



ECOAMPLA ELECTRICITY THROUGH WASTE

THE EXTENSION OF A SUCCESSFUL MODEL



IRR Regional Initiative
for Inclusive Recycling



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PRESENTATION

Pep Tarifa-R4S

The Regional Initiative for Inclusive Recycling (IRR) began operations in 2011 with the aim of contributing to the improvement of recycler's access to recycled materials markets in Latin America and the Caribbean. The program is supported by the Multilateral Investment Fund (MIF) and the Water and Sanitation Division of the Inter-American Development Bank (IDB), Avina, the Latin American Network of Recyclers (Red-LACRE in Spanish), PepsiCo Latin America and Coca Cola Latin America. The IRR has built a platform for strategic and multisectoral partnerships between different actors in the recycling which serves as a space for dialogue and action, in order to gain scale and impact with specific initiatives to disseminate best practices and effective models for economic and social inclusion of recyclers.

In 2007, the power operator company Coelce, in the State of Ceara in Brazil, created the "Ecoelce" program to promote access to energy services through the introduction of a model that offered customers a discount in their electricity bill for participating in their community recycling scheme.

This document is part of a series of two case studies which analyzes the pioneer model "Ecoelce" and how it has been adapted and adopted to two new contexts; in the Metropolitan Area of Santiago in Chile as "Ecochilectra"; and in the State of Rio de Janeiro in Brazil as "Ecoampla". The impact of model application is analysed looking at two key issues: (1) Formal and affordable access to energy; and (2) Inclusion of recyclers in the recycling value chain. Key lessons for strengthening these schemes and their replication in other contexts are identified.

The IRR presents these case studies hoping that they will serve as a reference for other companies that are considering the introduction of bonus systems and in this way facilitate access to these services for low income populations. Also, it can help the exchange of goods and services between the partners of at the bonus scheme.



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FROM ECOELCE TO ECOAMPLA

Pep Tarifa-R4S

In 2008, the Department of Integration and Social Development at the Ampla electricity company¹, the Brazilian subsidiary of Endesa in the State of Rio de Janeiro, started work on the design of EcoAmpla, which replicated the experience of Coelce, another subsidiary of Endesa, and its Ecoelce project in the Brazilian State of Ceará. The aim of the EcoAmpla programme is to promote waste recycling among the company's clients by offering a discount on their electricity bill that is proportional to the value of the waste contributed to the scheme.

In 2007, Coelce set up the Ecoelce programme, a pioneer project for fostering access to regulated energy services through a system of credits in return for the promotion of recycling. The State of Ceará, in the northeast of Brazil, has one of the highest poverty rates in the country, 49.11%, and has the highest number of people without access to electricity. The communities in the most vulnerable areas also had the highest insolvency rates out of Coelce's customers, and clandestine electrical connections were widespread. The aim of the Ecoelce programme was specifically to provide a response to these problems using a simple approach: customers separate recyclable waste in their homes and take it to collection points located around the city. There, the waste is assessed and part of its value is transferred to the client, who receives a discount in their electricity bill in return.

Ecoelce was such a success and so widely recognised² that the idea was extended to other parts of the country, such Rio de Janeiro through Ampla and also to other countries, such as Chile, through Chilectra.

Since it appeared as a commercial brand in 2004, after being purchased by Endesa, Ampla had sought to become something more than a mere energy supplier. It therefore launched a restructuring project, called the "Transformation Plan", through which the company was clearly oriented towards improving the quality of its operations and building a value added relationship with its clients. There were issues to be resolved that affected its results, and one of Ampla's biggest challenges was that of dealing with clandestine connections and lost energy, which in the two year period 2003/2004 amounted to 24.7% of the energy distributed, with some municipalities having rates as high as 52%.

¹ Ampla Energía y Servicios S.A. is an electricity distributor with a license to operate in the State of Rio de Janeiro, where it currently serves 66 municipalities (73.3% of the State territory), in December 2013 catering for more than 2.8 million clients, distributed as follows: 90.5% are residential clients (12% of the overall low income clients), 6.1% are commercial, and 3.4% are other users. It is a subsidiary of the Endesa España S.A. group, which in turn is controlled by the Italian ENEL group.

² Ecoelce has obtained, among others, UN recognition at the 2008 World Business and Development Awards.



<http://peeenel.com.br>

To successfully deal with this problem, an in-depth analysis of the causes, and especially their social components, was required. In 2003, Ampla commissioned a study to the Getúlio Vargas Foundation (FGV) and the Fluminense Federal University, which revealed that the State of Rio de Janeiro had high rates of violence and social complexity³. These were caused by unplanned urban occupancy with little access to such services as sewage systems, solid waste collection or street maintenance; high population density and an elevated number of low income groups; all associated with a very limited sense of belonging to society. This led to the conclusion that these characteristics were directly related with the clandestine connections and loss of energy. Ampla thus opted to seek a better understanding of and approach to its users, having realised that the introduction of theft-prevention technologies was pointless if there was no social intervention to go with it, in order to raise awareness and seek alternatives for the most financially limited family groups.

It therefore created the Ampla Awareness Programme, of which the EcoAmpla project forms part. Its programme of awareness and training activities regarding consumer responsibility catered for more than 185,000 people in 2014. It was also calculated that in 2014, the loss and theft of energy was reduced by 19.7%. Since May 2014, AVSI Brazil⁴ has been coordinating the day-to-day activities of the EcoAmpla project, and is managing all of its operational side after winning the tender called by Ampla to outsource its services that are not directly related with the sale of electrical energy.

The model adopted to introduce EcoAmpla is based upon the distribution of different fixed waste collection points in different cities out of the 66 to which Ampla provides a service in the State of Rio de Janeiro, and which involved different partners with experience of waste management. It currently operates in eight cities, after some closures due to problems with the quality of the service. Thanks to the incorporation of experienced partners, Ampla was able to focus on the sale of electricity and on organising awareness activities, while the entire waste management operation was left to these partners, to which Ampla granted rights to advertising and to be identified as participants in the EcoAmpla project in each location, as well as the basic infrastructure to account for the waste provided and to transform that into discounts on the electricity bills of Ampla customers. Over the years, deals have been signed with different partners, which include companies that work with former informal recyclers, municipal bodies and private waste management companies, which has enabled a wide variety of different actions. In some municipalities, like Niterói and San Pedro de Aldeia, EcoAmpla has been integrated into the municipal solid waste collection system, while that is not the case in other cities like São Gonçalo, Maricá and Búzios where private or non-governmental organisations manage recyclable waste collection centres, or even Petrópolis, where Ampla's partner is the city's municipal development body.

The overall results confirm the value of the project, for in the 2008-2014 period, 74,542 clients have participated in EcoAmpla, 4,196 tons of recyclable municipal waste have been recovered and a total of R\$ 743,400 (US\$ 316,000) has been discounted from electricity bills.

³ "Ações sociais, educação e Sustentabilidade", 2010. Published by the Ampla Social Area and containing information referring to the cited study, conducted by the Fundación Getúlio Vargas and the Universidad Federal Fluminense.

⁴ AVSI Brasil (Asociación de Voluntarios en el Servicio Internacional - Brasil) is a non-governmental organisation that has operated in Brazil for more than 30 years. The institution grew out of the experience of the professional associated to the Fundación AVSI, an NGO of Italian origin founded in 1972, dedicated to cooperation for development projects. Its work focuses on human development, with special attention to education and the promotion of all forms of human dignity.



Study Methodology

This study was developed in two phases, the first between November 2013 and February 2014 and the second between November 2014 and April 2015, when the draft of this case study was completed. Following the compilation of the bibliographic information and the document analysis, work began on a field project in the State of Rio de Janeiro. This took place between 2 and 16 December 2013 and was conducted in four different municipalities: Niterói, São Gonçalo, Itaboraí and Maricá.

These visits involved interviews with different members of the Social Integration and Development team (of which EcoAmpla is part) at the two head offices that Ampla has in Niterói and São Gonçalo in 2013. The second visit in 2014 also involved interviews with AVSI Brazil, the company that since mid-2014 has been managing Ampla's social projects

Visits were made to the public waste management company in Niterói (CLIN), to the ONG Eccovida, to the MAFIS waste management company and to the president of the Coopbrilho cooperative. An interview was also conducted with the president of MNCR (*Movimento Nacional dos Catadores de Materiais Recicláveis*) in Rio de Janeiro.

On site visits were made to six fixed collection points located in four municipalities, and to two mobile points in the municipality of Niterói. There was also a visit to the Morro de Céu cooperative, where waste from the city of Niterói is sorted, and to the Coopbrilho used cooking oil management cooperative. On these visits, 41 questionnaires were given to clients who came to deliver their waste to the project.

Finally, the research team participated in a training session for the managers of a collection point on the use of the computer system used by EcoAmpla, and also attended the AGM of the community leaders of the Ampla Awareness Programme.

The following is a presentation of the setting and main components of the EcoAmpla project, plus comments on the same, to facilitate the overall comprehension of this case study.

