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## Notes from the Field:

### E-waste in Brasil - Lixo Eletrônico and MetaReciclagem

#### Abstract

As probably every other country in the world, in recent years Brazil has seen an immense increase in the production and consumption of electro-electronics equipment, which generates, as expected, an equally large amount of e-waste. However, there is a general lack of information about health and environmental issues among actors involved with the e-waste cycle, and very limited public discussion about the topic. Also, proper legislation to regulate the destination of all this material does not yet exist. The National Policy on Solid Residuals, which has been discussed in the Brazilian Congress since 1991, had shown signs of including e-waste management. But the responsible working group in the Chamber of Deputies has recently decided to make an amendment to its 33rd article, dealing with the regulation of reverse logistics (take-back) and mandatory recycling of special waste, and no longer considering electronic equipment as such. In response to that, the collective Lixo Eletrônico decided to publish a manifesto and open an online petition drawing attention to the change in the bill. The article offers an overview of the situation and the issues involved and explains the action that is being carried out by the Lixo Eletrônico Collective, presenting the first outcomes and next steps.

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## 1. The Lixo Eletrônico Collective and the Brazilian Context

The Lixo Eletrônico<sup>1</sup> collective evolved from a perceived need to open up the public debate about e-waste in Brazil. Its weblog was created following the release of a study on e-waste management in the country, commissioned by the Dutch organisation Waste.nl and carried out by members of the MetaReciclagem network.<sup>2</sup> The results of the study revealed several critical issues regarding e-waste management:

- the existence of a local market that relies on small-scale cooperative recycling businesses and the informal handling of electronics, which are usually discarded with the normal trash and end up in landfills;

the small amount of information available in this e-waste market regarding proper safety and environmental measures for managing and recycling e-waste; among the few specialized recycling companies, the complexity of a proper full-cycle solution for the materials, being often necessary to export the waste to be handled in other countries which have proper recycling plants, thus making the whole process more expensive;

- the absence of a legislation that regulates the discard of e-waste and poses rules for an environmentally sound management.

Regarding the legal framework, Brazil is a signatory to the Basel Convention, which states that hazardous waste should be managed as closely as possible to the source of generation, but it lacks proper national legislation to deal with the issue. The National Policy on Solid Residuals has been in discussion in the Brazilian Chamber of Deputies since 1991, but has not yet been approved. The bill addresses all types of solid waste and regulates the disposal of these materials. Although included in the original draft, electronic waste was exempted from this regulation. It was in this context that the Lixo Eletrônico website was launched in September 2008, aiming to open the debate about e-waste to general

discussion and proposing a model which encompasses the social, environmental and economic issues related to e-waste management.

## 2. Developing a Local Model for E-waste Management

Being informed of and in contact with projects from all over the world while keeping an eye on the local context, the Lixo Eletrônico collective is developing a model for e-waste management that responds both to a global issue and to local specifics. Its guidelines were outlined in a series of articles called „The e-waste life-cycle“ which were published in the Lixo Eletrônico blog, and consist in a threefold action strategy: production/consume, disposal/reuse, and recycling<sup>3</sup>. Each of these axes involves several complex questions.

Production/consume is seen as a continuum, in which both consumers and manufacturers influence and affect each other's decisions. In that sense, not only the industry but also the media and the consumers are responsible for the ever growing sensation of obsolescence of technological devices. To fight that trend, Lixo Eletrônico recommends (and adopts) measures in three perspectives: foster the responsible consumption by gathering and publishing information about the manufacturing processes and other practices of the industry, as well as helping to increase awareness of related publications such as Greenpeace's Guide to Greener Electronics; stimulate the reuse of electronics by showing ways to extend the life span of technologies using alternative strategies such as adoption of free software and repurposing hardware (e.g. using an old computer as a file server or firewall); and provide information about how to discard electronics in an environmentally sound manner.

While Brazil has been increasingly integrating into a globalized economy, there is still a huge gap in terms of access to information technologies. For that reason, rather than adopting the perspective that every discarded electronic device should be directly sent to recycling, Lixo Eletrônico contends that every potential use of electronic devices should be attempted before such devices are sent to final disposal. Some of the founders of Lixo Eletrônico have also been acting as key members of the MetaReciclagem network, which in a more local, de-

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1 [lixoeletronico.org](http://lixoeletronico.org)

2 da Silva, Martins, & Oliveira 2007. A small-scale governmental reuse effort exists, see [www.computadoresparainclusao.gov.br](http://www.computadoresparainclusao.gov.br)

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3 Fonseca 2008.

centralised fashion has encouraged a great deal of experimentation regarding the critical reappropriation of information technologies for social change, either by reassembling computers or repurposing them in initiatives related to education, art or craftsmanship.

Building on this experience, Lixo Eletrônico proposes a model in which local nodes (social organisations, small-scale, cooperative businesses and the like) develop knowledge related to the repair, reuse and disassembly of electronics, and start acting as a network that operates receiving electronics, making them work again (as electronics or otherwise) and delivering them to social projects, as well as forwarding the unusable parts to proper recycling facilities. The best way to achieve scale for the network without losing autonomy would be to establish the bases for a distributed logistics network, a non-financial, self-organised auction system in which people could offer their electronics for donation and interested organisations and projects would be able to receive these donations.

