

PRODABEL

BELO HORIZONTE

COMPUTER RECONDITIONING CENTRE

Combining resource recovery, skills training, and digital inclusion



GOVERNANCE
Prodabel - Empresa de informática e informação do município de Belo Horizonte S.A

POPULATION
2.5 million

GDP
88 billion BRL

DENSITY
7,167 per KM²

AT A GLANCE

THE INITIATIVE

The Computer Reconditioning Centre (CRC) is an integral element of the city of Belo Horizonte's digital inclusion, skills development and waste reduction efforts. In this electronics remanufacturing facility, citizens from low income communities receive extensive training to restore donated post-use IT equipment into full working condition. This refurbished equipment goes on to support over 300 'digital inclusion sites' operated by the city, where Belo Horizonte locals have free access to computers and internet as well as varied training opportunities in basic digital literacy. The CRC is run by Prodabel, the city's information and technology provider, as part of the '[Computadores para Inclusão](#)' (Computers for Inclusion) Federal Government initiative that establishes local partnerships to set up similar centres around the country.

TIME FRAME

The Belo Horizonte CRC was launched in 2008 as an enabling component of the city's pre-existing BH Digital programme. It became one of the first local chapters of the Federal Computadores para Inclusão initiative.

Ten years on and the Belo Horizonte CRC continues to be an exemplar component of the Computadores para Inclusão network and the backbone to Belo Horizonte's skills development, waste diversion and digital inclusion efforts, the latter having earned Belo Horizonte the title of [Brazil's most digitally advanced city in 2011](#).

FOCUS AREAS

The initiative focuses on the electronics sector as a priority area for achieving its social inclusion, skill development and waste diversion ambitions.

FINANCE

The CRC operation is largely funded by the Brazilian Federal Government, under the Computadores para Inclusão programme. Every two years, the Ministry of Science, Technology, Innovation and Communications (MCTIC), issues a public call for new programme applicants or funding requests. Since its establishment, the Belo Horizonte CRC has signed multiple funding agreements with MCTIC to guarantee the initiative's continuity. Federal grant funding has totalled approximately BRL 2.4 million.

The City of Belo Horizonte has also invested resources in the operation, including the provision of an 897m² building offered by the Municipal Secretariat of Education to house the facility.

CORE TEAM AND PARTICIPANTS

A core team of eight people from the Digital Inclusion department are responsible for overseeing the programme. These include a director, a superintendent, a learning manager and a representative in charge of overseeing remanufacturing activities and the digital inclusion sites, in addition to four Prodabel officers.

The team is aided by public bodies and NGOs that donate physical spaces and resources to set up and operate digital inclusion sites, as well as CRC monitors and other contributors to its capacity building offering.

The computer remanufacturing training programme, held at the CRC, is mostly directed at young (16-24) Belo Horizonte locals from low income communities that are looking to acquire new skills for first employment. At the same time, the digital inclusion sites based in public and private buildings particularly in low-income areas, are open to citizens of all ages in search of digital literacy, with aims to democratise access to information and facilitate tasks such as submitting online job applications and paying bills.

OUTCOMES TO DATE

In the first years of the Belo Horizonte CRC since its 2008 launch:

- 7,000 post-use IT products (CPUs, monitors, printers) were restored in the first nine years of the initiative and offered to digital inclusion sites and similar initiatives
- 15,000kg of post-use electronics have been diverted from landfill every year on average, since 2008, thanks to this initiative. This adds up to 165,000kg by 2018.
- 10,446 citizens have been trained in basic technological skills, environmental education, and computer remanufacturing to date
- Belo Horizonte was recognised as Brazil's most digitally advanced city in a 2011 ranking
- The initiative became a city priority with annual targets for 2018-2021 on remanufacturing, skills training and digital inclusion (see measuring progress)

THE JOURNEY

ORIGINS

In response to citizens' demands for greater digital inclusion in the Belo Horizonte area, particularly in low income communities, the city government launched its BH Digital programme in 2005 to expand infrastructure in under-served areas of the city and provide digital literacy to all. The Digital Inclusion Department was created within Prodabel, the public-private city information and technology provider, to execute this strategy which included setting up digital inclusion sites around the city. Given the electronic and electrical equipment (EEE) waste landscape in Belo Horizonte, and a growing demand for post-use electronics treatment solutions, it was agreed that these sites should be equipped exclusively with refurbished computers.

Once the need for a computer remanufacturing facility was confirmed, the project team applied for funding from the MCTIC's Computadores para Inclusão programme, whose strategic aims are threefold: to foster digital inclusion in low income areas of large Brazilian cities; to build capacity among low income young Brazilians so that they have increased opportunities to enter the job market; and scaling up activities that keep electronics circulating in the economy in high-value uses and out of landfill. A proposal for the Belo Horizonte CRC was submitted by the Digital Inclusion team at Prodabel and approved by the MCTIC. The facility was set up in a space provided by the Municipal Secretariat for Education and operations commenced in April 2008.



