

CASE STUDY

2003

ECOLIXO

Selective Waste Collection and Recycling Program

Cascavel – PR



**CAIXA Program
for Best Practices in
Local Management**



CAIXA



UN-HABITAT

Case Study prepared by the Brazilian Institute for Municipal Administration (IBAM) for the Federal Savings Bank (Caixa Econômica Federal) under the CAIXA Program for Best Practices in Local Management

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Presentation by CAIXA

This CASE STUDY is part of a series of publications which aims to publicize the ten award-winning experiences by "Caixa Best Practices in Local Management Program" correspondent to the 2001/2002 cycle. The main objective of this series is to provide deeper evaluation of the award-winning practices, allowing other Municipalities, that are interested to develop similar initiatives, to identify and to get out the maximum of the subsidies from those successful projects.

In this publication, we present the ECOLIXO Practice. This is a selective waste collection and recycling program implemented by the Municipality of Cascavel with the involvement of the scavengers organized in cooperatives. The objective of the ECOLIXO Practice is to reduce the waste generation and to teach the population about the importance of waste recycling. The positive results of this project call the attention of the Pan-American Health Organization, which choose ECOLIXO as a model for Latin America.

The CAIXA has as a mission to promote the continuing improvement of the living conditions in our society, intermediating resources and financial business, acting as a priority in the encouragement of the urban development, therefore, in housing, sanitation and infrastructure, and in the management of funds, programs and social services. As one of its action strategies, it is important to highlight that CAIXA establishes partnerships with other institutions, in order to obtain a high quality product.

With that commitment we are looking for, through this publication, to disseminate the Brazilian Best Practices that we are supporting/financing and, overall contributing to the improvement of the social polices in our country.

Other important publications for your city and community could be find at the website: www.caixa.gov.br, download option.

Aser Cortines

Vice-president of Urban Development and Government

Jorge Mattoso

President of CAIXA

Presentation by the Executive Director of United Nations Program for Human Settlements, UN-Habitat

I am pleased to present a series of case studies and guidelines on lessons learned from Brazilian Best Practices. The Habitat Agenda, adopted in June 1996, calls for the documentation and analysis of best practices as one of the principal means of monitoring conditions, trends and emerging policy responses. Since then, the international community has called upon UN-Habitat and its partners to apply lessons learned from best practices as a basis for capacity building and decentralized co-operation through the exchange of knowledge, expertise and experience.

The Brazilian Federal Savings Bank (CAIXA) and the Brazilian Institute for Municipal Administration (IBAM) are demonstrating their leadership role in this endeavour. As partners of UN-Habitat's Best Practices and Local Leadership Program, they are providing the Latin American and Caribbean region, as well as other regions, with valuable lessons learned from experience.

The in-depth analysis of the ECOLIXO experience, which was designated by UN-Habitat as a global good practice in 2002, should be of particular interest to all those involved in the implementation of the Millennium Development Goals. It provides insights to addressing the issues of sustainable urbanization, poverty reduction, and the improvement of the living conditions of the urban poor.

It demonstrates that the strategic objectives of the Habitat Agenda – namely partnerships and participation, decentralization and capacity building – can be applied in a holistic manner to bring tangible and lasting benefits to people and their communities. It also demonstrates that sustainable development is increasingly dependent upon addressing the issues of the urbanization, good urban governance, and access to land, shelter and basic services by the urban poor. To this end, the case studies and guidelines provide Habitat Agenda partners around the world with pointers for the future.

Anna Kijamulo Tibaijuka

Under-Secretary-General

United Nations Programme for Human Settlements

Presentation

The CAIXA Local Management Best Practices Award was created in 1999 to provide national, regional and international recognition for projects carried out with the technical and financial support of the CAIXA. The Awards Program is intended to encourage the multiplication of these experiences, leading to concrete improvements in the quality of life of the population from the point of view of sustainable development.

The CAIXA initiative is an activity that supports the implementation of the Habitat Agenda Brazil¹ and offers a perspective of award-winning Brazilian practices through the Global Excellence Award of the Best Practices Program. This Program is sponsored every two years by the City of Dubai jointly with the United Nations Program for Human Settlements (UN-HABITAT).

The CAIXA Awards Program has been held on two previous occasions (1999 and 2001) and in its database are more than 200 registered projects in the areas of basic sanitation, infrastructure, income generation, environmental preservation and others. Every two years, the Institution presents awards to the ten best initiatives in its database as judged by an independent jury, and subsequently these initiatives are submitted to the Dubai awards competition².

Besides the publicity and other materials produced in support of the submission for the Dubai Award, the CAIXA Best Practices Award also includes the preparation of a Case Study based on a common Term of Reference. The Case Studies seeks to create greater understanding about the initiatives and provide evidence to help evaluate the results and impact of these practices, emphasizing the lessons learned and identifying its potential for replication.

In 2001 the Brazilian Institute for Municipal Administration (IBAM) was designated to prepare the first of these Case Studies on the Villa-Neighborhood Project *"Projeto Vila-Bairro" - Housing, infrastructure, and poverty eradication in shantytowns and slums*. In 2002, IBAM once again assumed the responsibility for the

¹ The Habitat Agenda was an international commitment assumed by the Brazilian government together with other nations during the II United Nations Conference on Human Settlements (Habitat II). The commitment was to introduce the main principles of sustainable development into national public policies.

² The Dubai International Award seeks to recognize and raise the awareness of society regarding the advances attained to improve the quality of life of populations. The selection process of the practices that are in the running for the prize are based upon the criteria established in Habitat II and the Declaration of Dubai. Besides international recognition, the practices selected receive a financial award. More information can be obtained through the Internet at www.bestpractices.org e [//dubai-award.dm.gov.ae](http://dubai-award.dm.gov.ae).

preparation of the Case Study that is the subject of this document: The "Ecolixo" Program – Selective Waste Collection and Recycling, carried out in the city of Cascavel, Paraná and selected as one of the ten best practices in 2001.

The analysis of this experience will follow the methodological principles in the Terms of Reference cited above and is based on both qualitative information and quantitative data and the observations made in consultations with primary and secondary sources. The former refers to the need for a chronological analysis of the evolution of the Practice, which occurred over the course of three different terms of public administration, each contributing in a different way to the conception and implementation of the initiative. The other principle points to the need to look at the selective waste collection program from a broader perspective, evaluating the capacity for application as part of a proposal for integrated management of solid waste³.

The basic characteristics of the Program are presented in the first part of the document placing it in the context in which it was developed. The main objectives, targets and results that were initially defined for the Program also are discussed.

The second part of the document provides a description of the process of implementation of the Practice, emphasizing the role played by the managing agency and its interface with other elements and actors who were involved.

After the presentation of the implementation process, the five strategic analysis variables – partnerships, impact, sustainability, leadership and strengthening of the community, and gender and social inclusion – are discussed in the third part. Then, in this same section, the main lessons learned, systematized according to the analytical variables, are presented facilitating the activities to replicate the experience.

Finally, the last part of the document offers some conclusions. This is where a critical and analytical evaluation of the practice is presented, bringing together the variables discussed in the previous section, proposing suggestions and commenting upon the prospects for continuity and improvement of the initiative by offering comments for the replication of the experience.

³ Integrated Management of Solid Waste is understood to be the means of managing the urban cleaning system, including all of its stages (generation, conditioning, collection, transportation, treatment and final disposal of the waste) through the widespread participation of society from a sustainable development perspective. The dimensions of sustainability must include social, environmental, cultural, economic, political and institutional aspects.

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1

The Concept and Characteristics of the Program

Population growth, the over-use of natural resources, the consumption of material goods and the generation of waste that is growing in volume and diversity are some key elements in discussions about waste management. In Brazil, municipal governments, with few alternatives for funding and infrastructure, face the challenge of how to properly manage their waste. Previously disdained, today waste is the focus of discussions and generates thinking about the need to change habits and customs. Selective waste collection tied into recycling activities was introduced into Brazil in a systematic manner in 1985. During the early 1990s, a number of different experiences were conducted and, gradually, selective waste collection was implemented in the country, although in an embryonic fashion.

In 1994, according to a survey conducted by CEMPRE (2000), 81 municipalities had selective waste collection programs. Currently, they are about 451 (PNSB, 2000), representing 8% of all Brazilian municipalities. Besides financial and environmental concerns, the programs have been taking on a social context through the recognition of the essential role of scavengers – informal workers who are responsible for collecting 90% of the waste materials gathered by recycling companies (Abreu, 2001).

The Municipality of Cascavel shared these same concerns regarding the growth of the population and the generation of waste, as shown in the charts I and II, and in 1993 began intensive discussions of possible alternatives to confront the problem and find solutions. During the same year, the Municipal Council approved a law that authorized the Local Public Authorities to sponsor a waste treatment and recycling service (Law no 2.366/93).

Chart I
Population growth

YEAR	1980	1991	1996	2001
Cascavel	163.369	192.990	219.652	245.066
Urban	123.698	177.766	205.392	228.340
Rural	39.671	15.224	14.260	16.726

Source: FUNDETEC in PMC, 2000 / IBGE, September 2001.