Socio-economic context

In Brazil, the concentration of wealth generates social problems and inequalities. The country is working to reduce these inequalities but they are still high, with the richest quintile concentrating 60% of the income, while the poorest accesses just 3% of the wealth⁵. In 2012, the extremely poor population, those who live on less than one dollar a day, fell from 7.6 million people to 6.5 million, which is 3.3% of the population of the country. The poor population, that which lives on an income of less than 2 dollars a day, decreased from 19.1 million to 15.7 million people, i.e. 7.8% of the population of Brazil⁶. These people can only access low quality education and health services⁷, and their capacity to prosper socially is limited. In the State of Rio de Janeiro, where Ampla operates, the percentage of the total population living in poverty is just under 5%, with the states in the north and northeast of the country having the biggest concentrations of extreme poverty.⁸

Until midway through the 2000-2010 decade, there was no significant increase in the number of active public policies regarding housing, education, the environment and health that improved access to basic services for this segment of the population. From that time on, public aid programmes were set up, such as *"Bolsa Família"*, which provides financial aid to families with children, where it must be shown that they are attending school and receiving the right vaccinations, and *"Minha Casa Minha Vida"*, which helps families with the fewest resources to buy their own home.

⁵ UNICEF; Global inequality: The distribution of income in 141 countries. New York, August 2012.

⁶ IPEA 2013: Duas Décadas de Desigualdade e Pobreza no Brasil Medidas pela Pesquisa Nacional por Amostra de Domicílios (Pnad).

⁷ Vanderbilt University, 2013. Prosperity and protests in Brazil: The future trend in Latin America?

⁸ Montero R. (2011) "El Brasil de la extrema pobreza" CIS magazine.



One important statistic to be considered in the socio-economic context is the rise of the minimum wage in Brazil. According to the census conducted by the Brazilian Institute of Geography and Statistics (IBGE), one out of every three economically active Brazilians receives a minimum wage. The increase in the same has been constant over time⁹: in 2000 it was 151 Reals (US\$ 65), in 2010 it was 510 Reals (US\$ 217) and in 2015 it was 788 Reals (US\$ 335)¹⁰.

Ampla's Social Projects

The Ampla company wanted to work by considering the client to be one of its strategic objectives, a focus originating from an understanding of the reality behind the theft of energy and that was fuelled by a negative view of the company and its scant relations with its clients. The thefts and losses basically occurred in the urban areas of the cities in the State of Rio de Janeiro, where Ampla has 90.5% of its clients, while barely 4% of them live in rural areas. Ampla made a priority of improving its relationship with the communities, through the incorporation of relevant people from the social sphere, such as teachers and the presidents of neighbourhood associations, in order to improve awareness of Ampla's needs and position it as a company that could assist with the development of those communities.

A study by the FGV in 2007¹¹ showed that the social actions conducted up until then had produced positive results: if in 2003, the percentage of clients who thought that electricity was a service that should be offered for free was 31%, thus encouraging the theft of energy; by 2007 the percentage of people that, after participating in one of Ampla's social actions, continued to think that way had fallen to just 6.1%.

Social projects follow a process that seeks to guarantee efficiency while at the same time improving the relationships between the company and its clients, thus generating trust and mutual benefits. This process is based on meeting and interacting with local leaders; the study of existing local projects and the presentation of the company's own projects; the establishment of agreements and the training of young people in the communities (in electricity supply tasks and local market research); the identification of the groups that are most receptive to the effects of the projects; the creation of customer profiles in the area (using data collected in the field and statistical data) and the application of solutions that are most in keeping with the reality of the situation.

The different social projects that Ampla has funded and developed are grouped under the "Ampla Awareness" programme, whose projects, of which the EcoAmpla initiative is one, are shown in **Table 1**.

⁹ http://www.guiatrabalhista.com.br/guia/salario_minimo.htm Reports on minimum wages in the country from 1940 until the latest official figure in January 2014.

¹⁰ Exchange rate used: 1 Brazilian Real=US\$0.425 (average exchange rate for September 2013-February 2014)

¹¹ Avaliação de imagem e das ações sociais da Ampla. Centro de Pesquisa e documentação de história contemporânea do Brasil, Fundação Getulio Vargas.



**Table 1. Ampla Awareness Programme.
Projects and Target Audience of each.**

Project Name	Project Type	Target audience	Beneficiaries 2014
Ampla Citizenship	Training in public rights and duties and assistance with administrative procedures	Low income families	17,782
Ampla Art - Cultural	Holding of cultural events and crafts training with recyclable materials	Community in general	7,740
Ampla Efficiency	Improve efficiency of domestic electricity networks	Low income families and public bodies	7,107
Ampla Future	Education for the development of sustainable behaviour	Teachers and students	36,097
Ampla Opportunity	Vocational training of young people	Young people and partner companies	1,748
Ampla Knowledge - On Wheels	Thematic training and awareness on environmental and sustainability issues	Community in general	22,322
EcoAmpla	Discounts on electricity bill through supply and assessment of recyclable waste	Low income families	13,754

The ones that are most closely related with EcoAmpla and that have a direct effect on its results are:

Ampla Citizenship - Many people, especially those on low incomes, do not know what they have to do in order to obtain administrative documents or are ill equipped to visit official bodies on their own. Also, families in situations of social vulnerability are monitored and informed about the Federal Government's Single Register, which enables participation in the Social Electricity Rate programme.

Ampla Efficiency - Ampla technicians visit low income and high electricity consumption customers and replace inadequate installations that could cause excessive energy consumption as well as the risk of electrocution. They also perform duties in community buildings such as hospitals and schools. Since 2005, when this project started, 54,711 refrigerators have been exchanged (in return for models that are over 10 years old) in what has been one of the most successful actions.

Ampla Opportunity - Promotes vocational training workshops for young people that are looking for work. Also runs awareness campaigns on the efficient consumption of energy in their communities.



Regulatory Aspects Related to Energy and Federal Assistance Programmes

The legislative framework that regulates electrical energy in Brazil is highly developed, as it seeks to guarantee, as far as possible, access to energy for everyone. Regulatory bodies, laws and assistance programmes have thus been set up that are directly related to the EcoAmpla project, the most relevant of which are the following:

National Electrical Energy Agency (ANEEL): This is the regulatory body for electricity services, whose purpose is to provide favourable conditions in order for the market to be developed in a way that balances the interests of different actors in benefit to society¹². It is therefore the body responsible for authorising the electricity tariffs of the different companies that operate in the country and which publishes the prices that should be applied to bills.

Social Electrical Energy Tariff – TSEE: Created in 2002 and currently governed by Law no. 12.212, of 20 January 2010, for consumers in the “Low Income Residential Subclass” group. It involves discounts on the tariff that electricity distributors apply to the basic residential class, as long as the family is included in the Single Register (*CadÚnico*)¹³, for Federal Government social programmes and that its residents’ income per capita is equal to or lower than the half of the minimum national monthly wage, which is currently 724 Reals (US\$ 308). The discounts vary between 65% and 10% in different brackets, depending on the consumption division, between 30 kWh and 220 kWh/month. No discount is applied to higher levels of consumption.

Law no. 9.991, of 24 July 2000: Regarding investments in research and development, and in energy efficiency, by concessionary, licenced and authorised companies in the electrical energy sector, and other related measures. This law is basic to understanding the widespread development of projects like EcoAmpla in Brazil, as it obliges electricity companies to invest 0.5% of their net operational income in energy efficiency programmes, both in terms of the supply and the end use of electrical energy. In 2012, Ampla’s investments in this area amounted to R\$ 18.1 million, i.e. approximately US\$ 7.7 million¹⁴.

“Electricity for everybody”: In 2003, the Federal Government took up the challenge of putting an end to electrical exclusion in the country, mainly in rural areas. This programme is coordinated by the Ministry of Mines and Energy and is run by electricity concession holders. The programme has been renewed, and a new edition was launched in 2014. Energy is a vector for the economic and social development of these communities, as it helps to reduce poverty and increase family income. Access to electricity helps to integrate the Federal Government’s social programmes, and also improves access to health, education, water supplies and sanitation services, so that, for example, schools can open at night, health centres can start to store vaccines and serum, and water pumps can be more widely available.

¹² <http://www.aneel.gov.br/area.cfm?idArea=635&idPerfil=8>

¹³ <http://www.servicos.gov.br/repositorioServico/cadastro-unico-para-programas-sociais-do-governo-federal-cadastro-unico>

¹⁴ Relatório de Sustentabilidade, Endesa Brasil 2012.



<http://www.conscienciaampla.com.br>

Indicators of the Population's Access to Energy

In 2010, 97.8% of Brazilian homes had access to electricity. However, 2,750,000 people still had no electrical energy in their homes, of which about 12% lived in cities and the other 88% in rural areas. The main problem for low income populations is not access to a source of energy in itself, for electricity networks are well distributed, but the ability to pay for the electricity that they consume.

