infrastructure to advance WEEE recycling.
- Establishing recycling targets, establishing protocols, and properly training collectors are measures proposed for all four countries.

## P.P. (3): Professionalize, limit (banning) WEEE flows

It is necessary to promote measures to transform and professionalize a complex sector that handles highly technological products and components that are hazardous to the environment and health. In particular, measures must be implemented to facilitate the transition from the informal sector to the formal sector.

It is also necessary to effectively control the flow, transportation, and trade of WEEE. Argentina has imposed strict measures to prevent the entry of WEEE and to prevent its circulation within the country. These types of preventive measures, although complex, are also necessary in other countries.

# P.P. (4): Prioritizing measures by country: Mexico, Argentina, Ecuador

Differentiate and prioritize policy measures for each country based on its reality:

- **Argentina and Mexico :**
- They have a regulatory development that should advance in its detailed specification and, above all, in the effective fulfillment of the objectives established in the different phases of the chain, promoting the introduction of EC criteria not only in the final phase of WEEE but also in the previous phases of production and consumption.
  - They need to strengthen their formal repair and reuse sector with fiscal measures and facilitate the transition of the informal sector.
  - Likewise, they must invest in WEEE collection and treatment infrastructure to encourage the transition of the informal sector.
  - In the particular case of Argentina, the lack of national regulations governing WEEE hinders the development of related productive or commercial activities , strengthening the second-hand market ( P2P or B2P models ).
  - Develop appropriate WEEE legislation to link all stages of the production, consumption, and waste management chain in a virtuous cycle.
  - Create **indicators** and adapt existing ones, allowing for homogeneous information for the future that will enable decision-making regarding each category of EEE.
- **In Ecuador** , where there is a nascent regulatory framework for WEEE management and the promotion of the Circular Economy, the focus should be on the measures necessary to implement it effectively:
  - Measures such as establishing fixed or mobile collection points for WEEE,
  - Make public investment in separation and recovery plants for materials and parts that can be used in EEE repair activities,
  - Establish clear recycling goals, along with an information module that allows monitoring of the waste generated and treated in the country.

# Cuba: forced circularity, anti-obsolescence eco- design, limited by the blockade

In the specific case of Cuba, given its diverse socioeconomic model and the limitations imposed by the blockade, this country has long relied on creative activities guided by the goals of frugality and extending the useful life of goods.

They are currently incorporating the principles of CE as a central element of the development strategy across the economy as a whole. For its viability, measures that allow for an adequate supply of materials and technological components must be promoted.

**The experience of some companies in the country in designing and manufacturing EEE, taking into account the specific characteristics of climate, energy efficiency, and maximum durability, should be extended to the entire country's industry.**

Instruments to promote eco-innovation in production processes, aimed at incorporating eco-efficiency and eco-design into EEE, as well as policies aimed at training and educating people with skills in managing and repairing EEE products and components, would contribute to this uniqueness.



## Key challenges

Domestic production and reducing the power of the global big digital oligopolies

Disincentivising/de-escalating obsolescence

Promoting reparability and repair activities

Investing in collection , classification and treatment of WEEE Infrastructure

Enforcing the Basel Convention: Banning the illegal flows and international trade of WEEE

# ANNEXES

- SWOTs by country
- Pre-requisites for CE in EEA
- Policy package to promote CE in EEE, and WEEE, by circular activity and business model , by country .



# ARGENTINA (1)

## WEAKNESSES

- Lack of availability of information clear and systematic information on the generation, collection and treatment of WEEE in the country
- Regulations inadequate for tackle interjurisdictional movements of WEEE
- Lack of public resources to promote policies aimed at increasing circularity in the EEE sector (mainly due to recent economic crises and external debt constraints)
- Consumption patterns are conditioned by low disposable income of families, making it very difficult to implement strategies that require a general increase in consumer prices.
- The absence of federal regulations makes provincial regulations on ecodesign, EPR, and WEEE management less effective.