Chart II
Urban cleaning situation

YEAR	1995	2000	2002
Responsible for the cleaning service	Private contractors	Private contractors	Private contractors
Estimates of waste collected ¹	119 tons/day	130 tons/day	190 tons/day
Type of final disposal	Sanitary landfill	Sanitary landfill	Sanitary landfill and landfill for inert wastes

¹ dados calculados com base em leituras e entrevistas.

In this same year, the Community Affairs Secretariat of the Municipal Government of Cascavel registered 120 scavengers who had been working independently or for small waste repositories. According to receivers and other buyers, the figure did not reflect the real number of people who worked as scavengers, estimated to be more than 300.

It was observed that an informal market already existed at that time for the sale of recyclable materials through scavengers, receivers and processing companies. Nevertheless, the activities did nothing to encourage the participation of the community or to regulate the work of the scavengers.

At this point, the "Ecolixo" Program – still un-named – began to be conceived by Municipal Authorities. Besides identifying an expanding market for recyclable materials and the need to organize the citizens participation and the work of the scavengers, they entered into a partnership with the Catholic University of Paraná (PUC/PR), through the Environmental Sanitation Institute (ISAM) to produce a study of solid urban wastes in Cascavel, with a view to beginning a recycling program.

The "Ecolixo" Program, which was based upon actions developed by this administration (1993-1996), was continued and perfected in subsequent administrations. This factor helped differentiate the Program from other initiatives linked to political activities that stopped when the government changed.

The following Administration updated the initial proposal and organized a group to mobilize the necessary funding for implementation. The basic proposal for the project was to establish a selective waste collection program in Cascavel that involved the scavengers while making a priority issue to increase the useful life of the sanitary landfill. The scavengers were to be organized in cooperatives located in different neighborhoods and would be responsible for collecting and storing the materials in warehouse facilities built by the Municipality.

The door-to-door Selective Waste Collection and Recycling Program carried out by the Municipality through the Environmental Secretariat- the agency responsible for urban sanitation services – was initially implemented in the neighborhood of Guarujá, which besides being densely populated also had demonstrated an interest in participating in the pilot project. Gradually, the service was expanded, and currently it is operating in ten neighborhoods around the city, and two municipal districts (see Chart III).

Chart III
Neighborhoods and districts with door-to-door selective waste collection

LOCALE	YEAR 2000	YEAR 2001	YEAR 2002	POPULATION (YEAR 2000) ¹
NEIGHBORHOODS²				
Guarujá	X	X	X	6.912
Country	X	X	X	2.470
Canadá	X	X	X	2.546
Independência	X	X	X	1.601
Recanto tropical	X	X	X	2.919
Parque Verde	X	X	X	4.743
Coqueiral	X	X	X	6.694
Claudete	X	X	X	4.973
Cancelli	X	X	X	4.223
Centro		X	X	22.008
TOTAL	9	10	10	59.089
TOTAL URBAN	38	38	38	225.599
DISTRICTS³				
Rio do Salto	X	X	X	3.567
São João	0	0	X	4.417
TOTAL	1	1	2	7.984
TOTAL RURAL	4	4	5	14.106

1. Source: IBGE, 2001/SEPLAN, 2002.

2. Collection occurs once per week in each neighborhood. In some neighborhoods, there is only one shift (morning or afternoon); and others, of greater population density, collection occupies a full day of work.

3. Collection is conducted monthly or upon request.

Based upon the chart shown above, it is estimated that the universe of people who benefit from door-to-door collection service is about 25% in the Municipality and about 50% in the district areas (see attached map). Despite the fact that the initial proposal for the creation of storage warehouses for the scavengers did not go forward, the scavengers themselves – now called "Ecological Agents" – were incorporated into the Program, and together with the collection services offered by the municipal government, the service covers the entire city.

In terms of program architecture, priority was given to low cost alternatives and the Program sought to involve the scavengers as a means of accessing their accumulated experience and, at the same time, to ensure that these workers obtained social benefits. In 2000, through a partnership with the CAIXA, the Municipality established a Recyclable Materials Processing and Transfer Center (CPTMR) that began operating in July of the same year (a schematic diagram of the Center is included in the Appendix). The main sources for the raw materials for the center are the ecological agents (80%), door-to-door collection run by the Municipality (6%), and schools, informal scavengers and other institutions (14%). In the case of the ecological agents, the material is sent to the Center or stored at home for subsequent weighing and collection by a city truck. The sale of the material to the Center also is open for informal scavengers who are not enrolled in the Program. The door-to-door collection, as shown in Chart III, takes place once per week in each neighborhood. Each household participating in the Program receives free a green plastic basket at the start of the Program, to be used exclusively for storing dry recyclable materials (metals, plastics, glass and paper).

Schools can either have the material collected at the institution or they can take it to the Center. It should be pointed out that sales of materials collected in public schools is only permitted under the condition that the school presents a proposal for an environmental education program to be run for their students.

Besides the methods described above, the Program also makes use of Voluntary Delivery Points (PEVs). A PEV consists of a group of four different colored containers located in public areas where the population may voluntarily deliver recyclable materials, separated by type. For a number of reasons, to be discussed in the next chapter, this strategy did not work and the containers are slowly being taken out of service.

All of the material delivered to the CPTMR is separated by type, processed and sold. The operating diagram of the Program is shown in the Appendix.

It is important to emphasize that an analysis of the other stages of the urban sanitation system reveals a quality service. Since 1991, these services have been outsourced. Currently, the company responsible for home waste collection offers the service to more than 90% of the population at alternating times. There is also a different collection service for medical waste that is conducted by a special vehicle. All of the material collected is sent to the sanitary landfill, with medical waste going to separate septic trenches. One possible problem between the two door-to-door collection services (home and selective) is the convergence of the pickup schedules, with both being conducted in the daylight hours, except in the central part of the city where it occurs at night. That is, since the truck from the outsourced company passes three times a week in the neighborhoods, its hours may coincide with or anticipate the pickup of the selective collection (see Chart IV). In order to avoid recyclable materials being collected by the home garbage pickup truck, it is of fundamental importance that the company's garbage collectors are instructed to collect only the trash that is not placed in the green baskets.

Chart IV Selective collection service calendar per neighborhood		
DIA DA SEMANA	MORNING	AFTERNOON
Monday	Coqueiral	Coqueiral
	Cancelli	Cancelli
	Centro	Centro
Tuesday	Country	Canadá
	Coleta Especial ¹	Coleta Especial
Wednesday	Guarujá	Guarujá
	Claudete	Claudete
	Centro	Centro
Thursday	Recanto Tropical	Parque Verde
	Coleta Especial	Coleta Especial
Friday	Centro	Centro
	Independência	

1. Special collection: PEVs, schools, companies, District of Rio do Salto and the Ecological Agents' House.

The initial stages for setting up the Program involved establishing partnerships that were essential for the success of the initiative. As previously mentioned, the technical support of teaching institutions in the formulation and verification of the initiative was very important. Next, the financial support, essential for installing the CPTMR and making the Program operational, was arranged with the CAIXA.

The CAIXA participated in the stages of the liberation of the funds from the Union General Budget (see Chart V), followed the construction of the CPTMR and of the rendering of accounts. The first grant, transferred by the Social Action Sanitation Program (PASS) of the Secretariat for Urban Development (SEDU) of the President of the Republic, was used with matching funds from the Municipality for the construction of the CPTMR, the acquisition of a compartmentalized truck and equipment. The second grant, transferred through SEDU's Live Better Program, was used for the purchase of another compartmentalized truck, 12 PEVs and plastic baskets for selective collection.

For the liberation of the funds, the Live Better Program, differently from PASS, required that a social plan be added to the project been financed. Thus, a number of presentations regarding self-esteem, hygiene and workplace safety were added for the benefit of the scavengers with the support of the Health and Educational Secretariat.

Once the funds transfer and monitoring stage was concluded, the CAIXA continued to be involved in the Program by indicating it as one of the ten best practices, which required the updating of information and technical support to the program managers to enable them to make their submission a candidate for the Dubai Award.

Chart V Investment					
YEAR	TOTAL OF THE INVESTMENT (US\$)	VALUE OF THE INVESTMENT (US\$) / PERCENTAGE OF THE BUDGET			
		CAIXA ECONÔMICA FEDERAL		MUNICIPALITY OF CASCAVEL	
1999	120,872.02	85,714.28	70,9%	33,157.73	29,1%
2000	29,167.57	22,857.14	78,4%	6,310.43	21,6%
Total	140,039.59	108,571.42	72,0%	41,468.16	27,6%

February 2003: US\$ 1.00 = R\$ 3,50.

Other partnerships were established over the course of the Program with local shopkeepers and companies donating 100 collection carts to the ecological agents. Only one of these companies remains with the Program, providing services for the CPTMR. How this was put together will be discussed in greater detail in the chapter on partnerships.

