

The Chilean regulation of waste electrical and electronic equipment (WEEE): some of the challenges and opportunities to incorporate informal E-waste recyclers

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21.1 The international commitments of Chile in the management of WEEE

Two landmarks at the international level have defined the agenda for management of waste electrical and electronic equipment in Chile. One was the country's ascription to the Basel Convention in 1992, which establishes the principles for cross-border transit of hazardous waste, which must be consistently reduced to the minimum with appropriate environmental management. Hazardous wastes should be treated and disposed of spatially, as close as possible to the source of generation, given that they are expected to be reduced and minimized at the source.

Chile's entry into the OECD Organization for Economic Co-operation and Development in 2010 has been another important affiliation for Chile, to promote policy processes in relation to environmental policy, and specifically to the proper treatment of waste in the country. To become a member, Chile undertook commitments in line with the recommendations delivered in a first environmental performance assessment in 2010.

At the time, it was recommended to develop and strengthen the regulatory frameworks to improve environmental health and comply with Chile's international commitments. For the second environmental performance assessment in 2016, the OECD acknowledges the normative advances and specifically recommended strengthening waste management, particularly that of hazardous chemicals and substances under international treaties. In general, among other things, it is recommended to apply more stringent environmental regulations and to respond to the needs of infrastructure development (ECLAC/OECD, 2016).

21.2 Some background prior to the enactment of the Law

The first constitutional process is carried out in August 2013, where the first version of the draft law enters the chamber of deputies, to establish a national legal framework. Prior to this, waste electrical and electronic equipment (WEEE) was regulated under instruments referred mainly to solid waste. The competence of their management was the responsibility of the Ministry of Health, under Supreme Decree No. 148/2004, establishing the Health Regulations on the Management of Hazardous Waste.

The application of this decree did not adequately consider the social and economic potential of WEEE, because the standards requested did not correspond to the necessary conditions for the specific treatment of the devices. Therefore material recovery was costly. These requirements enabled only a limited number of companies to respond to these conditions, usually with a closed system of business between companies.

This situation was far from an adequate solution for this type of waste management, as OECD countries were solving it, particularly the member states of the European Union. Since 2002, the member countries of the European Union had a policy that combined environmental and social concerns, where electrical and electronic waste was included. This means that Latin American laws, including the Chilean one, have been nurtured on the European integrated system for waste created 14 years earlier.

Two years after the European provisions, in 2004, the Regional Latin American and Caribbean Platform for Electronic Waste (RELAC) proposed to work on the digital gap, which, according to their diagnosis, contributed to increase the lag in waste management in the region. To this end, it was proposed to investigate and raise awareness about the link between Information and Communication Technologies (ICTS) and electronic waste.

In this line, the RELAC Platform has contributed to giving urgency and visibility to this problem in public and private spaces of the region. In parallel it has also worked in finding solutions in Chile, a country where its headquarters is located and from where regularly participates with the Ministry of Environment.

The government was sensitive to the proposal and called for a Voluntary Agreement of Management of Electronic Waste in 2010, which, although not implemented, served to establish the issue of WEEE management as a potential public–private task. This agreement was made among five companies of electronic products, the former National Commission for Environment (CONAMA) and the RELAC/SUR Platform. The latter provided for the first study in Chile on volumes of waste from computers and generation of electronic waste, which included an analysis of the current situation. It also included an estimate of present and future waste volumes of computers, using the model of the flow of materials (Silva, 2007; CyV Environment, 2009) and a model of inclusion of the Informal Sector in the sustainable management of WEEE in Chile (Wolfensberger, 2009).

All these results have been encouraging alliances to discuss regulations for these residues that require special treatments. In practice, the concern of formalizing their revaluation requires that the regulatory vision be broadened. Most are sanitary regulations and consider residue to be hazardous solid waste within international health regulations and the regulation on basic safety and sanitary conditions in landfills, thus decreasing the diversity of WEEE and their respective life cycles (Alarcón, 2012).

21.3 The national movement of waste pickers (MNRB)

With urban life, people collecting and making use of waste have historically been identified. They are identified and named according to the type of waste they work with. Although garbage is not synonymous with waste, their work has made them socially stigmatized and undervalued. In Chile, current waste recyclers acknowledge their work since the late 19th century. Their identity has required of collective work, supported by the construction of its historical memory.