## THREATS

- Structural imbalances in the economy often lead to the outbreak of chronic crises.
- The high level of imports in the AEE sector in Argentina means that a considerable part of the production chain (including the design phases) is located outside the country, reducing the power of local public policies.
- Risk that changes towards greater circularity in consumption and production patterns in the AEE sector will lead to net job losses, especially as it is a sector with a high level of formal employment and high wages
- Difficulty for WEEE management and recovery agents belonging to the popular economy (whose social role is sought to be promoted and strengthened) to adapt to the demands of a market increasingly governed by competitiveness guidelines, regulations and international standards
- High levels of political polarization could hinder the generation of consensus for the implementation of new policies and modification of existing regulations.

# ARGENTINA (2)

## STRENGTHS

- Growing awareness among representatives of third sector organizations, academia, public institutions and international organizations about the need to make progress towards circular WEEE management in Argentina and the need to implement strategies that incorporate the different phases of the EEE chain
- There is an EEE assembly industry in the country. that could (and ought) be considered as a central part of EC's strategy for the sector
- Tradition of innovative resource utilization limited, especially in the university environment, the organisms of investigation and development, and in the popular economy
- Some cooperatives and companies of management Local WEEE authorities have already incorporated some repair and reconditioning activities into their tasks. of AEE

## OPPORTUNITIES

- Because EEE products contain a high level of imported components and whose prices do not adjust downwards, their replacement is discouraged in times of crisis, which could act as a driving factor in extending their useful life (something partially evident during the Covid-19 pandemic).
- Local repair and reuse activities could offer a relevant alternative to imports, considering the country's chronic foreign exchange restrictions.
- There are synergies between the social inclusion and environmental objectives of a comprehensive EC strategy applied to the circular management of WEEE.
- There is currently a general consensus among the various political forces on the need to advance legislation on extended producer responsibility (EPR).

# CUBA (1)

WEAKNESSES	THREATS
<ul style="list-style-type: none"><li>• Difficulties in the supply of electrical and electronic products, parts and components.</li><li>• Lack of appropriate technologies for the treatment of WEEE</li><li>• Limited waste collection and treatment capacity</li><li>• Lack of statistical data on WEEE</li><li>• Approximately 85% of the industrial added value in the country was concentrated in low and medium-low technology productions.</li><li>• Lack of management, control and treatment of WEEE.</li><li>• Growing accumulation of hazardous substances in homes and businesses.</li><li>• Lack of environmental culture</li><li>• High consumption of energy and natural resources, given the impossibility of easy, profitable and safe recycling</li></ul>	<ul style="list-style-type: none"><li>• US blockade of the island</li><li>• Limited financing capacity</li><li>• Problems of access to financing and technology</li><li>• Lack of investment in the sector</li></ul>

## CUBA (2)

STRENGTHS	OPPORTUNITIES
<ul style="list-style-type: none"><li>• Role played by the Recycling Business Group (GER).</li><li>• Increased manufacturing of new products using raw materials and recycled materials.</li><li>• Existence of workshops for the repair and extension of the useful life of EEE</li><li>• Existence of the National Energy Saving Plan</li><li>• Development of science and innovation for the recovery of EEE.</li><li>• Organized and institutionalized society</li><li>• Political will to address the problem</li></ul>	<ul style="list-style-type: none"><li>• The National Economic and Social Development Plan (PNDES) until 2030 includes, within the Productive Transformation and International Integration axis, a project for the development of the circular economy in the country.</li><li>• Existence of a regulatory framework for the activity, with inclusion of the topic in the economic development plan to 2030)</li><li>• Medium level of institutional development (GELECT Group, Electronics Industry Business Group, Recycling Business Group)</li><li>• Boosting linkage in the EEE sector as a result of investment by Chinese companies in the sector</li><li>• Job creation in environmental-related sectors</li></ul>

# ECUADOR (1)

## WEAKNESSES

- There is no record of imported WEEE
- Management of WEEE by Ecuadorian households: home storage, sales and donations to informal waste collectors or scrap metal dealers, and disposal with other waste.
- Regulations focused on the final phase of the product lifecycle (WEEE treatment and management). It does not include activities aimed at extending product life (repair, remanufacturing, eco-design, eco-innovation, among others).
- There are no economic or tax incentives for repair, remanufacturing, and recycling activities.
- Low rate of WEEE collection, recovery and recycling
- Lack of adequate infrastructure for WEEE management.
- WEEE statistics are not collected in Ecuador.
- Limited data on EEE imports and exports.
- There is no national EEE manufacturing industry.
- Ecuador is not highly integrated into EEE value chains. Its exports of these products are minor (refrigerators, home surveillance equipment, cooling equipment, etc.).  
professional).