Homes without access to energy are mainly located in municipalities with a lower human development index, in rural areas and belonging to low income families. About 90% of these families receive less monthly income than three minimum monthly wages, i.e. less than 2,172 Reals (US\$ 924)¹⁵. In the State of Rio de Janeiro, these percentages are similar, with 98.7% of homes having access to electricity¹⁶. Ampla is present in 73.3% of the State territory, and in 66 of the 91 cities. The cities where the EcoAmpla project is being implemented are: Niterói, São Gonçalo, Petrópolis, Magé, Saquarema, Búzios, São Pedro de Aldeia and Maricá. Of these, São Gonçalo and Magé have the highest levels of clandestine connections and losses, over 30%, and the informal settlements of Niterói have levels of around 25%. These losses are centred on residential customers.

The inhabitants of Rio de Janeiro dedicate 15.5% of their income to covering energy costs (electricity and liquefied petroleum gas). According to the study by the Brazilian Institute of Geography and Statistics (IBGE) in Rio de Janeiro, the segment with the fewest resources consumes 103 kW/h per month, which signifies an expenditure on electricity that equates to 7.5% of their total disposable income in the case of a family with the right to receive the applicable Social Rate discount (see Regulatory Aspects). If a family does not receive this aid, the cost of electricity rises to 24%, which represents a sizeable percentage of their monthly income and in turn leads to an increase in energy theft¹⁷.

In 2014, Ampla provided an electricity service to 2,809,000 clients, 2.9% more than in 2013. Out of the total, 90.5% were residential clients, 6.1% were commercial, and 3.4% were other users. Residential clients are divided into conventional residential clients (78% of the total) and low income residential clients (12%), who are granted subsidised electricity prices, for which the subsidy varies depending on the amount of monthly consumption. The same discount policy for low income groups is used in other Latin American countries such as, Paraguay, Venezuela and Costa Rica. The average consumption by Ampla customers in 2014 was 184.3 kW/h per month revealing a slight increase in recent years, from an average consumption 169 kW/h in 2011.

¹⁵ <http://luzparatodos.mme.gov.br/luzparatodos/asp/>

¹⁶ IBGE <http://www.censo2010.ibge.gov.br/>. In 2010, this census included for the first time a question about access to electrical energy by families.

¹⁷ Caiuby, Gabriela. Acceso a energía eléctrica de poblaciones urbanas de baja renta. COPPE (Universidade Federal do Rio de Janeiro) 2012.



Waste Characterization and Management

Another of the key elements for understanding the EcoAmpla project is waste management, for the scheme is based on people recycling household waste in exchange for discounts on their electricity bills.

Municipal solid waste composition in Brazil can be described as follows¹⁸:

Table 2. Waste Characterization in Brazil

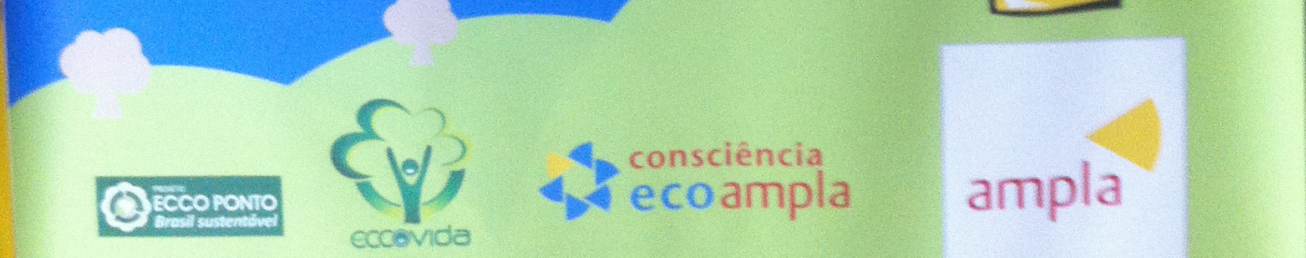
Waste	Percentage
Recyclable materials	31.9
Metals	2.9
Paper, cardboard, Tetra Pak	13.1
Plastic (total)	13.5
Glass	2.4
Organic matter	51.4
Other	16.7
TOTAL	100

Significantly, around 10% of the waste generated in Brazil is not collected. Almost half of the 63 million tons of municipal waste generated each year ends up in inadequate open-air and uncontrolled dumping sites, and only 3% is actually recycled¹⁹. On a local level, it is the municipal government that is responsible for the collection, transport and disposal of household waste in each of the territories, as stipulated by the 2002 National Plan for Solid Waste, which covers a wide variety of interrelated issues, such as reverse logistics, separate collection (including the work done by *catadores*, who collect recyclable materials) and composting, among others, and which should be included in solid waste plans. However, it should be noted that less than 20% of Brazilian municipalities have developed a separate collection policy for recyclable waste.

Important to this context is the existence of some 600,000 *catadores* (recyclers) of recyclable materials in Brazil, according to the National Waste Management Plan. There are about 1,100 recycler organizations in operation around the country, although barely 10% of *catadores*, i.e. about 60,000, belong to any of these organizations.

¹⁸ National Waste Management Plan of the Ministry for the Environment http://www.sinir.gov.br/documents/10180/12308/PNRS_Revisao_Decreto_280812.pdf/e183f0e7-5255-4544-b9fd-15fc779a3657

¹⁹ Panorama dos resíduos sólidos no Brasil, 2012. ABRELPE (Brazilian Association of Waste Management Industries).



In 2003, an Inter-Ministerial Committee for the Inclusion of Recyclers of Recyclable Materials (CIISC) was created, and its executive secretariat came into existence in 2007. Then in December 2010, the Pro-Catador Programme was institutionalised, its aim being to integrate and articulate the Federal Government's actions to support the development and organization of recycler associations. All of these actions were added to the 2012 National Plan for Solid Waste, but it remains to be seen how these actions will affect the everyday work of recyclers and the related institutions.

Ampla provides a service to 66 municipalities in the State of Rio de Janeiro²⁰, including the city of Niterói²¹, which is one of the most populated cities in the State and also home to the company's head offices. The body that deals with waste is the Niterói Urban Cleaning Company (CLIN), a public-private partnership, with a sizeable public majority. In 1997, CLIN introduced a door-to-door separate waste collection system, along with extensive awareness campaigns. The waste collected by means of this system is taken to sorting centres that are managed by various cooperatives. These were founded by recyclers²² that had previously operated informally, such as, for example, the Cooperative do Morro de Céu, made up of former *catadores*²³ from the dump at Morro de Céu. CLIN helped to found the organisation and offers its own transport for the transfer of the waste collected from the door-to-door system for sorting by the cooperative, which then sells the materials obtained.

The rest of the waste collected in street containers is transported to the landfill site at Itaboraí. Of the 750 tons of waste generated every day in Niterói, around 20% is left uncollected in public places. The average waste generation in Niterói is 1.36 kg per person per day, this being one of the highest rates in the State of Rio de Janeiro, compared with a general rate of about 1 kg/person/day.

²⁰ In 41 of the 92 municipalities in the State of Rio de Janeiro, a project has been run since 2012 (and ends in July 2015) to help recyclers to get organised. The service expects to reach some 3,000 recyclers.

²¹ Three cities are involved directly in the development of the EcoAmpla project. Of these, Niterói has been the most open to providing information and is the one that in December 2014 had made the most progress with its implementation, so this study focuses somewhat more on that project than on the other cities, while its model for the integration of EcoAmpla and recyclers is different and differentiating.

²² The last census to be conducted in the State of Rio de Janeiro, in 2008, counted almost 10,000 waste pickers. A new census is scheduled for 2015. Information reported by Claudete Costa, President of the Movimento Nacional de Catadores de Materiais Recicláveis, Rio de Janeiro section (MNCR-R).

²³ The Portuguese word used to identify informal recyclers in Brazil, and with no direct English translation.

In 2004, a group of Ampla employees that were trained social workers started to research community demands in depth, seeking to identify possible solutions, with the help of all of the affected parties. "Community Leadership Networks" were created and developed, involving the presidents of neighbourhood associations, school head-teachers and high-standing people in their communities. The work began in the prefectures of the State of Rio de Janeiro with the highest rates of electricity loss: Magé, São Gonçalo, Itaboraí and Duque de Caxias.