Currently, the National Movement of Waste Pickers (MNRB) is one of the most visible, which we could consider in terms of collective action, as an interest group for the formation of national and even regional public policies.

The beginning of this movement may be traced back to the early 1990s, when the first collective gatherings were held in order to eliminate the persecution by the police and to achieve better prices for their materials. At the beginning of this decade, the first formal organizations were identified in the country, and the first Association of Independent Collectors, together with the first meeting between the association and entrepreneur waste recyclers took place.

In the year 2000, the environmental public policy recognizes the work of the waste recyclers in environmental management, and they begin to internationalize their associative work and networks in Latin America. There is no doubt that the fire that cost the lives of the entire family of waste recyclers on May 23, 2007 triggered the formation of the MNRB.

Their demands include fairer working conditions and dignity, in addition to the need for appropriate places and sanitary conditions for the collection of the material, thus preventing catastrophes in their own homes.

In 2010, the MNRB was formalized as the Association of the National Movement of Independent Waste Pickers of Chile, which allows them to participate in discussions on the national law for waste management. Additionally, with the support of the International Labor Organization and the Avina Foundation, this association, participates in the follow-up of national public and regional public policies. A public–private interweaving that strengthens the framework of principles of inclusive is being developed through the Regional Initiative for Inclusive Recycling (IRR) for Latin America and the Caribbean. This initiative is led by regional public–private partnerships, where the association participates with the financing

of the Inter-American Development Bank (IDB), Fundación Avina, Coca Cola, Pepsi-cola, and the Latin American Network of Waste Pickers (Red LACRE).

The association of waste pickers—recyclers project inclusion more directly on the state and the market, and more culturally in civil society. Their vision includes for them to become professional providers of environmental and public services. They also propose to modify their isolated and undervalued work, for one that is linked to differentiated collection systems in communal recycling centers, in formalized association modalities of cooperatives, companies, and associations.

The incidence of the association in national policy discussions on residue has highlighted the inclusive principles they demand in terms of recognition, dignity, and equity. Through this construction of identity, MNRB postulate to increase public recognition and the social and environmental contribution of their work.

Now, regarding the regulation of WEEE, as its president Ezekiel Estay says, there are many challenges to face in the handling, transport, and packaging of WEEE that need to be addressed in terms of prevention of health and environmental risks (Fig. 21.1) (Yohannessen et al., 2019).

Their concern is still not to hide the work that exists and has been carried out for years by these workers, with standardization directed exclusively toward the large producers. In particular, they are concerned that this treatment is exclusively for large retail stores. There are different electrical and electronic products that waste recyclers are willing to reconsider in handling and certification of competencies.

21.4 National law of waste and extended producer responsibility (REP) (Law 20920)

On June 1, 2016, Law 20920 was issued in Chile as the “framework law for waste management, extended producer responsibility, and the promotion of recycling.” This standard aims to reduce waste generation and to promote reuse, recycling, and other types of recovery, through establishing extended producer responsibility and other instruments for waste management, in order to protect human and environmental health.

The provisions incorporated into the waste electrical and electronic equipment (WEEE) included as one of six priority products, considered so by the characteristics that these products share: the large volume of waste they produce, their components, the high level of replacement, among others.

Various studies show the exponential growth of these residues, which are currently under the label of appliances and are the ones that produce the highest volumes of waste, more than any other product, between countries from the North to the Global South (Davis and Herat, 2008; Puckett, 2005).

To this situation, we add the quality of its components, which increases their importance and makes it complex to regulate their management (Bakhiyi et al., 2018). By norms, it is known that these devices coexist with toxic and hazardous materials (lead, mercury, and cadmium) with tradable materials such as gold, silver,



Figure 21.1 Voluntary recruitment of waste pickers of WEE in August in Temuco 2017. Pictures of team research and main results in [Yohannessen et al. \(2019\)](#).

and copper (FCPy MNRCh, 2015) and with global health challenges for vulnerable populations (Heacock et al., 2016). These particularities require a waste management system to ensure adequate treatment so hazardous materials have a safe final destination and that materials of value are recovered. In addition, all these procedures must protect the health of workers and the general population. To this end, the enactment of Law 20820 aims to promote integrated management and to promote specific regulations for these residues.

Chile is one of the few countries in Latin America that are beginning a legislative process that responds to the challenges and opportunities offered by the management of electrical and electronic waste, taking into account the characteristics of the countries of the region.