## THREATS

- Demand for EEE and WEEE generation increase in line with GDP pc ( ppp ). In the long term, rising income pc will generate a larger flow of WEEE, which can pose a threat if circular planning and management are not in place.
- Lack of sectoral coordination. The productive sector focuses on trade, auto and bicycle repair (38.21% of total sales) and food manufacturing (21.08%).
- Lack of public and private resources to invest in the sector.
- Current economic problems facing the country

# MEXICO (1)

## WEAKNESSES

- The statistical data are heterogeneous and dispersed. Furthermore, they are structured with different criteria and categories, such as those used to identify EEE groups or by level of importance in terms of volume, size, and EEE consumption.
- The collection rate is 3% of the 1.1 Mt of WEEE generated per year (approximately).
- The recycling rate is low, at 10.8%.
- Low social culture of separating and recycling WEEE.
- There is no infrastructure to keep pace with WEEE generation to address its management. Much of the responsibility falls to the private sector, whose management is not monitored.
- High (excessive) liberalized tariff policy for EEE trade
- Weak policies on responsible production and consumption
- There are no Extended Producer Obligation policies
- There is no Circular Economy Law; its understanding is inherent to recycling, reuse , and the environment. However, at the national level, there is a National Circular Economy Strategy.
- Environmental Regulation has shown significant progress since its implementation (1988), but it can be characterized as superficial, since only three cities in the country have made progress in the matter and other related aspects.
- The informal WEEE industry has a significant relative weight in WEEE management processes (collection, transportation, separation, reconditioning, repair, refining and detoxication).

## THREATS

- High cross-border trade flow, both for new consumption and for waste disposal.
- Liberalization under the USMCA could lead to increased imports of WEEE from the US or Canada.
- EC and sustainability policy is losing ground as a result of other current issues in the country.

# MEXICO ( 2)

STRENGTHS	OPPORTUNITIES
<ul style="list-style-type: none"><li>• SEMARNAT reports demonstrate a willingness and sensitivity to address WEEE issues.</li><li>• Presence of a body responsible for protecting consumption (PROFECO).</li><li>• There is a significant academic diffusion to improve the problems caused by WEEE.</li><li>• Strong adherence to international regulations (Montreal Protocol, Rotterdam Convention, Stockholm Convention, Basel Convention, among others)</li><li>• Significant presence of the Repair and Maintenance sector</li></ul>	<ul style="list-style-type: none"><li>• Harmonize criteria in the variables/data of the statistical reports prepared by EEE producers and WEEE managers.</li><li>• A social culture of separating and collecting WEEE can be promoted through campaigns across all sectors.</li><li>• Take advantage of and enhance the values of indigenous communities related to harmony, respect and care for nature</li><li>• Harmonizing criteria for compiling statistics and promoting social culture contribute to improving the WEEE collection and recycling rate.</li><li>• Through PROFECO, international agreements and progress in compliance by USMCA partners can generate synergies with trading partners to reach agreements on the management of WEEE at the end of its useful life.</li><li>• Strengthening and enforcing international agreements can facilitate the establishment of tariff policies (payment and control) whose "polluter pays" principle is associated with a final objective in the implementation of EEE waste management.</li><li>• Compliance with industry standards in line with those established by business partners that are adopting more demanding environmental and circular criteria ( e.g., those carried out in European countries , Canada, the US or Japan).</li></ul>

## Summary table. Comparison and standardization of CONDITIONS/PRE-REQUISITES for the effective implementation of circular activities.