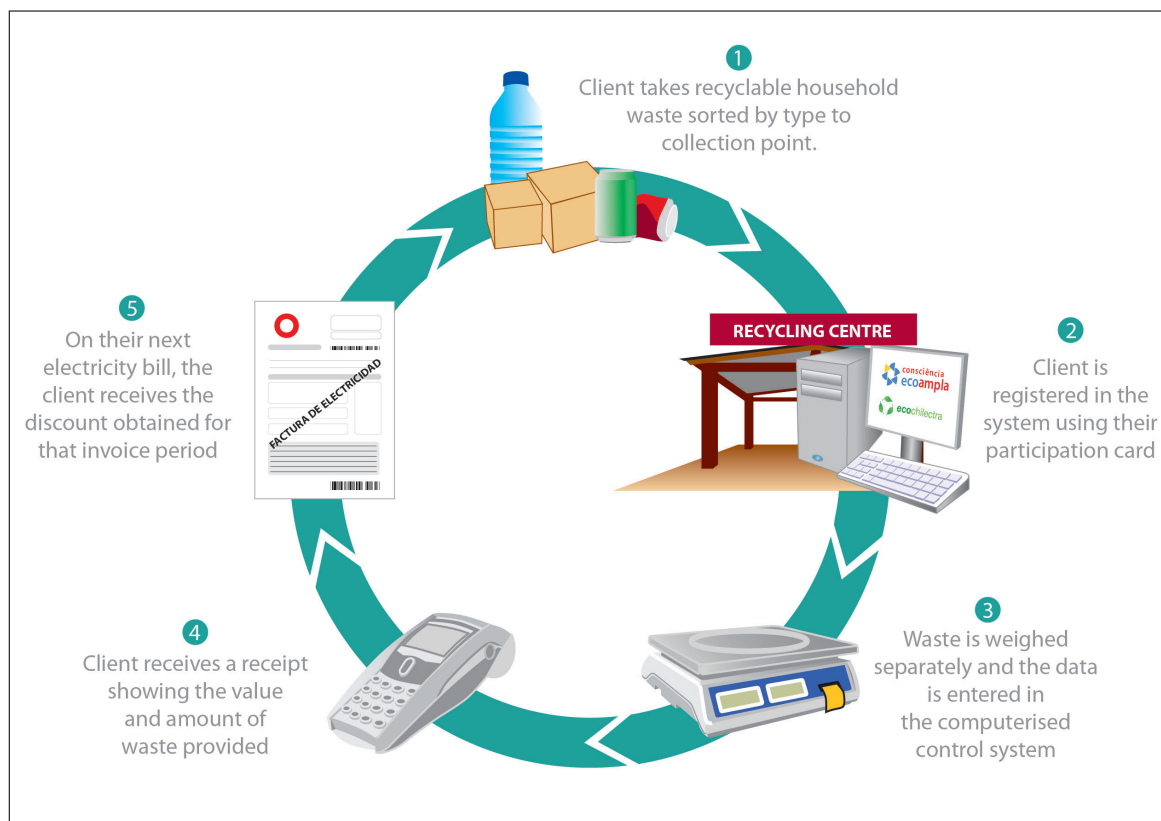
First of all, pilot projects were run in these cities based on the exchange of waste for energy, but the plan did not work because it was solely focused on aluminium cans. Only using one type of waste did not enable economies of scale in the logistics, which meant huge amounts needed to be recovered in order to make the scheme viable, and there was also the problem of competing with other recyclers, as aluminium cans have always been attractive because of their high price.

In 2007, Coelce, the energy distribution company in the State of Ceará, and also a subsidiary of Endesa, adopted the basic model in order to replicate it in its own region. Coelce conducted, together with the University of Fortaleza (UNIFOR), a number of data analysis projects. These showed that the communities with the highest amounts of litter in their streets corresponded to those with the least disposable income. These were also the communities with the highest rates of insolvency and clandestine connections, the latter problem being derived from the inability of these homes to pay their bills. This time, a positive result was obtained from the implementation of the system which offered discounts in electricity bills in return for the delivery of recyclable waste, as other types of waste were included and widespread involvement and participation of people, institutions and companies was achieved from the outset. And so the Ecoelce project was born²⁴.

It was in 2008 when, on the basis of the results of the Ampla Awareness Programme (see Table 1) and of the Ecoelce experience, the project was reintroduced to Rio de Janeiro, now called EcoAmpla. The aim of this new project was to promote separate waste collection and recycling, to raise awareness and educate the population regarding responsible energy consumption, and also to facilitate legal access to electricity in the State of Rio de Janeiro. EcoAmpla is aimed at all of the company's clients, especially those on low income, as this system also seeks to help them to pay their electricity bills. Customers take their waste to collection points (*Puestos EcoAmpla*, hereinafter PEA) and in return receive discounts on their electricity bills that are proportional to the amount and type of recyclable waste that they have provided.

²⁴ <http://www.endesabrasil.com.br/sust/coelce/2008.html>

Basic operations are shown in the following diagram:



To promote the project and encourage clients to participate, there have been a number of complementary actions such as, for example: for each 40kg of waste provided, the client receives a ticket for a draw to win a new refrigerator²⁵, for each 60kg of waste provided, the client receives a free Reusable Eco-bag (made of recycled material) that reduces the use of single-use bags; and for each 80kg of recyclable waste provided to the EcoAmpla project, the client receives an energy saving light bulb in exchange for a spent incandescent bulb. All of these actions help to save energy.

Relevant Interest Groups in the Development of the EcoAmpla Project

Interest groups are those that could be or are affected, in this case, by EcoAmpla. The following is a summary of the participation and involvement of each of them in the project:

²⁵ 12 draws a year. The winner must provide another in return that is over ten years old.



<http://3.bp.blogspot.com>

Energy distribution companies. Electricity companies are the promoters of the project and who adapt the basic idea to the characteristics of the area where they operate, in this case Ampla in Rio de Janeiro. Similar projects are being conducted in eight other Brazilian states²⁶.

Local councils and municipal waste management systems. Mainly the municipal government of Niterói, but also that of São Pedro da Aldeia. In Niterói, the municipal CLIN company runs the EcoAmpla project and manages the PEA. CLIN provides the spaces, which are also run by the local council. It manages 9 of the 10 mobile points in operation in Niterói.

Waste managers. These hold different positions in the EcoAmpla scheme. They manage some PEA, as in the case of MAFIS (company that recycles metal and which in order to start collecting other kinds of waste decided to work with Ampla on this project). They also buy materials from other sources. Depending on the amounts of waste, they either establish collection routes or deal with one-off requests.

Waste pickers. These are involved in the project in a number of ways. They form part of the staff of some PEA, having been contracted by different Ampla partners, and are also involved at the end of the chain as cooperatives that receive the material that has been collected from the different points for fine sorting and sale. One example of this is the Cooperative de Morro de Céu²⁷.

NGOs. Eccovida participates as the manager of a PEA that forms part of the EcoAmpla project, and involves informal recyclers on its staff. It not only receives waste from Ampla clients, but also from informal recyclers, and forms part of an association that provides informal recyclers with places to sell their waste, called the “*Campanha amigo do catador*” (Friend of the Recycler Campaign).

Management of EcoAmpla’s PEA

The first PEA, and the only one that is still managed by Ampla, was opened on a site belonging to the company, near to its head offices in the city of Niterói. As of January 2015, 16 garbage collection PEA are in operation (in eight different municipalities, namely Niterói (this being the city with the most collection points, six), São Gonçalo, Petrópolis, Magé, Búzios, Saquarema, São Pedro de Aldeia and Maricá. There are also mobile PEA in Niterói and Itaboraí²⁸.

²⁶ http://planetasustentavel.abril.com.br/noticias/oito-estados-brasileiros-trocam-lixo-reciclavel-desconto-contaluz765775.shtml?utm_source=redesabril_psustentavel&utm_medium=facebook&utm_campaign=redesabril_psustentavel

²⁷ They participate in several points of the recycling chain. Morro de Céu is a recycler cooperative that sort waste from EcoAmpla and from door-to-door collection, Coopbrilho, recycles used vegetable oils from EcoAmpla and other sources, the PEA in San Pedro de Aldeia is managed by the Cooper Aldeense recycler cooperative.

²⁸ The mobile points work in the same way as fixed points but they move around, they are small stands that are set up in different squares in Niterói and Itaboraí on set days of the week, and waste is received from people living in the area.



<http://4.bp.blogspot.com>

From the beginning, Ampla was clear that it was an **electricity company and not a waste management company**, and so the model chosen for the expansion of EcoAmpla involved reaching agreements with partners that have experience in this field, as explained by Gislene Rodrigues, who is in charge of Ampla's Department of Social Projects. It is therefore a **mixed PEA management model** in which Ampla supports its partners by directly intervening in matters related to the promotion of its own points and of activities associated with the project, but not in waste management operations, which are the responsibility of each partner, given that they are experts in the field. At first, no set processes or criteria were established for the selection of the partners in the project. In some cases, it was Ampla that made contact with a waste manager, as in the case of CLIN, while in others it was the managers, MAFIS for example, who wanted to take part in the project and that approached Ampla to offer their infrastructure and expertise. Subsequent negotiations determined whether the applicant was equipped to participate in EcoAmpla. When AVSI started coordinating the EcoAmpla project's operations, the services provided by the partners were reviewed and, for example, in 2014 two PEA were closed because they were not being operated according to the service quality requirements that had been established by Ampla. No new PEA has been opened since late 2014 because the procedures that should be observed in order to participate in EcoAmpla are under review.

Ampla supplies the software and hardware, computer and printer, which are required to register customers, record the waste delivered and note the discount in the client's account, and also to issue to corresponding receipt. It also provides the scales, advertising posters and banners identifying the point as a participant in the EcoAmpla project. It is also responsible for the awareness campaigns conducted among the general public. All of this means that Ampla is assured that all of the partners in the project use the same procedure, which has a positive effect on control of the waste transactions and discounts on associated bills, creates a unified image for the brand and enables Ampla to keep in constant contact with its customers in general and with EcoAmpla users in particular.

