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Introduction

Costa Rica has a very interesting context regarding the topic of green information and communications technologies (ICTs). On the one hand, in the public eye Costa Rica is seen as a “green” country that has based an important part of its development on environmental preservation. On the other, there is significant penetration of mobile telephony (45%) and internet (40%) and a very dynamic information technology (IT) sector – large companies, such as Intel and Hewlett-Packard, sit alongside local software developers and some ten data centres. An ecosystem of enterprises has developed throughout the country, among which one can find call centres, internet cafés, hardware repair workshops and distributors of mobile phones and other technological equipment.

These enterprises offer services that have a high energy consumption and generate electronic waste (e-waste). Between 1996 and 2007 there has been an accumulation of 24,000 tonnes of e-waste through the growth of the country’s IT sector and there is a projected increase of 4,000 tonnes per year.

Since 2003 multiple stakeholders from civil society, academia and state enterprises have been working on the topic of e-waste, developing assessments and promoting regulations; but the citizens are yet to become truly aware of the consequences of handling these materials badly. Although the population of Costa Rica is aware of the importance of good solid waste management, good, safe waste management practices are not widespread. The country has not yet implemented the recently approved regulations for the adequate management of e-waste.

In 2007 two pilot tests were carried out in order to check the procedure that could be implemented at a national level to manage e-waste, and as a demonstration to advocate for public policy on e-waste. The tests were developed in eight phases that included an information and awareness campaign, collection, disassembly, commercialisation, packaging, permits to export hazardous materials, and transport. The pilots generated awareness about the issue of e-waste, especially with large exporting companies and the state.

In Costa Rica several public and private initiatives have been developed to manage e-waste; they have operated in the absence of regulation so far. Some of them are targeted at gathering e-waste that is selected, organised, packaged and exported to countries like Vietnam or India, as in the case of the Costa Rican Institute of Electricity and Telecommunications (ICE) and La Bodeguita. These enterprises have to accumulate a significant amount of e-waste for the export to be profitable.

Very few enterprises have been able to process e-waste, either partially or in whole, within the country (this is the case of Fortech mainly and, to some extent, Holcim and Fruno). Some of these initiatives have created international partnerships with enterprises that have ample experience in the field (for example, the relationship between Holcim and Global Electronic Processing from Canada).

Public universities have made an effort to implement internal policies of solid waste management that include e-waste. For example, the National University (UNA) has a programme called UNA Sustainable Campus. At the same time, several private companies such as Walmart, Office Depot and the National Television Channel have developed e-waste collection campaigns.

Policy and legislative context

Since 1994 Costa Rica has signed several international treaties regarding climate change and environmental protection. Among the most important are the United Nations Framework Convention on Climate Change and the Basel Convention on hazardous wastes. Change in government is very recent (May 2010) and the National Development Plan 2010-2014 is not available yet. For the 2006-2010 period, the environmental sector had the objective of developing and implementing the National Climate Change Plan to mitigate greenhouse gas effects. In the assessment of this plan, one can observe relatively little progress, and it has been proposed to extend the objectives of the plan into the next period. However, no actions related to ICTs have been mentioned.

Nevertheless, in 2010 there were three important advances in the legal arena: the General Law on Solid Waste Management (13 July 2010), the Regulations for Integrated Management of E-waste (5 May 2010) and the Regulations...
for Waste Recovery Centres (5 May 2010)\(^8\) were published. Once the laws and regulations have been approved there are important steps to be taken regarding the implementation and effective application of these regulations.

One of the good practices that can be highlighted in the process of creating and approving the regulatory framework on e-waste is that it is a result of the work of a multi-stakeholder National Technical Committee. This committee integrates the perspectives of multinational private companies, academia, local companies, final consumers, the state and public enterprises. The regulations referred to above were the result of this committee’s work over several years.

The regulations consider e-waste management as part of the production chain and clarify the responsibilities of producers throughout the whole life cycle of electronic products. There is an obligation for producers to establish places and mechanisms to collect e-waste, and they are assigned the responsibility of informing final consumers of the processes for proper disposal, including designated collection places. The regulations also commit the consumers (whether individual or collective) in terms of their obligation to follow the procedures and hold them responsible for the consequences of handling e-waste inadequately.

Those who manage e-waste are also regulated and the conditions under which they can exercise this business are defined, as well as the obligation of being registered and supervised by the Ministry of Health, the regulating entity for solid waste, including e-waste.