## 12 Circular Activities/Models

		ARGENTINA	CUBA	ECUADOR	MEXICO		
PREREQUISITES (CONDITIONS)	DESCRIPTION	MODEL / ACTIVITY 1, 2, ... 12	MODEL / ACTIVITY 1, 2, ... 12	MODEL / ACTIVITY 1, 2, ... 12	MODEL / ACTIVITY 1, 2, ... 12	1) Eco-design	7) Leasing / rental
Network of companies and other necessary agents	Manufacturers, repairers, collectors, waste managers, support services (information, traceability)	4, 6, 7, 8, 10	3, 4, 6, 10, 12	3, 7, 8, 11, 12	3, 4, 7, 8, 10	2) Design for EEE life extension	8) Sharing
Infrastructure	Collection points, warehouses, clean points	8, 11, 12	3, 8, 11, 12	8,9,11,12	3, 8, 11, 12	3) Repair activities	9) Second-hand sales
Regulation and incentives	WEEE regulation, warranty regulation, tax incentives for repair,	3, 6, 9, 10, 11	3, 4, 6, 11, 12	6, 10, 11, 12	1, , 3, 4, 6, 7, 9, 10, 11, 12	4) Remanufacturing activities	10) Extended producer responsibility
Financing	Public funds for infrastructure construction, private financing of	1, 2, 3, 4, 5	3, 4, 11, 12	11,12	1, 3, 5, 12	5) Manufacturing activities of components and parts	11) Management, storage
Knowledge and technology	Training in repair and remanufacturing activities, training in eco-design	1, 2, 3, 4	3, 4, 11, 12	3, 11, 12	1, 2, 3, 4, 6, 11	6) Extension of warranties, maintenance and repair	12) Recycling
Socio-cultural guidelines	Business attitudes towards clean and sustainable production, user-consumer attitudes towards responsible consumption,	4	3, 4, 8	3.12	3, 4, 12		



- **Summary of policy proposals to promote circular economy in the EEE sector , by type of circular activity (business model) and country.**

PHASE	CIRCULAR ACTIVITY	MEASURES	Argentina	Cuba	Ecuador	Mexico
	1) Eco-design	1) Promote eco-innovation projects for those involved in phase 1 of the AEE life cycle (manufacturing)		X		X
		2) Penalize the use of toxic materials and chemicals, e.g. those classified as POPs	X	X		X
		3) Eliminate accounting and tax depreciation on investments in harmful industries /	X			X
		4) Facilitate sustainable loans for the incorporation of energy-efficient industry/machinery	X			X
			X	X		X
PHASE	CIRCULAR ACTIVITY	MEASURES	Argentina	Cuba	Ecuador	Mexico
	2) Design for EEE life extension	1) Incorporate the concept of eco-design into the curricula of higher technical and technological institutes	x	X		x
		2) Generate tax incentives for the acquisition of components suitable for eco-design for the assembly of EEE	x			x
	3) Repair activities	1) Promote the creation of informal sector worker cooperatives and/or alliances between workshops specializing in the maintenance, repair, and recovery of EEE materials.	x	X	x	x
		2) Strengthen teaching and capacity building related to repair and maintenance at all educational levels and in public employment training programs	x	X	x	x
		3) Tax instruments (reduced income tax for individuals and legal entities whose main activity is repair; exempting incorporated technical services (labor) from VAT)	x	X	x	x
		4) Raise consumer awareness about the importance of periodic care and maintenance of EEE and the use of repaired products - awareness campaigns, information, labeling ,	x	x	x	x
		5) Develop agreements for the provision of reconditioned equipment in good condition between cooperatives/companies for the comprehensive management of WEEE and municipalities, other state or private entities.	x	X	x	x
		6) Implement/maintain/expand public repair centers and/or workshops	x	X	x	x