Regarding institutional partnerships, some courses offered the scavengers or their families received the support from the *Companhia Cascavelense de Transporte e Tráfego* (CCTT) and state agencies.

The most solid and systematic partnership to the implementation of the Program was the one built among the managing agency, the Environmental Secretariat and the Community Action Secretariat, which have supported and assumed some of the responsibility for the ecological agents.

2

Implementation Process

For a broader understanding about the steps taken to create the Program, we first present a brief description of the three stages of the practice, and list the main actions that directly or indirectly shaped the initiative. A brief discussion about the program management unit will be presented as well as for the partnerships that were established, the participatory process, the difficulties encountered and lessons learned about how to set up the Program.

Phase one (1993 to 1996)

This phase was the embryonic period of the "Ecolixo" Program where the municipal needs that were linked to urban sanitation were discussed, the targets and objectives of the Program defined and the strategies produced. It is important to remember that this phase corresponded only to the period of project design.

- Approval of the law that authorizes the municipal government to sponsor the waste recycling service.
- Discussion about the charging of a fee for selective collection
- Discussion about the relevance of the preparation of a Recycling Code
- Preparation by PUC/PR, through ISAM, of the "Pilot project for the selective collection of solid urban wastes and transfer of materials for recycling – Cascavel/PR".
- Motivations for the preparation of the above mentioned study: I) to reduce the volume of waste collected and sent to the landfill; II) to reduce environmental pollution and the consumption of raw materials and; III) to make the economic development of the Municipality possible.
- Program Targets: the processing of 20% of domestic wastes through the CPTMR, with capacity of eight tons/day, going to 20 tons/day in 2014
- To initially benefit 50% of the population with the selective collection service.
- To work on a partnership basis with scavengers, providing warehouses for storing the materials.

Phase two (1997 – 2000)

It was the responsibility of the Municipality to arrange funding to set up the Program, and also to update and implement the activities that had been developed in the previous phase.

- The establishment of an agreement with the Caixa Econômica Federal for the transfer of the necessary funds for building the CPTMR, inaugurated in 2000.
- The construction and put into operation of the Center, respecting the initial proposal: an administrative sector, a sector for environmental education activities and an operations sector: reception, processing and distribution of materials for sale.
- The training of workers.
- The establishment of an agreement with PUC/PR for program monitoring and follow-up.
- A definition regarding the capacity of the CPTMR: beginning with 20 tons/day and going to 50 tons/day in 2018.
- Six neighborhoods initially to be serviced by the selective collection door-to-door program with the distribution of plastic baskets.
- The scheduling of segregation at the source by type of waste: paper/cardboard, metal, plastic and glass.
- The installation of three PEVs.
- The establishment of the "Simplesmente Cidadão" Project.
- The establishment of environmental education activities with the schools.
- The involvement of the scavengers:
 - 88 scavengers registered, renamed ecological agents;
 - Delivery of 43 carts;
 - Professional training courses;
 - Uniforms;
 - Proposal for the formation of a scavengers' association;

A comparative analysis between the first two stages of the Program demonstrates a process of improvement at work. In structural terms, the scheme initially proposed for the CPTMR was respected. However, its estimated minimum processing capacity was increased from eight to 20 tons per day. The goal set for

the quantity of recyclable materials to be sent to the CPTMR, estimated at 20%, was maintained. That is, of the garbage collected in the city, it was estimated that one-fifth would be collected in a selective manner and sent to the Center and the remaining 80% would be sent to the sanitary landfill through the home collection services.

Based upon the literature on the subject, it is considered that the stipulated target was realistic⁴. Despite the potential for recycling being about 40% of household garbage, it is known that achieving this target is difficult. One also must remember that more than half of this waste is composed of organic matter, and the "Ecolixo" Program does not include taking advantage of this fraction (see Chart VI). On the other hand, as the person responsible for the preparation of the pilot project stated, *"recycling is a business that is based on volume. The need to receive continuous and constant supply of materials is critical"*.

Chart VI Average composition of household trash in the Municipality of Cascavel	
MATERIAL	%
Metal	4,2
Plastic	9,3
Paper	20,5
Glass	2,3
Organic Material	63,7

Source: Work Plan presented to SEDU /Live Better Program, 2000.

The involvement of the scavengers in the "Ecolixo" Program seems to have become stronger, with the indication of a series of benefits, including the condition of being an ecological agent linked to a Municipal program. Another initiative in this sense was the creation of the "Simplesmente Cidadão" Program of the Community Action Secretariat.

The managers of the "Ecolixo" Program were aware that offering better working conditions to the scavengers would make it possible that their sons and daughters could be left in a safe place between classes during the periods when their parents were working. Thus, the Simply Citizen Program was born, to provide a space for leisure, reading and meals. Initially, it was designed to be used only by the children of the scavengers, but little by little it was expanded and began to take in other needy children, totaling some 370 persons between children and young people, of which 70 are the children of scavengers.

⁴ For more information on the subject, please consult GRIMBERG, E (org), BLAUTH, P (org) *Coleta seletiva: reciclando materiais, reciclando valores*, São Paulo, Polis, 1998. 104p. and EIGENHEER, E (org) *Coleta seletiva de lixo: experiências brasileiras*, Rio de Janeiro, ISER, 1993. 84p.

Phase three (2001 – currently underway)

The "Ecolixo" Program is part of the current government's proposals, with an environmental focus whose motto is "Cascavel City of Waters." *"The management of waste is essential to achieving the objective of protecting water resources, such as the valley bottoms and springs"*, according to the Environmental Secretariat. The current administration has assumed the responsibility of continuing the initiative, improving it in a number of ways, as follows:

- Greater range of CPTMR operational improvements;
- Establishment of a partnership with a recycling company;
- Changes in the system of segregation of materials at the source: recyclable items no longer separated by type;
- Increase in door-to-door collection to 10 neighborhoods;
- Deactivation of most of the PEVs;
- Setting up the "Minha Casa" Project (My Home Project) , to relocate families, including scavengers, into housing projects;
- Expansion of the "Simplesmente Cidadão" Project (Simply Citizen Project), now renamed "Eureka";
- Holding scavengers meetings on a neighborhood basis on the initiation of the new stage of the Program;
- Holding monthly meetings with the ecological agents;
- Awarding the work of the agents and distribution of basic food baskets;
- Reforming the base of calculation for the collection fees charged by the local government;
- Creation of an environmental education division at the Environmental Secretariat;
- Creation of a solid waste division at the Environmental Secretariat;
- Establishment of educational campaigns for condominiums and schools;
- The running of the "Ecoônibus" Project (Ecobus Project) – which uses a municipal bus to present plays, put on by a theater group, in various public spaces.

Perhaps one of the main innovations at this stage of the Program was the interface with the "Minha Casa" Project, that resulted in its inclusion in the government environmental preservation and housing proposal. More than 500 families who live in areas at risk, such as the valley bottoms, were relocated to two

housing projects – Quebec and Lar Cidadão Julieta Bueno. A number of families of scavengers benefited from the project. It is estimated that of this group about 22% were families where at least one of its members was a scavenger as a profession. Many of these are now ecological agents in the "Ecolixo" Program.

Another particularity of this phase of the Program was the substitution of the bases for relationship between the Municipality and the ecological agents. The Program began to gain a less help-based approach and started to make the training

Chart VII
Systematization of the main actions in each phase of the Program

ACTION	PHASE 1 ¹	PHASE 2	PHASE 3
Partnerships / Responsibility	<ul style="list-style-type: none"> ■ PUC/PR, ISAM and FUNDETEC – preparation of the study about urban solid wastes in Cascavel from the recycling point of view. 	<ul style="list-style-type: none"> ■ Caixa Econômica Federal – investment and technical support; ■ PUC/PR – Monitoring of the Program; ■ Private companies – donation of carts; ■ Ecological Agents – supply of materials to the CPTMR. 	<ul style="list-style-type: none"> ■ Private companies – sale of products and donation; ■ CCTT – traffic safety course; ■ Ecological Agents – supply of materials to the CPTMR; ■ Social Action Secretariat-housing and social support for the agents.
Operational	<ul style="list-style-type: none"> ■ Division of the city into two sectors for selective door-to-door collection; ■ Segregation of dry materials; ■ Distribution of the 150 PEVs; ■ Construction of two CPTMRs. 	<ul style="list-style-type: none"> ■ Segregation of dry materials by type; ■ Construction of a CPTMR; ■ Selective collection Pilot Project; ■ Expansion of collection to nine neighborhoods and one district; ■ Use of the PEVs. 	<ul style="list-style-type: none"> ■ Segregation of dry materials-Collection in 10 neighborhoods and two districts; ■ Gradual deactivation of the PEVs; ■ Creation of a Solid Waste Division.
Legal / Financial	<ul style="list-style-type: none"> ■ Collection of selective collection tax; ■ Preparation of a Recycling Code. 	<ul style="list-style-type: none"> ■ Financial investments (CAIXA and Municipality). 	<ul style="list-style-type: none"> ■ Reform of calculation base for sanitation fees; ■ Beginning of the discussions for the preparation of the Cleaning Code.