In that sense, the Law 20920 opts for a series of provisions that are new in the regulatory system relating to WEEE. One of these precepts has been to identify this standard, stating it as extended producer responsibility, more commonly known as the REP Law, for its name in Spanish. There it is established that the extended producer responsibility is the specific system to regulate the management of WEEE. This means that producers are responsible for the organization and the funding of these products which are marketed in the country. This is the system chosen, considering that it will ensure compliance with the proper management of these wastes.

Another of the peculiarities of this law is the introduction of new actors such as the municipalities and their active role in various stages of management, mainly in the inverse production chain management systems, recycling management, and environmental education. Municipalities can be considered a hinge, that enables articulating the participation of other actors such as managers, and very especially including waste recyclers, who will be able to access certain benefits through municipalities.

Certainly one of the most important measures, related to the issue of this chapter, is the principle of inclusion, which Law 20920 is defined as the set of mechanisms and instruments for training, funding, and formalization aimed at enabling the integration of waste pickers in the management of waste, including the management systems in the context of extended producer responsibility

From this principle, a series of provisions are established, which allow the integration of waste pickers—recyclers, formalizing their presence and participation in the management systems of the REP Law in Chile. It is important to note that this is the only law in Latin America that includes waste recyclers in the waste management system in its contents. The specific way of incorporating these actors will be set to the specific decree for WEEE, which, because of its complexity, will be the last to be published. However, according to the provisions of Law 20290, the structure of their actions is designed.

Although the proclamation of this law is a response to international demands, as well as an update of the national environmental policies, through legislation and regulation, its implementation is relative to each product. In this way, waste electrical and electronic equipment, given their complexity, are expected to be the latest products to have regulated norms through a specific decree. It is necessary to emphasize that the process concerning the publication of the decrees has been slow,

more than expected at the time the law was presented, which includes six priority products: (1) tires, (2) containers and packaging, (3) lubricating oils, (4) dry cell batteries, (5) batteries, and (6) electrical and electronic equipment. Without the promulgation of decrees, the implementation of the law for WEEE is not feasible. The expectations designed in 2017 of developing targets for most priority products for 2019 have not yet been met, except the tires. Currently, there is work on the regulation for packaging. Following the previous order, four more decrees would have to pass before the decree that regulates the implementation and management goals for waste electrical and electronic equipment is issued.

This does not mean that there is no progress at the policy level about the implementation of this law. This proclamation has given way to a series of tools that have been the support mechanism and have prepared the proper regulatory context for its implementation. Since 2016, the following regulations have developed:

- National Waste Policy 2008–2030
- The regulation governing the procedure for the elaboration of the supreme decrees established in Law 20920 (November 2017)
- Amendments to the Regulation of Pollutant Release and Transfer Register RECT (June 2017)
- Regulation Fund for recycling (March 2017)
- Regulation governing the Cross-border Movement of Waste (March 2017)

This law, from its constitution, has initiated a prolific and extensive process of including actors on the one hand, and of creating tools and instruments, on the other. In line with the principles of inclusivity, the participation of waste recyclers is an achievement, which has not been fortuitous and, for this group of actors, it has been a difficult and permanent task which continues to the present. Given the entire process of what it means to regulate the implementation of the law in connection with the participation of recyclers, questions to be solved in this regard are opened. Their participation in the management of electrical and electronic waste is mentioned in various areas of the law and specific ways in which they will be reflected.

21.5 Including waste pickers as recyclers in Law 20920

As mentioned, the Chilean REP Law is the only one in Latin America that includes waste pickers as recyclers in its system of management of priority waste in its text. The specific way of incorporating these actors will be established in the future decree of WEEE; however, by the regulations of Law 20290, the structure of their actions may be interpreted from the definitions expressed.

All the normative instruments referred to have means to facilitate the participation of recyclers in the integral management of priority waste.

In summary Law 20920

- Acknowledges them as waste managers. Thus, they should respond to the same requirements as recycling companies.

- They must be registered with the National Pollutant Release and Transfer Register (PRTR) to participate as authorized managers in the fulfilment of targets for collecting stipulated in waste management.
- Must be certified within the framework of the National Certification System of Labor Competencies established by Law No. 20267.

Article 3 establishes that a waste recycler is a natural person who, through the use of manual and semi-industrial techniques, participates directly and habitually in the selective collection of domestic or absorbable waste, and in the management of reception and storage facilities of such waste, including its classification and pre-treatment. Notwithstanding the above, waste recyclers are also natural persons registered as waste recyclers, by article 37.