Although operations are the same, and each of the entities that manage the PEA provide the project with the space where the installation is located plus the staff assigned to the same, and is responsible for sorting and storing the materials provided, the legal statuses of the managing entities are different, as shown below:

- Public companies with participation of municipal governments (Niterói, through CLIN and Petrópolis, manage altogether seven fixed points and a mobile one)
- Cooperative (San Pedro de Aldeia, one point)
- Private companies (Ampla, BRR and MAFIS, manage a total of four points)
- Two NGOs (Eccovida and Crer Vip, four points and a mobile one)

Note that these organizations all belong to the area of waste management, which means they have the necessary know-how and infrastructures for the management of the recovered materials and to be more efficient than if the same function were to be served by Ampla, given the integration of the costs associated EcoAmpla in their ordinary operations. This is the case for all participants. From the outset, Ampla was supported by already existing companies and cooperatives and the social inclusion of waste pickers was not one of the objectives of the project. However, participation in EcoAmpla has benefitted the different cooperatives that are part of the scheme because they have professionalised their management, obtained greater amounts and types of materials and improved their public image.



<http://3.bp.blogspot.com>

The Cooper Aldeense cooperative, in San Pedro de Aldeia, is the only one that has been created *ex profeso* on the basis of participation in EcoAmpla.

Once Ampla customers have deposited their waste at the PEA and the discount has been noted in their account, the waste is deposited in 'big bags', as sorted originally by the participants in the scheme. At the PEA, as a general rule, no secondary sorting is undertaken. From there, the materials are transported to warehouses where the fine sorting of the materials takes place. Some cooperatives sort everything and others specialise in a certain type of waste and the remainder is sold directly, without manipulation. After fine sorting, negotiations are held with the buyers of the materials. In the municipality of Niterói, mobile PEA managed by CLIN also operate. These points are very basic, consisting of small stands that are set up in certain squares every two weeks and which receive waste from the people living in the area. They are not set up if it rains or in very hot times of the year because they are not designed to cope with such weather conditions. If they cannot be set up in a certain place on the corresponding date, that turn is skipped and the service does not return to that location until two weeks later. Ampla is studying the possibility of setting up some better quality mobile points by purchasing a customised truck with containers that can be used to collect the materials that customers bring to the PEA and thus improve the image of mobile points. This should come into service sometime in 2015.

In the years that EcoAmpla has been operating, different PEA have come and gone. It is suggested that three aspects have influenced the closure of points. Two of these are external. First, some PEA installations in areas with high concentrations of people on low income had to close because the local people did not bring enough waste, or waste of the right types, to make it profitable for the EcoAmpla partners to manage them. Second, some were opened near to *favelas* where there were high levels of violence, and had to be closed to protect the safety of the people working at the points. The other reason is internal, being the lack of quality management in accordance with the standards that the EcoAmpla project requires from its partners.

Differences between Public and Private Management of PEA

Although, as stated earlier, the operation is the same for all PEA managers, there are some peculiarities depending on whether they are public or private.

If the **manager is public**, and receives recyclable materials via the PEA, it can reduce the intensity of door-to-door collection, which means savings on management costs, as well as additional savings due to the deposit of less waste in landfills. Part of the waste recovered by the collection system and at EcoAmpla project PEA is taken to different cooperatives (which sort the materials and sell them independently) with support from the local council, thus generating economic activity. The only cost is the transport of materials, which is done daily by the collection service's truck during a four hour period when it is not being used for the regular service.



<http://image.slidesharecdn.com>

When the managers are **private companies and cooperatives** whose area of activity is exclusively waste management, these collect waste, sort it, apply the appropriate treatment as requested by the buyer of each type of material and sell it. **They do not work exclusively with the materials recovered by the EcoAmpla project, as the amount obtained from their sale has to be shared, but do benefit from greater stability in the collection of materials, as well as greater volumes, even though this is at the cost of lower profit margins.** Anybody who wants to can deposit waste at PEA, not only Ampla customers.

It should be noted here that recycling cooperatives, operated in different points of the chain, have different problems. For instance, the Morro de Céu cooperative, which had already been created and was being consolidated, had some trouble keeping its members, for some preferred to go back to working alone, as there were differences in opinion regarding the distribution of income and the control of work hours. In this case, the problems were of an administrative and internal nature²⁹, while others could not expand their collection and recycling activities due to the lack of capacity to invest in bigger warehouses or trucks (Coopbrilho) as they find it difficult to obtain bank credit.

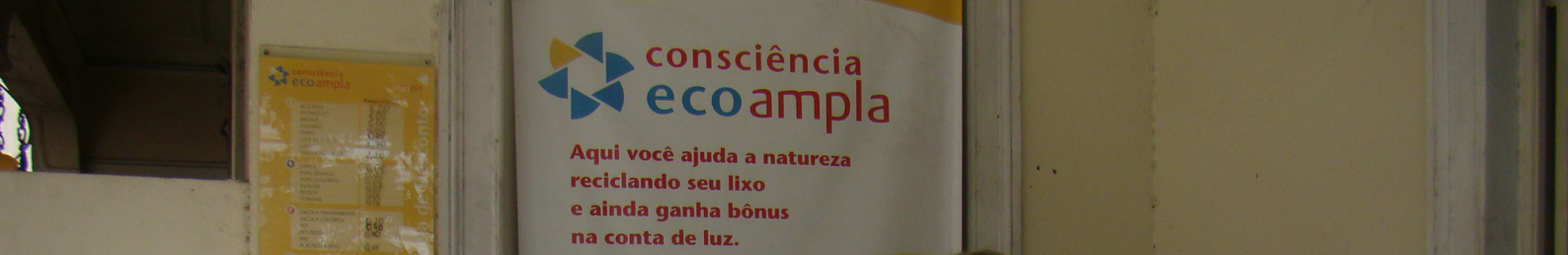
Economic Aspects of Operating PEA

Income from PEA depends on a variety of aspects: the amount of material gathered, the quality of the sorting process and the international value of the materials. PEA managers seek the best moment to sell, and the best price, while trying to ensure that this has no negative repercussions on storage costs. To do so, they need to constantly monitor prices. If they regularly have a sufficient amount of materials, they can sell directly to industries that incorporate them in their processes. If they cannot gather sufficient amounts, the materials collected at PEA are sold to intermediaries, who thanks to the accumulation of large quantities of materials are able to sell them on to manufacturing industries, making a profit on the difference between the price paid to the PEA and that received from sale to industries. These are attracted by the opportunity to purchase recycled materials as they are the same as raw prime materials, but cheaper. The price also varies depending on whether the end buyer collects the material from the warehouse or whether it is transported to their premises. Note that transport is a key factor in the structure of waste management costs.

One of the **most important aspects of the EcoAmpla project** is the system that relates the waste delivered to the discounts that Ampla applies to customers participating in the project. Once a year, Ampla establishes prices per kg of waste exchanged at PEA. Although the prices of materials can increase or decrease, Ampla tries to keep them constant so that people have a stable reference to work with. These prices are made very clear and are the same for all PEA, regardless of who manages them and where they are located.

The discounts on electricity bills that Ampla applies to its clients are not a direct cost to the company, as they are paid these amounts by the PEA managers. On the 10th of each month, the EcoAmpla partners are informed, in accordance with the records in the computer system, of the amounts of waste exchanged and their monetary value in Reals for the previous month in order for them to be verified and paid into the Ampla account. The prices applied to the waste that Ampla customers provide to PEA are lower than the market price of the material contained in the waste, and it is thanks to

²⁹ Although they make more money out of being in the cooperative, some prefer people not to know what they do. Conversation with Seu George, president of the cooperative.



<http://www.conscienciaampla.com.br>

this difference that managing companies make their money. Of the income from sale of materials, the amount paid to Ampla for it to discount from participant customers in EcoAmpla is, on average, 25%-30% of the end price of the materials. The remaining 70%-75% is the money made by PEA managers and is how they cover their expenses. It is estimated that waste management companies make a profit of around 10% on the final sales price.

Despite not obtaining 100% of the sale price of materials, PEA managers are attracted by the idea of participating in EcoAmpla because it enables them to collect different types of municipal waste at market value. Before participating in the project, they did not collect these materials as they could not guarantee minimum amounts for some of them. Now they receive them constantly and many have exploited the situation by becoming socially recognised managers thanks to being associated with a major company. Note that as they were already waste managers, they group the waste that they obtain through the EcoAmpla project with other waste obtained by other means. There is no exclusivity requirement in order to work with EcoAmpla, so they can gather larger amounts of waste and thus obtain better sales prices. Finally, note that a large number of the investments that are required in order to operate with the EcoAmpla project are amortised by the intrinsic activity of waste managers. For example, there is no need to buy trucks to transport the waste gathered by PEA, or baling machines to compress sorted materials, as they already own these as part of their waste management activity.