The recycling business usually relies on regulations that (as mentioned above) are not currently available in Brazil. Even if that wasn't the case, e-waste recycling is a rather complex issue: unlike common examples as PET bottles or tin cans, for which a fairly well-developed recycling industry exists in Brazil, the proper recycling of electronics requires the separation of materials, which poses a difficult challenge: every electronic device is composed of dozens of different materials, all of them welded one into the other. The separation requires the use of machinery not widely available. In fact, Lixo Eletrônico has learnt that a great number of Brazilian companies which claim to properly recycle electronics usually adopt all kinds of questionable practices. The most common one is to tear up the equipment to extract the very small amount of expensive materials - gold, silver - and then put all that is left in containers which are sold to unlicensed operations in places like China, Ghana, India and others. More often than not, these materials will be processed with no attention to environmental, labour or social regulations, and will likely end up in a landfill somewhere else in the world.

As long as adequate recycling processes and technologies are not in place, the sector makes a high profit by acting irresponsibly. Because the recycling of electronic materials as a whole (including every part of electronic devices) in the current state of technological development is hardly sustainable, legal mechanisms ought to be established to fund

those activities. Given the need for proper legislation that addresses the issue of e-waste management, the bill on the National Policy of Solid Residuals, which has been under discussion in the Congress for more than 15 years, could be a response to this need. Unfortunately, recent changes to the proposed policy suggest that this will not be the case.

### 3. The Electronic Waste Manifesto

Over the summer of 2009, the bill on the National Policy of Solid Residuals started moving again inside the Brazilian Chamber of Deputies. However, for no apparent reason, the responsible working group has decided to make an amendment to its 33rd article, dealing with the regulation of reverse logistics (take-back) and mandatory recycling of special waste, no longer considering electronic equipment as such. There was no official explanation for the change, but a few groups and NGOs involved with the theme of e-waste management implied that it had been done because of the pressure of the Brazilian Association of Electric and Electronics Industry (ABINEE).

In response to this move, Lixo Eletrônico decided to publish a manifesto and open an online petition drawing attention to this change in the bill:

#### **ELECTRONIC WASTE MANIFESTO FOR THE INCLUSION OF ELECTRONICS IN THE NATIONAL POLICY OF SOLID RESIDUALS**

*Let's pressure the Chamber of Deputies to reinstate electronics into the amended 33th article of the National Policy of Solid Residuals dealing with reverse logistics (take-back) and mandatory recycling of special materials.*

*There are approximately 160 million cell phones and 60 million computers currently in use in Brazil. The prediction for 2012 is that there will be an estimated amount of 100 million computers, one for every 2 people in the country. In 2008, the income of electronics market reached R\$ 123 billion (about US\$ 61.5 million), having been growing since 2002. Electronic devices can make companies more competitive, make people's lives easier, offer leisure and entertainment, and are an important tool for individual and social development.*

*On the other hand, electronic equipment produces toxic waste in great amounts and has complex recycling processes. According to studies on the risks for the environment and people's health carried*

out by the Brazilian commission of the UNEP (United Nations Environment Programme), most of these products contain toxic substances like anti-flame polymers, plastics, heavy metals like mercury, lead and cadmium.

In addition to contaminating the environment, such substances may cause severe damage to the health of people and animals, causing failures in kidney, lungs and brain that compromise the entire nervous system. It is a growing issue and many countries already have specific legislations to deal with it. The European Union, for instance, has regulated a policy on the Electronic Residuals by the Environmental European Commission; and USA has many laws by the US Environmental Protection Agency as well as specific legislation from e.g. New York and California states.

In Brazil, we have an opportunity that is being literally wasted. A bill regarding a National Policy for Solid Residuals (PL 203/91) has been discussed since 1991 in Brazilian Congress. It is imperative that such policy contemplates electronic equipment and frames it as a special product for mandatory recycling and take-back.

Electronics are increasingly becoming part of our lives, bringing benefits at the same rate as they produce waste at a pace we cannot currently deal with. Regulating and specifying its destination is an urgent and necessary condition for us to keep on benefiting from technological advances in a sustainable fashion, without the environment and human health paying a higher price.

In addition to releasing the manifesto and the petition, Lixo Eletrônico also used mailing lists, social networks and microblogging tools to spread the word about the situation. Within one month, the petition had been signed by over a thousand people and was featured in major media channels. Even more important, the assistants of three of the congressmen who are part of the working group contacted Lixo Eletrônico. One of them offered some information regarding the removal of electronic waste from the bill, while the other two thanked the collective for making the debate public, and mentioned that it would help them bring the subject back to the legislative discussion.

## 4. Next Steps: Amplifying the Discussion

Lixo Eletrônico will keep the petition open until the final voting of the National Policy of Solid Residuals in the Brazilian Congress. Still, besides the existence of a proper legislation there must be ways to monitor those activities and to draw public attention to the consequences social, environmental, economic - of the development of IT and electronic devices.

With the aim of sharing information, experiences and perspectives about how the issue is being dealt with in other parts of the world, the Lixo Eletrônico collective, together with the Obsoletos.org project from Spain, and the MetaReciclagem Network, has organized a working group for the IV Congress of Cybersociety (2009)<sup>4</sup>.

The Congress is an international event with a very broad and interdisciplinary focus. It has been organized by the Observatorio de la CiberSociedad since 2002 and brings together researchers and practitioners to discuss how the development and use of technology relates to education and learning, communication, politics and participation, culture and identity, security and every other aspect of our daily lives, which are being permeated by the use of technologies. Even though an important effect of the increasing use of technology is the amount of e-waste that is being generated in the world, 2009 is the first time the Congress in which a working group is specifically addressing the topic. The aim of promoting the discussion in an event such as the Congress of Cybersociety is to raise awareness about the fact that e-waste management is not only a matter of disposal logistics but entails social, environmental, political and economical trends.

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<sup>4</sup> [www.cibersociedad.net/congres2009/](http://www.cibersociedad.net/congres2009/)