This year the National System for Integrated Management of e-Waste (SINAGIRE) was created as a multi-stakeholder entity responsible for developing an action plan to implement the new e-waste regulations.

### Raising awareness for ICTs and environmental sustainability

The management of e-waste as well as solid waste in general is a responsibility of all social stakeholders. Most people, rich and poor, use ICTs in Costa Rica. An e-waste programme should be conceived as part of a strategy that promotes responsible consumption, especially taking into account that this is an historic moment that combines the consumer society with the information society, and that there is a strong consumer impulse to continually upgrade to newer technology.

A key issue in this discussion is who should assume the cost of recycling in a society invaded by electronic products. In Costa Rica large technology companies have been established, and the country has given them special conditions to operate – and they are high energy consumers. These companies should also have a responsibility in terms of social and environmental costs.

At the end of 2009 the Central American civil society groups dealing with climate change gathered, with active participation from different organisations from Costa Rica. Two key actions were defined, among several others: civil society will actively develop educational, training and awareness initiatives about climate change targeted at citizens; and concrete actions will be taken to advocate for climate change regulations. At these discussion tables there were no specific conversations on the issue of climate change and ICTs.

It is important to highlight two initiatives that use ICTs for climate change. One of them is led by the National Emergency Commission (CNE). It is a communication system to prevent natural disasters that uses an early warning system based on community observation. To implement this system alliances have been established with community organisations that use a radio communication system, internet and satellite communication to keep the community and the CNE updated of possible threats. Similarly, the Volcano and Earthquake Observatory uses text messaging to keep support entities and community organisations informed.

Finally, we should mention the REDDES (Digital Resources for Sustainable Economic Development) programme. It is a regional programme promoted by Hivos in Central America. Led by Cooperativa Sulá Batsú and Fundación Galileo, it seeks to foster the use of ICTs to transform consumption habits and strengthen green entrepreneurship in the region. One of the most important strategies of this programme is the use of ICT campaigns for a citizen awareness and discussion process about climate change, energy efficiency and sustainable energy.

### New trends

This is a broad field that can be approached from multiple perspectives. Civil society organisations that work in the ICT sector have a fundamental role to play in the matter.

It is necessary to develop information, awareness and promotion campaigns for the public, not only to effectively transform the consumption habits of individuals and families, but also to advocate for enterprises working in the sector to apply the law and assume responsibility as e-waste generators, and for local and national governments to create the infrastructure and adequate procedures to handle e-waste.

The most important challenge for this period is to enforce the approved regulations. It is very important to develop different strategies for each stakeholder involved: individual consumers, local enterprises, multinational companies, public and autonomous entities, social organisations, local governments and the national government.

Private companies merit a special mention, especially telecommunications multinationals and the large technology enterprise sector (Intel, Hewlett-Packard, call centres, data centres) regarding their responsibility when it comes to the country’s e-waste. Currently these enterprises have developed isolated initiatives that will be more effective if they can be coordinated.
Organisations that work in environment, responsible consumption, energy efficiency and social economy do not currently have e-waste on their agenda. It is necessary that these organisations develop joint actions at a national level.

**Action steps**

From the perspective of Cooperativa Sulá Batsú, we consider it our responsibility to develop an e-waste awareness and information campaign for the public, social organisations and social-economy enterprises. We should have a special approach with the cooperatives that currently offer electrification services and will soon be offering telecommunication services. For this we will use ICTs, especially social web tools.

On the other hand, we believe it is necessary to develop an instrument or protocol that allows organisations, local governments and social enterprises to assess if they are behaving responsibly when it comes to e-waste. This could also be used to follow up on the behaviour of other organisations, especially multinational private companies.

It is important to develop alliances between organisations that work on ICTs and those that work in environment, responsible consumption, sustainable development and sustainable energy. Of course, it is important to join the ongoing efforts of those stakeholders that in the past years have been working and advocating on the issue of e-waste.

An important path for future actions is work with local governments, since the new regulations place a lot of emphasis on the responsibilities of municipalities. This is an opportunity for social organisations and municipal governments to work together.

It is also necessary to promote collective entrepreneurship dealing with e-waste. It is evident that e-waste-related business can be very profitable, and it could be promoted amongst sectors of the population with fewer opportunities. In this sense, it is necessary to contact technical schools that are a breeding ground for new entrepreneurs, as well as to encourage financial entities to provide seed funding for initiatives. Universities should be encouraged to offer technical expertise to collective enterprises in urban and rural areas to harness the opportunity presented by e-waste.
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