PROCESS

IT equipment donations by public and private institutions are intermediated by the MCTIC. Institutions who would like to make a donation must submit a detailed list of the equipment and its state to the Ministry of Planning. The Digital Inclusion Department at the MCTIC then indicates whether there is an interest from one of the CRCs and directs the IT equipment donations accordingly. Private individuals can donate IT equipment directly to a local CRC. Belo Horizonte locals must contact Prodabel via telephone or email to organise a collection visit. On the agreed date, Prodabel employees assess the products in situ and select the items that can be used in the CRC (such as computers, printers and keyboards)

which are then transported back to the facility. In the past, private IT equipment donations had to be deposited at Prodelabel's offices, but since 2018 the company has been operating a door-to-door collection system using rental vans. An increase in donations is expected in this new model, which makes the overall donation process more convenient.

Once donated IT equipment reaches the CRC, it is assessed and grouped into two categories based on whether they are suitable for remanufacturing. Those submitted to the remanufacturing process are either restored to working condition or used for spare parts. Approximately one-third of the total volume of donations leaves the CRC as restored IT equipment. The entire process is conducted by technicians in training and overseen by instructors.

Restored equipment is grouped into 'donation kits' and offered to either Prodelabel-run digital inclusion sites or other registered institutions (such as public schools and libraries). Parts and materials that cannot be used in the remanufacturing processes are auctioned off by the city of Belo Horizonte to registered companies which then direct them to recycling. The city feeds the revenues generated back into the CRC training programme.

MILESTONES

The Belo Horizonte CRC began its operations in April 2008. Later that year, in December, a launch event was hosted by the Secretary of Logistics and Information Technology (SLTI) at the Ministry of Planning. Prodelabel's President and Digital Inclusion Director, various municipal authorities, and representatives from other CRCs were among the event's attendees.

In 2010, the city of Belo Horizonte signed an agreement with MCTIC worth BRL 371,000 in government funding to guarantee the continuity and enhancement of its digital inclusion initiatives, including the CRC. It expired in late 2012, and government funding for the CRC has since been renewed twice.

In addition to the continued ministerial support in programme funding, two important milestones have reinforced the initiative's growing relevance, both at city-level and nationwide. In 2005, with the establishment of the Digital Inclusion Department in Prodelabel, the city launched its Government Action Plan (PPAG), a four-year strategic plan for the city, which for the first time included specific targets relating to the CRC operation, thus reinforcing its status as a city priority. This was reiterated several times, the most recent being in 2017 for the 2018-2021 PPAG. Also in 2017, with aims to formally scale the initiative across Brazil, a proposal to transform the Computadores para Inclusão programme from a voluntary programme into a national policy for EEE was passed by the House of Representatives and [submitted for approval by the Brazilian Senate.](#)

MEASURING PROGRESS

The funding agreement with MCTIC is dependent upon CRCs meeting a set of basic criteria. These are monitored via quarterly reports submitted by Prodelabel, who must also produce a final progress report at the end of the contract. Targets within each contract period include, (MCTIC):

- A minimum of 100 young citizens trained in basic IT skills
- A minimum of 100 young citizens trained in computer maintenance
- Revitalising at least ten local digital inclusion sites

In addition, the City of Belo Horizonte has included the following annual targets for Prodelabel in its 2018-2021 Government Action Plan, (PPAG):

- Remanufacturing at least 1,000 items in the CRCs per year until 2021
- Maintaining the 302 existing digital inclusion sites until 2021
- Providing 600,000 people with access to Telecentres in 2018; 650,000 in 2019; 700,000 in 2020; and 750,000 in 2021
- Providing IT training to at least 2,000 people every year



REFLECTIONS

Leveraging connections to build impactful initiatives. Cities' powerful networks and unparalleled reach suggest that they are best placed to lead initiatives of this sort. With access to various city secretariats, technology businesses, entrepreneurship authorities and many more, city authorities can articulate robust action plans with relevant stakeholders while ensuring that all efforts are extended to communities in need. The successful Belo Horizonte CRC operation has prompted the MCTIC to revise programme guidelines allowing city governments to apply for the grant directly. The network of registered CRCs now includes another two city-led operations, located in João Pessoa and Curitiba.

Shaping mindsets is critical for creating lasting transformations. Prodabel and the City of Belo Horizonte as a whole acknowledge the need to incorporate circularity into professional training activities. This is an opportunity to educate young citizens and future professionals that are inclined to make the most of technology, products and materials to generate value in a circular economy rather than exacerbating today's wasteful linear model.

Adopting a multi-faceted approach to innovation. Belo Horizonte is already regarded as a national reference in terms of digital capabilities. The city has now raised its level of ambition, aiming to become a widely recognised smart city. A multi-faceted approach that integrates innovation, social inclusion, and environmental considerations will be needed in order to achieve this.

Scaling the initiative will require a new level of commitment. Currently the CRCs are established and run on a voluntary basis and only three out of nine existing facilities are city-led. Outcomes to date have proven the relevance of the Computadores para Inclusão programme and transforming this into a national policy would be an important step towards scaling electronics remanufacturing and digital literacy in Brazil, Latin America's top EEE waste generator.

FOR MORE INFORMATION

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This case study is part of [Circular economy in cities](#), Ellen MacArthur Foundation