The activities set out in this article are similar to those performed by formal managers on any solid residue, specifically selective collection, and classification. However, waste pickers as recyclers may be excluded from some activities due to the hazardous components. This may be the case of storage procedures that involve specific conditions of protection of these residues and include pretreatment, such as for some electrical and electronic waste. In this way, the implementation of this law may be at risk in terms of inclusivity because marginalizing or fractioning the activities that are being conducted within the law, could mean a ban on them and therefore significant reduction in their income, given that they would only be able to perform the easier work with less pay (Fig. 21.2).

To understand the pathway by which waste pickers as recyclers of WEEE could prove to be excluded from some activities set out by law, it is necessary to detail how they are considered part of it. The first phase is the recording. These waste recyclers are required to be duly certified within the framework of the National System of Labor Competence Certification (SNCCCL) established in Law No. 20267.

This SNCCCL, in turn, considers waste recycling people as human capital that require recognition and strengthening, by incorporating them in Law 20920, according to four job profiles. These profiles defined in collaboration with the Movement of Informal Waste Recyclers in Chile. Thus it is possible to establish performance standards on these activities, skills, and roles they may assume and fulfil later (Fig. 21.3).

As it is foreseeable, this instrument, on the one hand, is the first barrier of entry, where a percentage of waste recyclers will be excluded. On the other hand, it enables the inclusion of another percentage of waste picker's recyclers, offering them a formative plan that identifies their possibilities of work development.

This way, SNCCCL allows for different participative areas and tools, which enable or restrict workers of the informal sector to respond to the procedures and requirements of the WEEE management system, which cannot overlook safe management for health and the environment, at all stages of reverse management.

It is important to highlight that to date, the study of reference for these topics is that of Foundation Chile Valora, jointly with the Ministry of Environment (2017), which does not include electric and electronic residue, because it only considers



Figure 21.2 Collecting, dismantling, and repairing WEEE. Pictures of team research, August 2017.



Figure 21.3 A waste picker leader showing the certification of competencies of waste pickers in a free market in Maipú. Picture of team research January 2018.

nonhazardous inorganic residue. So far, this also excludes the four occupational profiles on which the training plans for workers were based. In short, none of the specific procedures required for waste from electrical and electronic equipment are officially considered in the law for waste recyclers.

Although these certification systems recover part of the knowledge of the workers, in this case of recyclers, they reflect only a portion of their activities. Otherwise, this set of activities are the most accessible ones to incorporate standardized management systems, given that they still do not consider the complexity and degree of danger of some elements incorporated into waste. Added to this is the trend of producers of reducing costs of materials in the production process of these devices, which has decreased the recovery of higher priced materials for informal waste recyclers.

Both the complication in identifying the categories of WEEE and the trend of the devaluation of their waste leads to a greater probability for each informal waste recycler to become invisible in an official reverse value chain. In summary, these complications and uncertainties can increasingly nurture speculations on the value of these residues, thus increasing the informal and illegal circuits of valorization, with its implications for human health and the environment.

One of the entry restrictions for the certification of informal recyclers is academic training. They are required to have completed secondary education in order to receive certification. In Chile, the level of schooling of informal waste recyclers is concentrated on primary education; only 15% has completed secondary education. Also, the certification has a cost.

How to enter WEEE is pending, along with the inclusion of these waste pickers as recyclers into WEEE, within the waste recyclers in general in the competency profiles. It seems unrealistic to marginalize formal and informal waste recyclers from participation given the history, discussion, diversity, and dangerousness of WEEE.

Below we list some expected challenges and opportunities for the inclusion of waste recyclers within the provisions considered for them by the law.

Article 6 of the Law 20920 sets out the obligations of waste managers. Moreover, it states that “Each manager must handle waste in an environmentally sound manner, applying the best available techniques and the best environmental practices, in accordance with the current regulations and the corresponding authorizations.

Additionally, each manager must declare, through the National Pollutant Release and Transfer Register, at least, the type, quantity, costs, service fee, origin, treatment, and destination of waste, by the provisions of the Regulation referred to in article 70, Letter p of Act No. 19300.”

One of the transitory provisions of law establishes that during the first 5 years, waste pickers as recyclers will be able to register without the required certification. However, after this period without having been accredited, their registration will expire. Then, the conditions and requirements on the possibilities of including waste recyclers are brought together in the certification above processes, together with the National Pollutant Release and Transfer Register, ETC, and their corresponding statements.