Chart VII (continuation)
Systematization of the main actions in each phase of the Program

ACTION	PHASE 1 ¹	PHASE 2	PHASE 3
Communication	<ul style="list-style-type: none"> ▪ Educational campaigns 	<ul style="list-style-type: none"> ▪ Production and distribution of educational materials; ▪ Publicity through the press. 	<ul style="list-style-type: none"> ▪ Creation of the Environmental Education Division; ▪ "Ecoônibus" Project; ▪ Production of Educational Materials; ▪ Mobilization for creation of a Municipal Waste and Citizenship Forum.
Social	<ul style="list-style-type: none"> ▪ The scavenger as part of the process; ▪ Access of the children of scavengers to education. 	<ul style="list-style-type: none"> ▪ Simply Citizen Program; ▪ Issue of uniforms and registration of the ecological agents. 	<ul style="list-style-type: none"> ▪ "<i>Minha Casa</i>" Project; ▪ "<i>Eureka</i>" Project; ▪ Consolidation of the involvement of some condominiums and schools; ▪ Changes in the professional relationship of the scavengers.

¹ It should be pointed out that this phase corresponded only to the planning of the Program. It was truly implemented only as of the second phase.

Regarding the role of the scavengers in the Program, it can be said that there were significant changes, perhaps because of a different way of looking at things by the new local administration or, perhaps, because of the natural maturing of the Program. At the beginning of 2001, a number of meetings were held in the neighborhoods reporting about and inviting the scavengers to join or rejoin the Program. Out of a total of 100 scavengers registered at the time, 74 continued in the Program.

The Simply Citizen Program was maintained and expanded, and currently is known as Eureka. It has a new facility located in the neighborhood of Santa Cruz where some 230 children and young people receive assistance.

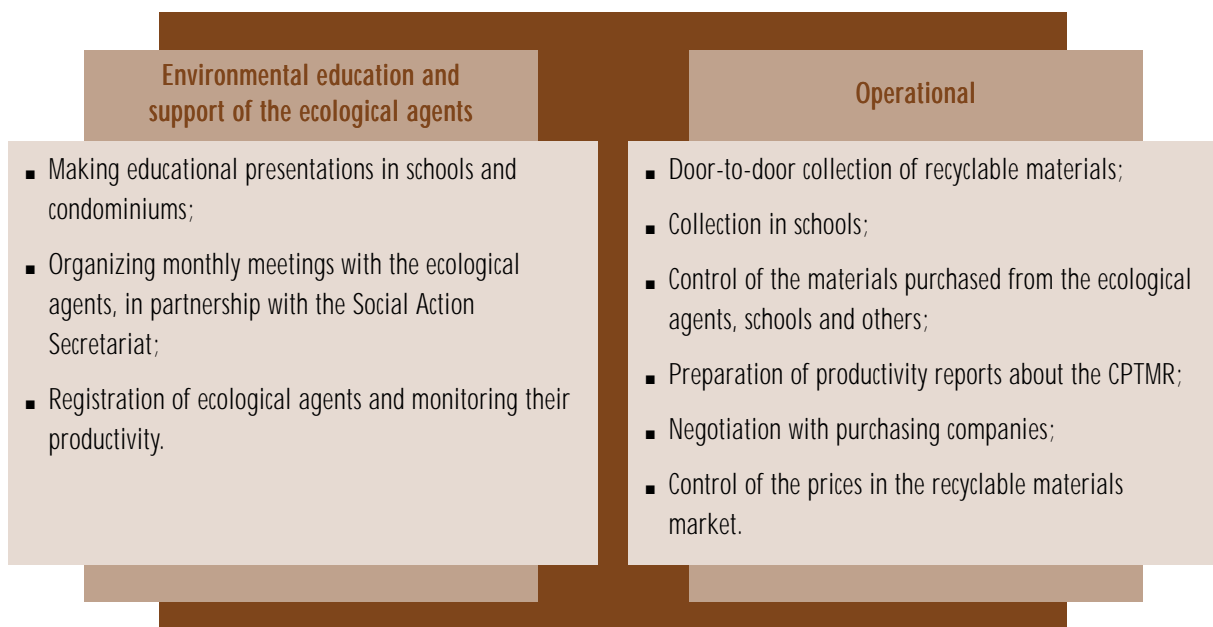
Management Unit and the partnerships established

As mentioned earlier, urban sanitation services are the responsibility of the Environmental Secretariat, which is the managing agency for the "Ecolixo" Program. Until 2000, the role of the Secretariat was limited to inspecting and monitoring the actions of the company that had been contracted out to provide the sanitation services. With the inclusion of the selective collection service, the Secretariat stopped merely

exercising an inspection role and assumed an active role, responsible for all operating aspects of collection and processing of recyclable materials.

The Program therefore made new demands upon the agency, which carried out administrative changes. To this end, it were created a Solid Wastes Division was created, exclusively responsible for managing the cleaning services, and an Environmental Education Division, responsible primarily for the educational requirements of the "Ecolixo" Program and the management of the CPTMR. The Environmental Education Division has a manager, a group of trainees and a list of volunteers to call upon. The sector that is responsible for the CPTMR has a director, a manager, a patio chief and 21 workers.

The main responsibilities of the management unit can be divided into two areas with complementary activities:



Structural changes also were carried out at the Community Action Secretariat, which was the main institutional partner in the Program. Since the ecological agents were gaining greater legitimacy and other programs of this Secretariat were being expanded, it was necessary to reallocate personnel. Currently, there are individuals who are specifically responsible for the three social programs that maintain an interface with the "Ecolixo" Program: the "*Minha Casa*" Project, the "*Eureka*" Project and the work with the ecological agents themselves.

These institutional changes in the Environmental and Community Action Secretariats reflect important changes in the role of the ecological agents within the Program. It was observed that in view of the many needs of this professional class, despite their vast experience, better preparing the scavengers for work would mean not only giving them access to equipment but also training and placement of their family members in social programs.

Participatory process

The dialogue between the different actors involved did not take place with the same intensity and scope during all stages of the Program. As has been seen, the Program was designed by the Cascavel Municipality and the institutions responsible for the preparation of the pilot project: FUNDETEC, ISAM and PUC/PR.

PUC/PR continued to be involved in the Program during the second stage, but on different terms. It was hired to monitor the Program. Based upon the reports it prepared, changes were proposed and decisions were discussed. During this phase, despite the fact that the number of actors involved was increased, the negotiations between the different Secretariats and the dialogue with the ecological agents, particularly, were not well established so far.

Currently, with more accumulated experience, the project management is more participatory in nature. Besides the Environmental and Community Action Secretariats being in closer agreement with each other, the ecological agents themselves have more space to present their suggestions and complaints.

Sources of funds

At the moment, the funds used for the maintenance and the improvement of the Program come from the Environmental Secretariat as well as the sale of the recyclable materials. The income from the sale of the materials is used to help funding the Program. At first, it was expected that a fraction of the funds collected through the sanitation fees would be used, but since the delinquency rate is quite high, the return is not sufficient even to pay for the costs of the sanitation service itself. According to the Chief of Staff of the Mayor, *"the problem is that in general those who do not pay are large generators of waste. The poor pay on time"*.

Relations with the ecological agents

From its inception through the process of reform which it is undertaking, the "Ecolixo" Program has shown a capacity for maturation and transformation, especially regarding the social aspect of redefining the relationship with the ecological agents. Despite a historical lack of access to basic services, this social category gained more strength as a result of the creation of the Program. It is through increasingly exercising a partnership role that the voices of the agents are being heard. This was quite clear in the form in which the work started up again in the new Municipal administration, which initially organized neighborhood meetings with the resident scavengers. The purpose of these meetings was to establish a dialogue with the agents that permitted a remodeling of the Program so that it would respond to the interests of both parties.

Main difficulties confronted and strategies to overcome them:

Social

One of the major difficulties encountered has been the lack of a collective vision on the part of the ecological agents. *"They still have a very individualistic view of the work"*, stated a division manager at the Social Action Secretariat, who also predicted: *"by the end of the term of office of this administration I hope that we will be able to have organized them into an association"*. As a strategy to overcome the problem, the Secretariats involved have been delivering lectures on group associations and group relationships and are seeking to identify leaders in the community of agents.

A lack of commitment is another difficulty that has emerged. Some ecological agents, who received a cart with the commitment to continue to work within the proposed ground rules at the beginning, have subsequently left the Program, while others sold their carts. In this new stage of the Program, this difficulty has become more evident since an effort has been made to convince schools and condominiums to "adopt" the ecological agents. Specific days of the week and hours were established when the agent was supposed to visit the agreed upon location to collect previously separated recyclable materials. The majority of the agents have not complied with the schedule. According to the team involved, *"they are accustomed to a very free life, they determine for themselves where and when to go somewhere. They also don't have much of a notion about the value of money. At the beginning, some had saved up so much money compared to what they were previously used to, that they thought they could stop working altogether for an entire month. The idea of saving money and improving small things, such as buying a radio or a blender, does not occur to them"*. As a result, the managers reinforced efforts to improve the self-esteem of the group.