PHASE	CIRCULAR ACTIVITY	MEASURES	Argentina	Cuba	Ecuador	Mexico
	4) Remanufacturing activities	1) Promote the development of logistics agreements between EEE producing/assembling companies and WEEE management companies, regarding the recovery of parts and components (for example, to reduce storage and transportation costs).	X	X		X
		2) Articulation with knowledge transfer centers to expand the Know How already developed	X	X		X
		3) Obligation of manufacturers to keep stock of EEE parts and components for an extended period (between 10 and 20 years depending on the product)	X			X
		4) Eliminate VAT withholding for the acquisition of waste as an input for industrial activity or marketing		X	X	X
	5) Manufacturing activities of components and parts	1) Promote eco-innovation projects for those involved in phase 1 of the AEE life cycle (manufacturing)		X		X
		2) Penalize the use of toxic materials and chemicals, e.g. those classified as POPs	X	X		X
		3) Eliminate accounting and tax depreciation on investments in harmful industries /	X			X
		4) Facilitate sustainable loans for the incorporation of energy-efficient industry/machinery	X			X
		5) Generate tax incentives for the acquisition of components suitable for eco-design for the assembly of EEE	X	X		X

PHASE	CIRCULAR ACTIVITY	MEASURES	Argentina	Cuba	Ecuador	Mexico
	6) Extension of warranties, maintenance and repair	1) Extend maintenance and repair warranties for more than one year	X	X	X	X
		2) Promote dissemination, knowledge transfer, exchange of experiences and collaboration for the creation of joint initiatives in repair (Forums between agents dedicated to repair and maintenance activities, open publication of manuals)	X	X	X	X
	7) Leasing / rental	1) Promote tool rental businesses through a second-hand rental market, whether through P2P or B2P mechanisms, with compliance with quality standards, seals, eco-labels, etc.	X	X	X	X
		2) Grant annual tax bonuses (proportional to the rental value) to AEE businesses that incorporate the rental service			X	X
	8) Sharing	1) Provide rooms with free access to computer equipment (and other EEE) in municipal public facilities	X	X		
		2) Create collaborative P2P networks in the use of EEE through alliances with existing digital commerce platforms	X	X	X	X

PHASE	CIRCULAR ACTIVITY	MEASURES	Argentina	Cuba	Ecuador	Mexico
	11) Management, storage	1) Develop a management and storage plan for execution by informal collectors		X	X	
		2) Ensure the availability of public and/or subsidized facilities for the storage and management of WEEE by cooperatives registered for this purpose.	X	X	X	X
		3) Incorporate the definition of WEEE into legislation	X	X		X
		4) Digitize the preparation of management plans (inventory), making it a requirement for WEEE generators	X	X	X	X
		5) Capitalize the informal WEEE sector towards the formal sector, offering optimal working conditions				X
		6) Encourage companies to internally manage and store WEEE until it is collected by the competent entity.	X	X	X	X
		7) Establish fixed or mobile collection/clean/green WEEE collection points (including a collection plan for hard-to-reach homes)	X	X	X	X
		8) Subsidize access to a fleet of electric road vehicles and/or rail transport for the transport of WEEE between collection and storage/management points	X		X	
		9) Collaboration platform between WEEE management companies and repair workshops			X	
		10) Creation of an information module on the quantity of WEEE generated by type of waste at the country level to facilitate traceability of this	X	X	X	X

PHASE	CIRCULAR ACTIVITY	MEASURES	Argentina	Cuba	Ecuador	Mexico
	12) Recycling	1) Public investment in plants for the separation and recovery of materials and parts that can be used in EEE repair activities. These facilities must be duly accredited and comply with certain safety standards.	X	X	X	X
		2) Establishment of recycling goals by type of WEEE for public-private companies	X	X	X	X
		3) Information campaigns on recycling centers or places, WEEE separation, etc.	X	X	X	X
		4) Carry out recycling campaigns that provide bonuses/discounts for the payment of local taxes (property tax, license plate renewal, etc.)			X	X
		5) Incorporate the topic of recycling into educational plans	X	X	X	X

# Publications

## Documents and reports:

<https://www.usc.gal/gl/investigar-na-usc/grupos/icede/proyectos-investigacion/proyecto-potencial>

<https://www.usc.gal/gl/investigar-na-usc/grupos/icede>

## Related publications:

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