From Ampla's point of view, this financial model is just as attractive, whereby the recycler transfers to Ampla 10% of the discounts applied to their clients and Ampla lends their image and minimum operational infrastructure, and hugely reduces the risks inherent in the implementation of a waste-based electricity discount system since it is not a company that understands waste management procedures.



<http://1.bp.blogspot.com>

Replicability of the EcoAmpla Model for the Management of PEA

The PEA management model developed by Ampla, whereby it transfers day-to-day operations to waste experts and lends the image of the EcoAmpla project to PEA along with waste recycling awareness activities, contains elements that makes its replication feasible. The commitment of company management is a key issue, as well as the involvement of employees. It is advisable to create a department or work group that is exclusively dedicated to the project, like at Ampla, whose Social Area includes seven people that are exclusively dedicated to EcoAmpla. This method of operation has recently been changed, and these tasks have been outsourced to AVSI, which dedicates 100% of its daily operations to the EcoAmpla project, with eight people assigned to the project.

Note that the existence of a law making it compulsory to spend 0.5% of turnover on energy efficiency was the impetus for such schemes all around the country, implemented by different electricity companies in different states. In places where this law is not in effect, the project can also be replicated, as the benefits (reduction in clandestine connections, late payments and better corporate image) are important enough to warrant the investment required to set up such schemes, as shown hereinafter in the financial results of the project. It will be interesting to see what effect the proposed reduction from 0.5% to 0.25% of the compulsory investment in energy saving, due to be introduced in early 2016, will have on potential replications in Brazil.

This model is also of interest to waste managers, as it enables them to increase the amounts that are collected and to ensure a constant flow of waste, and also to associate their brand image with a company with social interests at heart. This is especially interesting, for example, for recently created recycler cooperatives that want to get themselves known and to operate in a relatively secure framework, albeit with tighter financial margins³⁰.

The sociological aspects of the communities where such projects could potentially be replicated should be studied beforehand, for as Silvia Pires of CLIN put it: "The Brazilian loves *'troca'*, or exchange, which is the basis of EcoAmpla. The delivery of waste in exchange for something material (fridges, eco-bags, bulbs) is better, for some of the people, than the actual discount on their electricity bill. It is on the basis of this preliminary study that actions should be derived that can operate in parallel to the discount on the electricity bill, as a way of guaranteeing that people will participate in the places where the project is replicated.

A very important aspect of the project is the involvement of partners, experts in waste management. That way, each partner is in charge of the part that they understand. The company promoting it deals with communication and awareness, as well as the project's computer systems, while the waste managers deal with the collection, sorting and sale of the waste, which is the area in which they specialise. The municipal waste management model in the location where the project is to be replicated will also need to be studied, to ensure that it does not conflict with the existing separate waste collection and recycling system. If there is no recycling system already in place then it is easier for the project to work and it can be integrated into the municipal system to ensure the support of the local administration.

³⁰ The subsistence economy of recyclers does not, however, enable this to be widespread among cooperatives because priority is given, especially among those that have recently been created, to an increase in short-term profits above other aspects that could improve them in the medium or long term.



Results of the EcoAmpla project

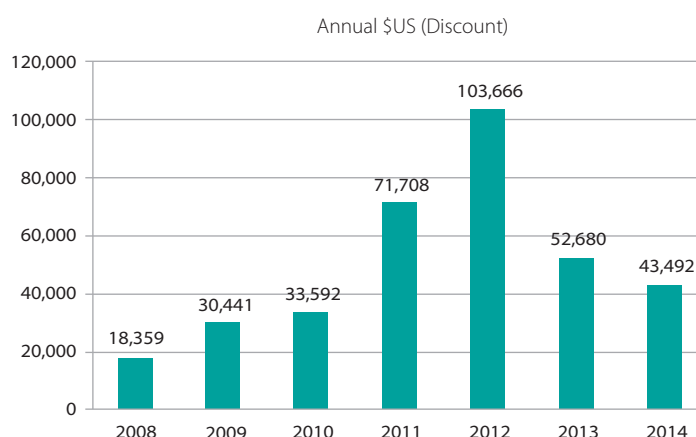
The EcoAmpla project has been in operation since 2008, and has achieved a series of results. The following is an analysis of those results affecting the financial, environmental and social aspects of waste management.

Financial results

Graph 2 shows the amounts corresponding to the discounts to customers' electricity bills for each year of the EcoAmpla project. Note the major decrease in the discount in 2013, when 5,857 clients contributed some kind of waste, with respect to 2012, when 5,446 customers provided waste to PEA.

In 2011, companies and industries were offered the opportunity to participate in the EcoAmpla project. There was a major increase in the discounts issued because these clients fed huge amounts of material into the system. But in 2013 and 2014, there was a reduction in the delivery of materials by some of these large producers, as they found waste managers that bought materials at a higher price than that represented by the discounts on their electricity bills. This is an indicator that the prices applied by EcoAmpla are not profitable for large producers, because they need to transport the material to PEA.

Graph 2. Amount of Annual Discounts Issued by the EcoAmpla project



Source: Developed by the authors based on data provided by Ampla

Table 3 shows the values of different materials: on the one hand, those that are applied to EcoAmpla customers at PEA, in kg, and on the other those that recyclers can receive from the sale of the same, in tons. It also shows the percentage differential that the recycler obtains when comparing the amount to be paid to EcoAmpla, as a discount on electricity, with that recorded as its own income. In general, it can be observed that the lower the final sale price of the waste, the lower the percentage profit for the recycler.



<http://3.bp.blogspot.com>

Table 3. Amounts paid by the project and final sale price³¹

Material	Price applied at PEA, per Kg	Final sale price, per ton	Percentage profit
Aluminium	R\$ 1.8 (US\$ 0.76)	R\$ 3,600 (US\$ 1,570)	50 %
PET plastic	R\$ 0.4 (US\$ 0.17)	R\$ 1,400 (US\$ 600)	30 %
Paper	R\$ 0.2 (US\$ 0.08)	R\$ 240 (US\$ 100)	20 %

Source: Developed by the authors

In terms of the amounts and types of waste managed, these figures vary from year to year and hence the financial figures change too. **In 2014, the average profitability for PEA managers was 10%.** 30% went to Ampla as discounts for the customers of the EcoAmpla project. 44% was spent on staff and operational costs, including external transport (these costs were directly associated to the amount of waste managed) and 16% went on amortizations. Note that part of these amortizations as they are allocated here, are not accounted for in their ordinary operations, which improves the operational results.

Environmental results

The environmental results are notable, given the amounts of waste that are selectively collected. PEA managers are integrated in the municipal collection system (two of them are, in fact, municipal governments) and the remainder, as their everyday activity is waste management, know the field perfectly and have all the right licences, permits and equipment for the collection, transport, sorting and sale of the materials³³.

Since it began in 2008, the EcoAmpla project has collected a total of 4,195 tons of waste. **Graph 3** shows the annual distribution.

³¹ Average values of these recycled materials in January 2015. The prices fluctuate depending on the international rates for the materials and also depend on the negotiations made by the different parties in the recycling chain.

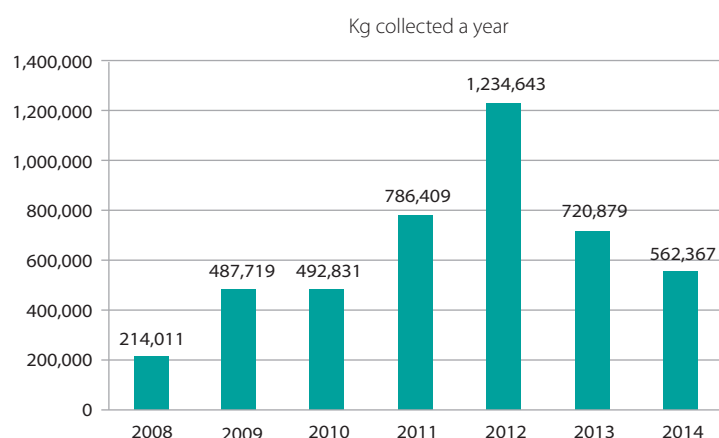
³² Internally calculated data on the basis of interviews and information from waste managers themselves.