Population

Perhaps one of the greatest weaknesses of the Program is in relation to the general public. The relation between the Municipality and the population itself is not particularly well established and the community has participated in a very timid and uncommitted way to the Program. As a generator of waste, the local population should realize that it is co-responsible for the Program. The communications and mobilization initiatives are still quite new and have not penetrated the larger public audience. An interesting initiative for strengthening dialogue was the experimental "Ecoônibus" Project, which used a theater piece acted out on public transportation to make the population aware of daily attitudes toward urban clean-up that should be better thought out.

Two other channels of communication are available to the population. One is an ecological hotline, which anybody can call with suggestions or complaints about the Program. The other is the CPTMR itself, which is open to visitation.

Operational

The door-to-door selective waste collection system is inefficient because the volume of trash collected in the neighborhoods is very low, especially compared to the money spent on transportation. According to the Director of the CPTMR, "*the return on-to-door collection is zero and does not compensate for the quantity collected, but it continues because the infrastructure already exists and we want to re-publicize the Program. I want to double and even triple the quantity of material using the same infrastructure*". In fact, as previously mentioned, the initial investment with selective waste collection may be high, but the investment per unit becomes smaller as the volume of recyclable materials collected increases.

In order to overcome this difficulty, two measures were taken. Two of the neighborhoods that previously had door-to-door selective collection (Centro and Guarujá) would have their recyclable materials collected by the ecological agents. The other measure was the intensification of publicity about the Program. The strategy is to work for people awareness, emphasizing the benefits of selective collection for the community and reinforcing the importance of the involvement of everyone in order to guarantee the success of the Program.

Further, with respect to the operational questions of the Program, another change is with regard to the shutting down of the PEVs. As the population has under-utilized the containers – which implies a health risk because of an accumulation of water in the base of the equipment – it was decided to remove them. After a small change in their design to overcome the question of water, some PEVs will be sent to specific locations, such as schools.

Outlook

The outlook for the Program is to develop activities that will give emphasis in making the ecological agents work more efficient and effective. This will involve training courses and workshops to be run during the coming year as well as increasing the number of public campaigns and appeals for the cooperation of the general public. The "Ecoônibus" Project will start again, as will contacts with condominiums and schools.

The funds that are anticipated for the continuity of the Program still have not been guaranteed, but will come out of the budget of the Environmental Secretariat. As the CPTMR assistant affirmed, "*we work with the funds we get. What is important is that we are doing our best to make sure the process is well done and that the physical construction is finished*".

Lessons learned

Based upon the statements by the actors involved in the process of implementing the practice, in technical observations and in the reading of

documents, some lessons stand out in terms of improving the practice and replicating it.

The initial emphasis must go to the question of knowledge and preparing the groundwork where the Program will be established. Selective collection must be understood as one of the elements in the integrated management of solid waste. As such, it is of fundamental importance to ensure that the Municipality either has or will provide the basic conditions for the Program. Some of these conditions include a characterization of the garbage generated in the city; a system of urban sanitation that is credible and extended to the greatest possible number of households; a system of fees that will guarantee the financial sustainability of the services rendered; and a survey of the informal recyclable materials market, identifying collectors and purchasers.

Once these steps are taken, the selective collection program can then be planned – with the use of low-cost technologies and establishment of partnerships with scavengers a priority; the implementation of permanent campaigns with the general population; the building of partnerships with the main actors that allows for increasing the material collected, the financial and the human resources, among others; and conducting realistic surveys about the cost of the Program and possible sources of financing.

Another important lesson learned in the process of establishing this Program was the need to have assurances of administrative continuity. A program such as this one, with long-term goals and leading to changes in behavior, must create a set of public policies that ensure its permanence.

3

The Project According to Strategic Analytical Variables

3.1 Impact

The analysis of variable is intended to give a dimension to the advancements that were accomplished in the practice, in a time and comparative context, involving qualitative and quantitative data.

The first section of this document includes an analysis of the main goals of the Program and the results that were achieved. Here we propose two distinctive views of the Program. The first will be an analysis of the operating targets that are anticipated regarding the selective collection system. Next, the social, educational and environmental targets will be evaluated.

Operational aspects

This section is limited to an analysis of the factors linked to the selective collection system, the performance of the CPTMR and the targets established for the volume of waste to be recovered.

Chart VIII
Performance of the operational system

GOAL	RESULT OBTAINED	OBSERVATIONS
Construction of the CPTMR	Construction of the CPTMR according to the original project	
Detour 20% of the waste collected to the CPTMR	Tax for detouring the waste of 1.2% ¹	
Capacity of the CPTMR of 20 tons/month	Currently processes 55 tons/month	At the beginning of the Program 10 tons/month were collected
Provide service to 50% of the neighborhoods with the selective collection service	10 neighborhoods are being served, corresponding to 26% of the total	The system's operations were reformed and part of the collection is being carried out by the ecological agents
To increase the useful life of the sanitary landfill	There was an increase, although not a significant one	Total volume of household trash collected increased

¹ The detour tax, or rate of materials recovery, corresponds to the percentage of the waste that does not get sent to the sanitary landfill. The amounts involved in the calculation are the total volume/weight of the waste sent to the landfill and the total volume/weight of the waste sent to the CPTMR

Some points must be explained regarding the chart shown above. The exercise of writing down some numbers is undoubtedly indispensable for the purpose of this document. However, it is of fundamental importance that these numbers be analyzed within a wider context, recognizing that the establishment of a program must be perceived as a process.

The first observation is with regard to the period of existence of the experience. Although the discussions about the Program began in 1996, operations were not started until July 2000. This is a very young Program and, it should be remembered, that its success depends in great part on changes in behavior and habits conquered over the long-term. The goals that have been presented in the chart shown above are interdependent and, in turn, depend greatly upon the commitment of the general population.

Despite the fact that the quantity of recyclable waste being processed is less than anticipated, as well as less than the capacity of the Center, it is worth remembering that as opposed to other experiences⁵ the Center makes use of almost 100% of the material that is delivered, and generates almost no waste of its own. This suggests that although the population that is benefited by the Program is quite small, in the majority it consists of people who are committed to it. Furthermore, it should be noted that there has been a gradual increase in the amount of tonnage being processed at the Center. It went from 10 tons/month at the beginning of the Program to 37 tons/month in 2001. Currently, 55 tons per month of recyclable materials are being processed.

All of the materials that are processed at the Center is absorbed by an expanding buyers' market located in the State of Paraná itself and, according to data from the Center's manager, 99% of the buyers are from the city of Cascavel. *"To discover people from here who are purchasers was excellent. At the beginning, it was sent outside of the state, increased in price by the ICMS circulation tax and the cost of shipping"*.

In terms of diverting materials from the sanitary landfill, and the subsequent increase in its working life, studies of national programs show an average materials recovery of 10.7%. For its part, the maximum rate of recovery is between 25% and 50%, depending upon the source consulted (CEMPRE, 2000 and GRIMBERG e BLAUTH 1998). Based upon these estimates, it has been concluded that the index of 1.2% achieved in Cascavel can be increased. It should be remembered, however, that there is a very large variation in this diversion rate when compared to other experiences around the country. The differences can be explained by differences in performance, but can also refer to programs of quite varied geographical scopes. In the case of Cascavel, some points should be highlighted: the population of Cascavel grew from 192,990 inhabitants in 1991 (the beginning of the operation of the sanitary landfill) to 245,066 inhabitants in 2001; the population universe benefited by the home collection system increased, going from 85% to 95% of the urban population; but selective collection did not undergo the same expansion in terms of the universe of people involved.

⁵ For more information on the refuse generated by the triage plants of other selective collection programs in the country, please consult 71 to 103 of GRIMBERG, E (org.), BLAUTH, P (org.), 1998.

Furthermore, regarding the final disposal of waste, recently Cascavel installed a landfill for inert material⁶, located in a decommissioned quarry whose management it is the responsibility of the Municipality, through the Environmental Secretariat. The establishment of this other landfill also contributed to increase the useful life of the sanitary landfill.

Social and educational aspects

The following chart allows for an evaluation of the performance of the Program according to the social and educational variables.

Chart IX Social and educational performance		
GOAL	RESULT OBTAINED	OBSERVATIONS
Inclusion of scavengers in the Program:		
<ul style="list-style-type: none"> ■ Involve the majority of the informal scavengers ■ Improvement in the generation of income ■ Literacy course ■ Formation of an association 	<ul style="list-style-type: none"> ■ 100 ecological agents enrolled in the Program ■ Average monthly income of one minimum wage ■ Not concluded ■ Was not formed 	<ul style="list-style-type: none"> ■ It is estimated that there are about 200 informal scavengers¹ ■ There is a very large variation in income per agent ■ The course was offered but the agents gave up ■ Difficulties regarding the space and the group vision
<ul style="list-style-type: none"> ■ Production of informational own materials 	<ul style="list-style-type: none"> ■ Production and distribution of magazines, brochures, games, garbage bags for cars and an educational kit 	<ul style="list-style-type: none"> ■ Some of materials were updated and others were created
<ul style="list-style-type: none"> ■ Creation of a recycling workshop school within CPTMR 	<ul style="list-style-type: none"> ■ Space was created but offers other activities 	<ul style="list-style-type: none"> ■ Locale for presentations with schools and monthly meetings with the ecological agents

¹ This class corresponds to informal scavengers who are not enrolled as ecological agents.