The 5 years of the exception of record for waste pickers as managers will be fulfilled by 2021. Three years have already passed without much information on the development of instruments for inclusion to facilitate the participation of the waste managers in the management of WEEE. It is conceivable and expected for the legal proposals to be ready by that time, but the processes for real inclusion of the managers requires training, information, and infrastructure. It is important to clarify that all these aspects of implementation are more laborious to achieve and require greater preparation and time.

On the other hand, one of the more serious offenses established by this law is not enrolling in the registry established in article 37. If the requirements are difficult to achieve, a possible future scenario is the inclusion of a limited number of waste managers in the area of WEE, and that the informal sector continues to work, with the precarious conditions of labor, health risks, and with low income.

One of the relevant actors in this law are the municipalities. These institutions have historically dealt with waste collection in the cities. However, this new law, in article 30, also gives new roles to these institutions that extend their tasks, including the celebration of agreements with waste pickers as recyclers.

In line with the above, this act establishes a recycling fund that finances projects, programs, and actions to prevent the generation of waste and promote recycling and reuse of another type of recovery implemented by municipalities or their associations. This fund will be composed of various sources of economic income and technical assistance. In this chapter, it is particularly noteworthy that the inclusion of waste recyclers should be considered within their field. This would enable the participation of this sector, through project application, access to programs or actions that may favor them (Fig. 21.4).

This waste pickers as recyclers require this type of support in different areas, for example, looking into the skills of these recyclers, it has been proven that need



Figure 21.4 Repairing and storage activities. Right workers of Emaus in Temuco and Corcolén Storage in Temuco local government. Pictures of Amaranta Agost.

technical strengthening and knowledge, that is, on the treatment of different equipment and devices (a reference to the study). Another area that they realize they require support is in the marketing of products and materials they obtain. Negotiations are usually with other mediators, which reduces their profit (FCPy MNRCh, 2015).

Municipalities can certainly facilitate spaces to materialize the collection of WEEE.

Generally, for this work, recyclers use their own houses, in the yards or parking spaces. However, this type of storage neither meets the security conditions this type of waste requires, nor safeguards the family of these workers from long periods of exposure to toxic elements. In this regard, the municipality can provide storage space that meets all the safety requirements.

Municipalities could also support waste pickers as recyclers in their training to work collectively. Generally, the work of the waste recyclers is individual or by family. If you require a higher level of professionalism, which is the aim of including them in this law, collective labor must be created. This would open up all the possibilities that come with forms of social and solidarity economy, such as cooperatives, associations, and foundations. While this would mean a change from the individual to the cooperative in the conception of their work, it would also open up the possibilities for strengthening their previous work as a collective action, which has made them known as another trade union, requiring comprehensive inclusion.

21.6 Conclusions

As mentioned above, the exclusiveness of the Chilean law, within the environmental frameworks, is in the fact of considering principles of economic valuation, in the context of extended producer responsibility together with the principles of inclusion. Both frameworks exist and may become problematic in their implementation. Given the specificity of waste electrical and electronic equipment, a collective conversation about ways of including informal sectors recyclers in the integral management of this type of waste is still pending. In particular, what is missing is how the implementation of the provisions of the law will be designed.

The needs of the waste pickers as recyclers in the areas of training, organization, infrastructure, and economics, among others, are very broad. The specificities and history of waste recyclers should be considered when the decrees are being designed—acknowledging them as managers are not enough because they cannot compete with the formal managers who have worked with WEEE until now.

Instruments of inclusion are designed primarily for solid waste. They do not have alternatives for the equipment that contains hazardous elements, as in the case of WEEE. Thus, the law would be including waste pickers as recyclers mainly in terms of collection and their technical achievements, displacing all dimensions of environmental health and that of their workers.

The role of the municipalities stands out in articulating the processes of inclusion of these recyclers, in terms of financing certification processes, opening up possibilities in storage, and management as well.

The transition toward sustainability of waste in the country has been linked to the collective action of waste recyclers, as an influential interest group in its design and discussion. This specificity is expected to remain productive, and that electric and electronic residues are not the exception.

Finally, the commitments it has assumed the government of Chile in the 20292 law implies a series of opportunities and challenges that can give an account of an exemplary experience, particularly in the principles of inclusion refers, for the Latin American region.

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