³³ The MNCR-R movement, in December 2013, managed to get recycling cooperatives, which comply with a series of minimum requirements, to not have to apply for an environmental licence in order to carry out sorting and baling tasks and sell collected materials. <http://www.mnrcr.org.br/noticias/blogsudeste/cooperativas-do-rio-de-janeiro-conquistam-dispensa-de-licenciamento-ambiental>



<http://webservice.npibrasil.com.br>

Graph 3. Annual Kg Collected by the EcoAmpla Project



Source: Developed by the authors based on data provided by Ampla

There is a reduction in the amount of waste recovered in 2013 and 2014 compared with the amount obtained in 2012. This decrease can be explained by:

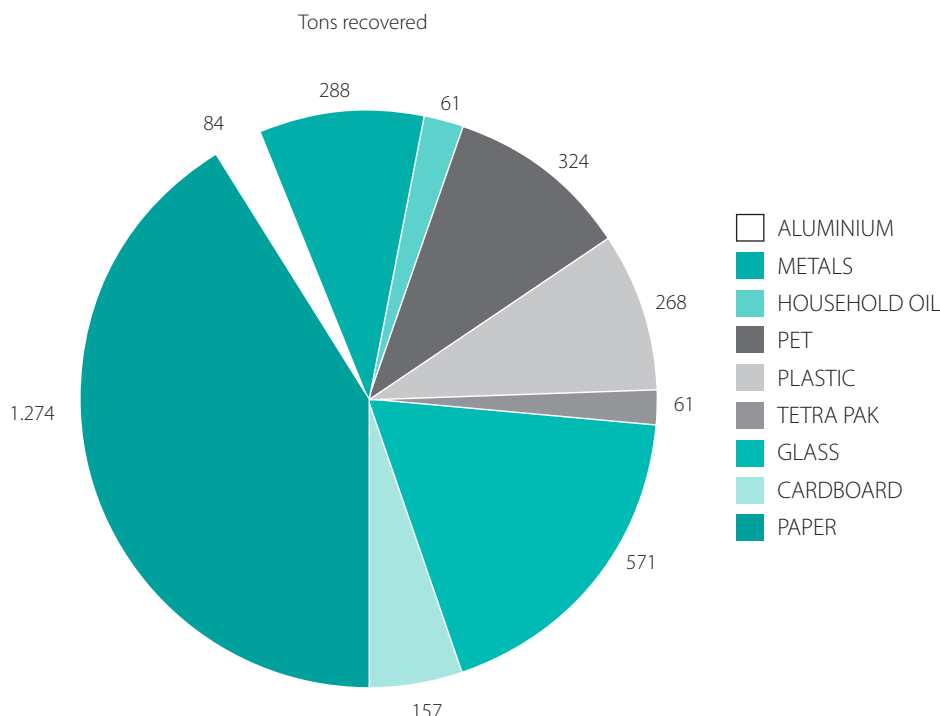
- Closure of two PEA in 2014, because they had not operated well in 2013. The PEA in San Pedro de Aldeia was opened in November 2014, so its results are not reflected in the data shown in the graph.
- Repeated malfunctioning of the computer system, which annoyed customers and did nothing to help encourage them to participate in EcoAmpla.
- The process, in the first half of 2014, to select the entity to govern the everyday operations of the PEA considerably hindered EcoAmpla's awareness and promotion activities.
- The departure from the project of the major waste producers that joined between 2011 and 2012.

Graph 4 shows this same total amount for each of the fractions of waste collected at PEA until 2013. It can be seen that the main recovered material is paper (and cardboard). Glass, despite the large amount collected, is not an attractive material for recycling due to the difficulty selling it, product of the strict requirements of the Brazilian glass industry.

³⁴ The data from the first quarter of 2015 shows an increase of 4.3% with respect to the amounts recovered for the same period in 2014.



Graph 4. Total tons recovered by the EcoAmpla project in the 2008-2013 period by type of material



Source: Developed by the authors based on data provided by Ampla

PET (and other plastics) are especially influential³⁵, because Brazil is the world's second biggest PET recycler, after Japan, with 57.1% of the material commercialised in 2011, and its market price is highly attractive, being between US\$ 600 and US\$ 1,300 per ton depending on the level of transformation.

Social results

One of the direct social results achieved by this project has been the creation of jobs by the PEA managers. Two types of job have been created; some already existing recyclable waste recovery and sorting businesses have been able to contract additional personnel thanks to the waste contribution to the PEA, which has in turn allowed more materials to be sorted; a second group are jobs that are mainly associated with manning the PEA, a newly created job. It is calculated that nine jobs have been created to complement the collection activities and a further ten jobs have been created in areas dealing with the public³⁶.

³⁵ Fifteen years of major economic growth in Brazil have increased the consumption of goods by the general public, as well as their disposable income. Brazil is the biggest market in the world for personal hygiene products, and the third biggest market for electronic products, pet care and household cleaning products. With more than 50 per cent of the population now considered middle class, consumption will increase and along with that there will be an increase in waste, especially plastic containers. Hardshake, the IFC's quarterly journal on public-private partnerships; Janaury 2014.

³⁶ Internal estimate, based on the number of cooperative members and employees before taking part in the EcoAmpla project and the number of employees after this participation. Note that this does not include the biggest PEA manager, CLIN, as vacancies are filled by public tender in the area of municipal waste management without places being explicitly allocated initially to the EcoAmpla project. Nine people currently work on CLIN's fixed PEA and three on mobile ones.



<http://www.conscienciaampla.com.br>

Impact of the Results of EcoAmpla on Access to Electricity

In the State of Rio de Janeiro, the main problem for accessing electricity is not the availability of electricity supply networks, but difficulties in being able to pay for the energy consumed. With the collaboration of the Ampla Citizenship project, people at risk of exclusion are visited and group sessions are held to help them learn how to obtain documents to access the discounts on energy consumption that are offered by the Brazilian government to people on low incomes. In 2014, there were 17,782 beneficiaries, and thanks to that, Ampla has been able to expand its client base. **Access to the social programmes has led to an increase in the percentage of clients that can now pay their bills, which has in turn helped to reduce the theft of electricity.**

Law 9.991 of 2000, required 0.5% of the operating profits of electricity distribution companies to be invested in energy efficiency projects. To respond to this requirement, Ampla must present an annual report to the Federal Government that shows that the activities included in the Ampla Awareness Programme generate genuine improvements in its customers' energy saving rates, in order for the programme to continue to be based on these funds.

The National Electrical Energy Agency (ANEEL) introduced changes to the procedures for the allocation of discounts on electricity bills to people on low income from December 2013. The 240,000 Ampla clients registered in this section are being monitored in order to get them to re-register and ensure that the new conditions do not mean that the people who meet the requirements do not lose their right to the discounts that they are currently receiving. There is a certain risk of this happening as people must show each year that they are within the parameters that allow access to these discounts.

Note that 90.5% of the 2.9 million Ampla clients are residential. This category is divided into Conventional Residential Clients (78% of the total) and Low Income Residential Clients (12% of the total). The increase in low income residential clients from 2008 to the present averages out at around 2.9%, while the increase in conventional residential clients is around 1.7%³⁷. It can therefore be claimed that EcoAmpla is obtaining positive results, as the increase in low income residential clients (people that access electricity in a regulated manner) is greater than the increase in conventional residential clients.

These results have been achieved thanks to the coordination of the EcoAmpla project with other projects in Ampla's social area. Note that the average saving on electrical energy, in 2014, obtained through collaboration with EcoAmpla and Ampla Efficiency, has been 33 kW/h per quarter per participant client in both projects, a decrease of 18%, which equates to an average quarterly financial saving per client of R\$18 (US\$7.7), basically thanks to the exchange of old refrigerators for new ones and energy saving light bulbs. In 2014, 1,748 young people also benefitted from Ampla Opportunity, a group of 91 youngsters were trained as electricians that had the option of being hired by Ampla and other associate companies. Awareness activities and others to present the EcoAmpla project to communities were also organised, which had a positive impact on awareness of the same in these communities and increased the number of participants.

³⁷ Ampla Sustainability Reports for 2008 to 2010 and for Endesa Brasil for 2011 and 2012. Note that this data was produced internally for this case study, and that the definition of a low income client has changed over the years in the country's legislation. In 2014, ANEEL is revising the criteria for the determination of a low income client.



Ampla has managed to reduce electricity theft from 24.7% in 2004, to 19.7% in 2014, and the company estimates that much of this success is due to the combination of technological measures and the development of the Ampla Awareness Programme. It is calculated that for each percentage point of reduction in robberies, turnover increases by R\$45 million, some US\$19 million³⁸.

Perception of the Project among Users

As part of the case study, a series of random interviews were held over two weeks. These were held at certain moments and were qualitative in nature, designed to gather opinions from users of the EcoAmpla project. The following results were derived from those interviews³⁹:

- 40% of users State that they knew about the project thanks to the PEA themselves; another 40% found out about them through a relative, neighbour or friend.
- Lower income users State that their participation is directly related with the discounts offered on their electricity bill. The remainder State that they do so for environmental reasons, although they do take advantage of the discount.
- 44% also appreciate the additional gifts that they can receive, especially the refrigerator and the energy saving bulbs, and describe them as a further element of their participation.
- Practically all respondents believe that the project needs to be promoted more. It is not well known and when they talk about their participation with friends and acquaintances, many of them say that they know nothing about it.
- 60% of users have recommended EcoAmpla to a relative or neighbour.
- 85% consider that EcoAmpla helps to raise awareness of the need to separate waste and recycle it. If this action was more widespread and more people were involved, the streets would be cleaner, although 60% do not think that people take much notice of awareness campaigns.
- The average number of visits to PEA is once a week, with between 5 and 20 kilos of waste being brought on each visit.
- Almost half of the respondents consider the discount applied to be small. They mention the existence of places where people can take waste and sell it. However, these establishments are either far from urban centres or require greater amounts of waste to be gathered, and the waste also needs to be better sorted than it does when it is taken to PEA.
- The average overall rating awarded to the programme is 6.1 out of 7.