The goal of involving the scavengers in the Program was not to make quantity a priority but, rather, to improve the quality of human relationships and services. The ecological agents represented about one-third of the total number of scavengers working in Cascavel. The intention now is to register all of the agents, including informal scavengers who may be interested in participating in the Program. Each enrollment implies new terms in the work relationship and commitment of the

⁶ Location for final disposal of wastes stemming from construction projects that do not require the same care of a sanitary landfill. Ideally, these wastes should be recycled.

Municipality to the agents. Through technical evaluations of the performance of Program and the exchange of views with the ecological agents, this new phase of the Program proposes a redefinition of roles.

The steps taken are then communicated to, and evaluated by, the agents themselves. The objective is to substitute mere assistance, such as the donation of basic baskets and handcarts, to more pro-active action in the sense of offering the agents training courses and greater autonomy.

The scavengers' income increased in part due to an improvement in working conditions, but also because of the action of the Municipality in establishing sales prices for each product. The Center thus became a competitor to the other middlemen in the region.

According to some of the statements given by the ecological agents, "*now it is good, I'm making US\$ 2.85⁷ per day*". Others suggested that the increase in income was connected to the sense of confidence regarding the sale of the materials. "*I take my cart somewhere else and they pay US\$ 1.71, then I come here and they US\$ 2.85*". One generalized complaint was regarding some of the specific materials, such as large bottles of water, paper and by-products, which in other places got a better price because they were sold as a single product.

Apart from discussions about the system of negotiation for some products, the great majority of the agents perceived a difference in the way they were treated at the CPTMR and the treatment at other locations. There was greater confidence regarding the CPTMR. The agent reimbursement system for the material that was collected changed for the better. Each agent was individually enrolled and had a personalized spreadsheet containing the weight of the materials that had been delivered and the equivalent payment in cash. Previously, payments had been every two weeks, but now it was made immediately after delivery of products. "*We saw that their needs were more immediate and that they could not wait*" 15 days, the CPTMR manager the affirmed.

Regarding the goal of getting the population involved, the estimates of the recyclable materials that would arrive at the CPTMR suggested that Program intended to encourage a greater number of inhabitants to participate. However, the hiatus between the end of one public administration and the start of the other caused "*the population to forget about things and they no longer collaborated. The campaigns must be permanent*", concluded the manager of the environmental education division.

On the other hand, one unexpected impact was the spontaneous demand from some schools that requested presentations and the subsequent placement of PEVs. The material collected from the schools is donated or sold to the CPTMR.

Regarding the goal of reducing environmental degradation and the level of pollution, statements attested to the fact that the Municipality's environment was now better preserved. The manager of the urban sanitation unit stated that "*vacant lots are*

⁷ The currency amounts were converted from Brazilian reals to US dollars to mean exchange rate for February 2003: US\$ 1,00 = R\$ 3,50.

still a problem in Cascavel, but the situation used to be much worse". Based on visual analysis, he also said he believed that the quantity of recyclable material arriving at the landfill had been reduced, but was still higher than expected. Another action that significantly contributed to reduce the environmental impact was the removal of precarious housing units from the back areas of the valleys, through the "Minha Casa" Project. Although not directly linked to the "Ecolixo" Program, it generated a positive impact in the Program. First, the dumping of garbage in the valley and other environmentally protected areas was reduced by transferring the population to housing projects that have garbage collection. In addition, part of the population benefited was made up of scavengers (ecological agents and informal scavengers).

The administrative structure and the managing body

Perhaps the most important result of the practice in the institutional system is the result of its continuity through two of public administrations with different political lines. As the Environmental Secretariat said, *"the thinking of this administration is that if something was working before, there's no need to do away with it, just to modify it"*. And, in fact, that is what happened with this Program.

In view of the greater size and visibility it received, the program's managing body, the Environmental Secretariat, saw a need to reform the administrative structure, which, through Municipal Law 3.205/2001 created the Solid Waste Division and the Environmental Education Division. Both activities had been attributed of the Secretariat, but had not been given specific management.

Another advance in the direction of strengthening the institutional aspects of the Program was the concern of the actors in preparing a specific legal instrument for urban sanitation. This document has begun to be drafted and contains contributions from both Secretariats and the company responsible for urban sanitation. The Environmental Secretariat stated that the intention was to discuss the proposal with other actors at a second stage, including with the ecological agents themselves.

In view of this institutional situation, it is expected that the Program will be able to contribute to the consolidation of public policy in the field of solid waste.

Social insertion

The project of involving the scavengers represented an impact in the way they perceived themselves and were seen by society. The substitution of the expression "scavenger" by "ecological agent" suggested a more pro-active position for the scavengers. They began to be seen as agents of change with responsibility and the power for collaborating in making the Program – which at the end of the day was to improve the quality of their lives – a success.

By professionalizing the group, with uniforms and the appropriate technical tools (the courses cited below) and operational instruments, identification through name tags and formalizing the partnership with the Municipality, the scavengers felt more integrated with the city. The general population began to be more aware of the work they did.

The creation of two categories of workers – formal and informal – did not exclude the informal scavengers, although it makes them different. The desire expressed by a number of institutional agents involved with the practice is to make all scavengers into ecological agents. What is important, however, is that this process be conducted carefully so that, in fact, the momentum towards joining is strengthened and that there is no feeling of excluding the informal scavengers.

This does not appear to be the situation. In principle, the ecological agents perceive themselves as being different, although they respect the scavengers. The resistance of the rest of the group to joining seems to be linked to the question of discipline and commitment. They prefer to earn less and to work in worse conditions, *"but there is nobody after us to tell us what to do"*, said one scavenger who was asked to comment while working in a city square.

The majority of people asked to give their opinion about the scavengers and the ecological agents said the same thing: *"one can't judge by appearance, but I trust the uniformed scavengers more since we know there is somebody who answers for them"*, one of those interviewed stated.

Courses and training offered during 2000 and 2002

Target public: ecological agents

- Traffic safety course for ecological agents taught by the Community Action Secretariat and CCTT;
- Literacy course taught by the Educational, Community Action and Environmental Secretariats;
- Meetings on sanitary and environmental education;
- Professional training courses: baking, sewing and typing – partnership with the State of Paraná.

Target public: CPTMR employees

- Operational training for employees.

Target public: teachers and residents benefited by selective collection

- Presentations on environmental education and waste management put on by the environmental education division.

In terms of the impact of the "Ecolixo" Program, it provided input for discussions about urban sanitation, including reform of the base for calculation of sanitation fees, preparation of a draft regulation on urban sanitation and, more recently, the creation of the Municipal Waste and Citizenship Forum⁸.

⁸ The Waste and Citizenship Forum was created in 1998 with the support of UNICEF. Its purpose is to remove children and teenagers from working with garbage and to reinsert them into the schoolroom. Another objective of the Forum was the involvement of the scavengers in the selective collection and garbage dump eradication programs. In order to attain these objectives, a number of state and Municipal Forums were and are being created. More information on the subject is available at www.unicef.org.br.

3.2 Partnerships – the role and the performance of the partnership institutions

According to the principles set forth in Agenda 21, *"the commitment and the genuine participation of all social groups will have a decisive impact on the effective implementation of the objectives, the policies and the mechanisms adopted by the Governments in all of the program areas of Agenda 21"*. The same principle applies to any other program, activity or project designed to improve the quality of life through the participatory process from the perspective of sustainable development. The "Ecolixo" Program falls into this group of programs and the principal partnerships, as well as the role they play, are presented below.

Partnerships established with other public administration agencies

Community Action Secretariat – a partnership established with the Environmental Secretariat having joint responsibility for assisting ecological agents. The interaction between this Secretariat and the Program takes place not only in the direct assistance to the ecological agents through the distribution of Basic Food Baskets and participation in monthly meetings with them, but also through the "Eureka" and "Minha Casa" Projects where the family members of the agents and others benefit from the family assistance offered by the Secretariat. The partnership between the Secretariats is long term and becomes more firmly established every day. Currently, decisions regarding the Program are made based on discussions and the shared views of the two agencies.

Educational Secretariat – support for the basic literacy course offered to the ecological agents, but which, because the agents themselves quit the Program, was discontinued.

Fundetec – participated in the technical discussions with PUC/PR the preceded the pilot project prepared by PUC/PR in 1996.

Governo do Estado – The State Government supported the "Eureka" Project, at the time when this Project was known only as "*Simplemente Cidadão*" (Simply Citizen), making transportation available for adolescents and adults enrolled in professional training courses.