³⁸ Calculated on the basis of <http://www.actualidadendesa.com/journal-article/combate-ao-furto-energia-eletrica> and information reported in interviews with the managers of the Ampla Awareness Programme.

³⁹ Random interviews held in December 2013 with 41 users of EcoAmpla when they came to deposit their waste at five PEA in three different municipalities. Distribution by gender is practically 50-50 and by income groups, 45% are in classes D and E (monthly family income of up to R\$1,749 or US\$744), 47% to class C (income between R\$1,750 and R\$7,499) and the remaining 8% belong to classes A and B (more than R\$7,500 or US\$3,190).



<http://www.conscienciaampla.com.br>

From the qualitative assessment of EcoAmpla it can be inferred that, among higher income users, the main motivation stems from environmental awareness, it being common practice to come as a family to leave waste at PEA. Among low income users, there is also a certain amount of environmental awareness, but financial motivations are more important, whereby they are interested in being able to get a discount on their electricity bills. In general, participation in EcoAmpla is not directly identified with cleaner streets, but it does represent a way of promoting environmental awareness among society. Some low income users also gather waste from their friends and neighbours in order to gain bigger discounts. Some people even go to the collection point several times a week, especially when they have no means of transport to allow them to carry large amounts. As stated earlier, the average quarterly discount is around R\$18 (US\$7.7), which represents an average discount of between 10-15% on the electricity bill. To date, Ampla has not worked internally with the data from clients to clients that declare that they started taking part in EcoAmpla in order to help pay their electricity bill.

In summary, this is a project that has been well accepted by society, which is highly recommended by its beneficiaries, and that is viewed as a good method for raising environmental awareness among the general public. However, it needs to be promoted better to potential users and there is a need to study the possibility of introducing improvements to the amounts applied as customer discounts.

The EcoAmpla case study has produced some interesting conclusions, which are described below. These are analysed in consideration of the settings to which they refer: administration, company, customers, waste managers and, finally, aspects of the general performance of the project.

In terms of the role being played by the government in the development of the project, it is noted that **Brazilian legislation on compulsory reinvestment in energy efficiency has a very important effect**. It has enabled the creation of a programme like Ampla Awareness. Without this funding, it would have been very difficult to implement the operational method and structure, or the staff that are currently dedicated to running and monitoring the scheme. The EcoAmpla project could have gone ahead without this legislation, but not in conjunction with all the other projects that have also been organised, and its implementation would probably have been much slower and its scope more limited.

The **company policy of holistically analysing the social setting** in which its economic activity takes place has produced positive results, as it has helped to adapt the actions to the local reality, has improved Ampla's image, has increased its client base and has reduced the proportion of theft. This is all thanks to the **strong management of Ampla's social programmes** and the coordinated work on the projects in its social area. Another key factor in the success of Ampla's social initiatives has been the **involvement of senior management**, as well as other areas of the company, whereby all departments, from the Directorate of Access to Markets, to the Social Area itself and the Directorate of Sales and Distribution, have all worked in conjunction.

The **participation of strategic partners** that understand their business, in this case waste management, has been a key factor in allowing Ampla to sell energy and organise social support actions without deviating from its area of expertise. It first outsourced the operations associated to waste management and later did likewise with the administrative operations, which are outsourced to AVSI. This is an important aspect for understanding why Ampla did not focus on the creation of cooperatives or on the integration of waste pickers, but instead relied on the efficiency of the processes that were already in operation. The inclusion of recyclers was mainly instigated by PEA managers.

These partners include cooperatives of former *catadores* (informal recyclers).

Almost all of them were already constituted for the management of household oil before they joined EcoAmpla, or for the management of a recyclable municipal waste sorting plant, like Morro de Céu. This participation is a means of expanding their waste



<http://2.bp.blogspot.com>

management activity, to the collection of new materials, and to boost their credibility as businesses through working in liaison with Ampla, a large and very well-known company. This is a highly attractive prospect for their cooperatives, because it helps to get them known to public and private agents that are involved in waste management. There is also the matter of the additional social impact gained from the integration of informal recyclers, which supposes **recognition of their work** in the recycling trade. Also, their activity involves daily contact with the general public, and with the right training they can be very useful allies of the municipal waste management system.

The closure of two PEA in 2014, as they were operating in conditions that were not comparable with the other points, revealed the need for greater control and monitoring of the waste management companies and entities that are put in charge of PEA. The arrival of AVSI in May 2014 has this purpose in mind. At the same time, AVSI is also working on improving relations with the partners of the EcoAmpla project and on standardising the procedures that they must observe in order to participate in the project, and determining the procedures that future partners in the project should observe.

The project was initially aimed at people on low income, but some PEA installed in their areas of residence **did not achieve the expected results** (low participation, quality and amount of waste provided, violent surroundings) and some of them had to be closed. Because of the system of alliances with external managers, minimum amounts of waste need to be recovered in order to guarantee profits. Preliminary studies of the locations need to be conducted, which is something that has not always been done.

The system is not exempt from criticism, and some users are demanding better returns on the amount of waste they bring and for there to be more mobile points to save on travel costs. The partners have demanded more involvement from Ampla in the activities to promote and raise awareness of the project, as well as improvements in marketing materials that indicate an Ecoampla waste collection point and changes to the computer system, which is often out of service. Finally, the partners have commented that the appearance of PEA is very important, as **it forms part of the brand image** of both Ampla and the company managing them, which is especially important when the manager is the local council and Ampla should pay more attention to this and collaborate more with the task of identifying PEA by supplying better identification and promotion materials.

There are risks to the continuity of the EcoAmpla project in certain local governments. They do not all integrate PEA in municipal waste management systems in the same way and whenever there are elections, and especially when there are changes in the government, the future of PEA that depend in some way on a municipal government comes under threat.

Interesting actions have developed around the EcoAmpla project that have helped improve access to electricity among the people of the State of Rio de Janeiro. However, there is always room for improvement. The following is a list of recommendations:

- Develop new discount options, in addition to the discount on the electricity bill, for EcoAmpla customers. For example, the exchange of other types of household appliance to help foster participation in the project.
- Improve the computer system as it is frequently inoperative, and this is one of the biggest complaints among the customers that bring their waste to PEA, and also among the managers of these, who are usually on the receiving end of customers' complaints even though they are not the ones to blame.
- One of the most common complaints among participants in EcoAmpla is the low price applied to the waste brought into the system, which they receive in the form of a discount on their electricity bill; recyclers, in turn, claim that with the value applied to the waste provided by Ampla customers, they receive less income and that this is endangering their survival. The acceptance of new forms of waste (for example, electrical and electronic appliances) should be studied, which could, by increasing the volumes recovered or their intrinsic value, make the prices more attractive to customers and PEA managers.
- Increase awareness activities with active participation in the same by, for example, the young people trained on the Ampla Opportunity project, to improve the social impact of the project and also attract more active clients to EcoAmpla.
- Set up new PEA: 1- **Fixed**, by studying beforehand the location and potential numbers of clients who could be offered the service in order to avoid third parties from making fruitless investments, as has happened on some occasions in the past. 2- Seek alternative ways of setting up new **mobile** points, such as, for example, through a partner who could provide complementary funding in exchange for advertising at the PEA itself. Also, the fixed points should be nearer to low income districts so that people that are unable to travel are able to participate in EcoAmpla.
- Improve the marketing materials such as banners, posters and other information elements that are offered to PEA managers to publicise their participation in the EcoAmpla project. PEA managers are unanimous in feeling that there are not enough of these and that Ampla should be more involved in improving their general appearance as these form part of the company image.



- Ampla should pay more frequent heed to the advice and ideas of partners with experience of waste management; participate jointly and actively in promotional activities and organize events that are open to the public and that involve displaying recycled materials and processes, etc. in order for the people to understand what happens to their waste.
- Direct integration of *catadores* and their cooperatives as EcoAmpla PEA managers. By working intensely with community leaders, awareness activities can be improved and new clients can be attracted to the project. The participation of former *catadores* could bring the project closer to the people in certain areas, while also boosting the social impact of EcoAmpla.
- There should also be support for stakeholders involved in other parts of the value chain of the management of recovered materials. Many cooperatives already exist and are seeking consolidation. Some of these are having trouble keeping their members (Morro de Céu) and others cannot increase their activity because they do not have the capacity to invest in bigger storehouses or trucks (Coopbrilho). To guarantee their survival, and as part of Ampla's social actions, a system could be set up to train, organise and monitor the management of these cooperatives, who due to the endorsement of working with or for EcoAmpla and hence obtaining income, could access funding.
- Law 12.212, which determines the percentage that electricity suppliers should spend on energy efficiency, has agreed that from January 2016 the amount will decrease from 0.5% to 0.25%. This issue will require special attention, including analysis of whether there is a need to seek alternative methods to guarantee the financial base and, of course, the impact, of Ampla's social actions on as many people as possible after that date.