Caixa Econômica Federal – the federal agency support was of fundamental importance to the implementation and continuation of the practice. CAIXA has provided technical orientation to the actors responsible for the Program and the resources for the construction of the CPTMR and the acquisition of equipment. Moreover, when this practice was awarded by the CAIXA Best Practices Program as one of the ten best initiatives in improving the quality of life, the agency provided the Municipality with two important ingredients for assuring the continued improvement and permanence of the initiative: recognition and responsibility. In the eastern and southeastern parts of the State of Paraná the "Ecolixo" Program is used by CAIXA as an example of a waste collection and selection that works.

Partnerships established with the private sector

Packaging company – this is perhaps the only company in the private sector that has an on-going relationship with the Local Authorities. Together with other companies in the area, it helped to set up financial and technical support for the Program, through the donation of carts to the ecological agents. The Company donated 25% of the 100 carts that were requested. According to the representative of the Company, the greatest single motivating factor for the Company was the possibility to provide support to the informal scavengers. *"In our line of work⁹, we have been dealing with the informal scavengers for many years and have always tried to offer better remuneration for their services, but the participation of the Municipal Government is essential to make sure that their children attend school"*. The Company was contacted a second time when it offered to provide a place for the scavenger's association to store recycled materials but the association failed to materialize.

This partnership has been recently redefined. When this Company set up a paper recycling operation, the partnership began to operate on the basis of an exchange of benefits. The CPTMR sells its entire production of paper and derivatives to the Company, which in turn provides a press machine and an employee who is in charge of processing paper.

Still in the private sector, some companies, such as the mineral water bottle manufacturing plant, donate the residual waste from production. When dealing with recycling residuals, it is best that the partnerships with the companies generating large quantities of waste be redefined and expanded. A marketing program emphasizing the social commitment of the company could be an important way to motivate them to donate their residuals to the Center. It is important to remember that these companies have a legal obligation to manage the waste that they produce in an appropriate manner.

CCTT – this company played an important role in the traffic safety course given to ecological agents. It appears that these courses will be offered again in the year to come.

Engelétrica – because this is a company that deals with city sanitation, this company is critical to the success of the Program. According to the Manager, *"everyone wins with the separation of waste, even those of us that are paid per ton of waste material sent to the landfill"*¹⁰. He believes that the company should be a partner of the Municipality. In this case the contributions from Engelétrica take the form of participating in the discussions about the progress of the "Ecolixo" Program and other related activities, such as the availability of material and human resources during the community clean-up activities that are held annually by the Municipality.

⁹ This Company, which has been operating in the area for more than 8 years produces paper packaging and derivatives and recently opened a paper recycling plant that supplies raw material for packaging located in the neighboring municipality.

¹⁰ Because it deals with solid waste collection, the weight of the waste sent to the landfill is not as important as the volume. This would not be true if organic waste were included.

Another partnership has been created in the area of assisting the regional schools that visit the sanitary landfill.

Technical and teaching sector

PUC/PR and ISAM – played a very important role at two moments in the Program. The first was during the conception and structuring phase of the proposal that led to the pilot project. Once the Program was implemented, it was contracted by the Municipality as the agency responsible for the monitoring of the practice, and produced monitoring reports. With the termination of the contract at the end of the year 2000, this institution had no further contact with the Program.

UNIOESTE – the University became involved through several activities for the mobilization and presentation of the Program to achieve greater participation by the local population. At the present time, their main link to the Program is through its students who make up the volunteers in the environmental education area of the Program. They will be enlisted to help in the reintroduction campaigns that will be held in the neighborhoods.

Community

Ecological agents – these agents are the key persons to the Program, not only as suppliers of raw material, but also as repositories of knowledge and experience. The dynamics of the relationship between the agents and the Local Authorities continues to be redefined, but many of the agents still harbor feelings of distrust for the activities of the Local Authorities – which makes the building of a more equitable relationship between them more difficult. When asked about the role they play in the Program, some of the answers given make it clear that there is confusion about the perception of their roles: *"I don't know what our role is, I only know that I collect paper; I did this before and so I don't have any commitments; my only commitment is to myself; and this works because I want to sell and they want to buy"*. This shows that in the eyes of the agents, the partnership established with the Municipality is invisible. The partnership exists, but while it is clear that a partnership of exchange has been established, perhaps they still do not have a notion of the size of the space they occupy. Certainly the low self-esteem of the group, and of scavengers in general, make a fair self-evaluation difficult. Beginning in the first part of 2001, with the organization of various meetings in the neighborhoods where the ecological agents reside, the dialog with the group was reopened and refined. Although the scavengers have always been involved in the process, perhaps the access of the scavenger as an ecological agent to the responsible institutions has been intensified. On the other hand, other partners in the Program are very clear about the importance of the agents. *"The ecological agents are of fundamental importance to the process, without the ecological agents this will not work"*, says one CAIXA supervisor. *"We have to work with and listen to the ecological agent; they are the ones who know the streets and how the scavenger operation works"*, says the Social Worker responsible for the *"Minha Casa"* Project.

Local residents – in the case of the local population in general, the partnership that has been established is still very fragile, except in specific situations. *"People have heard about "Ecolixo", but there has to be more advertising, people have to be told of the benefits and told how they can participate"*, said one resident, when interviewed in the downtown area. The local population learned about the Program through publicity campaigns that took place at the start of the Program. While it appears that the level of involvement has not lived up to expectations, it is gradually increasing.

Schools – the number of schools participating in the Program has increased. There are currently about 20 schools enrolled. The motivation could be financial, given the possibility of income from the sale of materials as a result of their socio-environmental concerns. The connection is made through the Environmental Secretariat that offers seminars and talks for the teachers. The teachers then act as multipliers as they pass the information along to the children. Two examples illustrate the role of the school very well: (a) in the District of São José selective waste collection was implemented by the Municipality soliciting and mobilizing a local school; (b) the involvement of one of the residential buildings, with the greatest participation in the Program, began with the actions of one resident, a teacher in one of the schools, who introduced to the other residents the "Ecolixo" proposal, and later on contacted the Environmental Secretariat.

Lessons learned

The variety of partnerships established – involving the private sector, the public sector, teaching institutions and the community – reinforces the importance of sharing responsibilities and resources in the implementation of programs of this kind. It also shows the different kinds of partnerships that can be developed and reinforces the need for partnerships that are both timely and effective. Some contacts are made on a timely basis and tend to be limited in terms of time and space, while others were shaped by the perspective of the process; in other words, they followed the stages of the Program. In terms of Local Authorities, note that the number of Secretariats involved is quite limited. In order to assure the institutional internalization of the question of solid waste, specifically the collection and separation (sorting) of waste, it would be appropriate to involve other Secretariats in the process, and to implement a program of separation of waste at the source in those institutions themselves.

Another point to be watched has to do with the nature and the flexibility in relations, such as that which occurred between the Local Authorities and the packaging company. This relationship evolved from an occasional or timely one into a long term partnership at the processing center with benefits for both parties. However, the private sector universe has been little utilized as a source of partnerships. It is essential that for other initiatives this partnership be established from the project's beginning, shifting the activities and responsibilities having to do with the financial and technical sustainability to the private companies.

With regard to the ecological agents, it might have been more appropriate

if the partnerships had been created along different lines. They should have been more involved in the initial stages of the conception of the Program. The access to the CPTMR, for example, requires physical effort, because it is located in a place where there are lots of hills. Perhaps a consultation with the ecological agents would have suggested an area better suited to the construction of the Center. Moreover, the relationships with the ecological agents have undergone a number of changes, suggesting that the establishment of partnerships itself involves a process of learning and maturation.

3.3 Sustainability

"Selective collection should be seen within the context of an integrated system of solid waste management and not as a solution for the problem" (EIGHNHEER, 1993). In this sense, the "Ecolixo" Program should be part of a broader proposal of integrated solid waste management where the management of the sanitation system takes place with the effective participation of the local population and with the perspective of sustainable development. What follows is a discussion of each of the various dimensions of sustainability involved with the Program.

Environmental – Several points can be made regarding the environmental sustainability of the Program. One of the goals was precisely the reduction of environmental degradation, caused in large part by poor waste management on at least two levels : first, a collection system that was not systematic and second, a system that was not organized for separating recyclable materials.

The lack of a waste collection system that reaches the local regional population added to the problem of irregular or illegal housing units, located deep in the valleys and in environmentally protected areas, are dealt with only indirectly by the Program. The "Minha Casa" Project, integrated with the "Ecolixo" Program has helped to reduce the amount of waste thrown by the wayside, empty lots and at the bottom of the valleys. In addition, these areas are being restored and converted into leisure areas. Also important is that the number of people benefiting from the expanded trash collection service has been increased.

The environmental benefits that are directly related to this Program are two: The gradual development of an environmental awareness in the city as a result of the activities developed by the Environmental Education Division, such as the "Ecoônibus" Project and the activities related to the "Ecolixo" Program in the schools and residential areas. The other benefit is linked to the recovery of material. The 55 metric tons that arrive monthly at the CPTMR, and that are returned to the system of production, permit a saving in raw materials and a reduction in the consumption of energy in the production process. It is important to remember that these effects have a geographic impact that is much wider. As it says in the teaching materials produced as part of the Program: *"The Ecolixo Program is good for you, for the city*

and for the entire planet (...) the materials used are turned into new materials, protecting our environment and adding to our local economy".

Cultural – Selective collection of waste can be perceived as a vehicle for communication with the local population that goes beyond the idea the simple segregation of waste and leads to cultural changes. Cascavel is slowly approaching this goal. In the first place, participation in the Program is optional, and those that choose to participate tend to be those that are better informed and have acquired a sense of environmental awareness. Schools and condominiums have agreed to participate in the Program spontaneously. As commented by the Manager of one condominium that agreed to participate in a test of segregated collection *"here the people wanted to learn to do it right, and once you learn the right way it is hard to go back to doing it the wrong way. I've learned a great deal from this experience"*. On the other hand there is a certain resistance on the part of the general population mostly regarding what "you usually throw out". *"I am not going to put my hand in the trash, and I'm not going to ask my maid to do so either – if it's in the trash, it's because it has no further use"*, said one resident in a neighborhood that does not have selective collection.

But as the Mayor's Chief of staff recalled, *"Cascavel is a meeting place for different groups and cultures, with migrants from São Paulo, Minas, and Rio Grande do Sul, and we are also close to the international borders with other countries. Changes in behavior in this kind of universe take a lot of time and ability"*.

In addition to the process initiated by the Program in what pertains to changes in behavior regarding the end use of waste generated, the Program is also responsible for redefining the community image of the scavenger. Today the scavenger is perceived to be an important agent in the process of environmental improvements. *"They still look dirty, after all they work with trash, but they perform an important job and deserve our support"*, says a merchant. The ecological agents themselves believe that the Program as caused a change in the way they are perceived by the community. *"I have been scavenging for about four years, now, and have never had a problem, but these days people treat me better, people look me in the eye"* says an ecological agent who works with his daughter.

Financial and economic – The initial resources for implementing the Program came from the Federal Government through the Caixa Econômica Federal and from matching funds from the Municipality. At the present time the source of funding for the continuity of the Program comes from the Environmental Secretariat and from the sale of recycled material. As the manager of the CPTMR observed, *"today we are operating at a loss, a financial loss. But on the social side, we earn profits"*. The financial statement for the "Ecolixo" Program taking the month of October 2002 as an example, shows operating expenses of about US\$ 3,350.86¹¹ (salaries, consumables and fuel for the trucks). The income from the sale of recycled materials for the same month was US\$ 2,755.69. Based on these data it is clear that in strictly financial terms the Program is operating at a loss.

¹¹ The currency amount were converted from Brazilian reais to US dollars to mean exchange rate the February 2003. US\$ 1,00 = R\$ 3,50.

But it is important to remember also that the key to the success of the Program relies on the involvement of the community, which can only be achieved through a financial investment in educational and community awareness activities that were not included in the financial accounting for the Program.

The prospects for the financial sustainability of the Program depend on two strategic factors. One is the search for other sources of funding to support the maintenance of the activity. One source of funding could be the Federal Budget. But a problem with this effort, is the fact that there are not currently any federal representatives from Paraná at the National Congress who would support the pledge from Cascavel for a parliamentary amendment to the Budget. Another essential factor for economic sustainability is the ability to guarantee a significant increase in the quality of recyclable materials arriving at the CPTMR. As the Environmental Secretariat has said, *"we need to provide more incentives to the population because the Program has the ability to absorb more material"*. As the numbers from the Program show, the trend is to increase the quantity of materials that arrive at the Center.

Still another factor that should be considered is the high delinquency rate of around 40% in the payment of the trash collection fees. This represents income that would indirectly support the Program, given that the sanitation costs are a significant burden to the Municipality. In October 2002 the costs of sanitation were approximately US\$ 130,000.00¹², including here the costs of waste collection – from domestic and health facilities sources –, the sweeping and street cleaning and dumping of the two kinds of waste. According to the Mayor's Chief of Staff a reduction in the delinquency rate is essential. *"If everyone paid for their waste collection, the income would be enough to cover the costs of urban sanitation"*.

Technical and operational – The technical and operational sustainability and the economic-financial sustainability are intimately related. In technical terms, this Program choose to adopt low cost technology, such as, for example not using a mechanized conveyor belt for separating material at the CPTMR. On the other hand, there has to be a more effective use of the fleet in terms of costs and benefits. The labor and fuel costs of the trash collection trucks are very high in relation to the volume of recyclable material collected. A first step has been taken to improve the efficiency of collection. The compartmentalized trucks that were designed to use several bays for various types of material, now place all recyclable material in one compartment, saving time. Another action designed to improve productivity of the system is to replace the selective collection on the trucks by the work to be done by the ecological agents.

Regarding the operating system of the CPTMR itself, the fact that it has the space available for the storage of materials allows it to adjust to fluctuations in market prices for the product, assuring a better price and higher income.

Institutional – The sustainability of the various public and private institutions is essential to the success and maintenance of the Program. In this case, the first evaluation that was done was performed on the Municipal Administration. As

¹² The currency amount were converted from Brazilian reais to US dollars to mean exchange rate the February 2003. US\$ 1,00 = R\$ 3,50.

indicated above, this Program was conceived by one administration, implemented by a second, and is being improved by yet another administration. Here it is worth repeating the words of the CAIXA representative who believes that *"in political-institutional terms the program is irreversible"*. The institutional sustainability of the Program is also gaining strength among public agencies, as was explained in the section on partners.

Another institutional factor that was observed was the reinforcement of the roles of the solid waste scavengers in the Program. As the representative of the "Minha Casa" Project said, *"our objective is to organize them (the ecological agents) in an association that is aware of the role that they play. This is essential, because it avoids problems in the transition in administration"*.

Social – Social sustainability will be discussed in greater depth in the sections on leadership and strengthening the community, and gender and social inclusion. In any event, in the opinion of the majority of the ecological agents that were interviewed, an essential factor in social sustainability is the integration of the group. As one ecological agent explained, *"this (here) is like a job; we come, sell and go home. Here there is no group unity, and without that we can't build anything"*. The concern with the condition of in-articulation was especially prevalent among women who have greater solidarity.

Lessons learned and recommendations for overcoming obstacles

When Municipality proposes to implement a consistent selective collection system only rarely is it motivated by cost-benefit analysis alone. The financial analysis of the program should include the social and environmental benefits that result from the activity, and understand that the program will not be sustained by the income coming from the sale of materials. Decision makers should also remember that the costs of the programs are inversely proportional to the volume of material collected. In other words, processing a larger volume of material makes possible the reduction of operating costs.

In institutional terms, when the manager is a public agency, it should be aware of the risks of discontinuity in administration. The activities that assure the sustainability of the project depend on the creation of a set of related public policies as well as on the strengthening of the ecological agents as a group so that they will have the ability to articulate the demands that the activities be permanent. One of the ways of moving in this direction, is by having the principles of the program internalized in the largest possible number of actors.

Programs that target groups disenfranchised of its basic human and civil rights – such as access to housing, health services, and food – cannot be designed in isolation. The interface with the activities of other programs is essential for the social sustainability of the initiative. An example of this is the relationship between the "Ecolixo", "Minha Casa" and "Eureka" Projects.

In cultural terms, the changes in behavior take different amounts of time depending on the individual. The important thing is to maintain open the channels of

communication with the community, keeping them informed about the results achieved and the correlation with the activities of each one. Voluntary and conscious changes in behavior are much more easily achieved than behavioral changes that are externally imposed.

An overview of sustainability shows that in addition to the fact that actions cannot be designed in isolation and focused exclusively on an operational aspect of the program, they should also make advance preparations for the project. By this is meant undertaking a series of activities and actions in other areas essential to the success of the project. Among these initiatives we would stress the construction of an administrative framework that is able to respond to the direct or indirect demands on the program, the application or preparation of the legal instruments that will govern the initiative, and the

3.4 Leadership and strengthening the community

The Program, from the initial stage of preparation to the present moment has contributed a great deal to the strengthening of the position of the ecological agents. However, in spite of having monthly meetings on "associative practices" and self-esteem, offered to the ecological agents by the Community Action Secretariat, they have not, so far, achieved a group identity and the growth that has taken place has occurred more on an individual basis. Because of the kind of work they are engaged in, where the building and maintenance of social relationships is not seen as necessary and are often difficult, they still have difficulty working as part of a team. According to one study of 25 ecological agents (10 women and 15 men) this view is changing. Currently 90% of those interviewed have said that they would like to see the formation of a cooperative for scavengers. (CHAGAS, 2002).

From the moment when each of the ecological agents is uniformed and registered and comes to be recognized by the local population and the Local Authorities as a professional, the agents themselves will also redefine their role, taking on a new identity and learning to take more pride in the work that they do. As one agent reported, *"I have been working with trash for a long time. But only now have I become enthusiastic about it"*. An agent who won a monthly award for his performance in having collected a large quantity of waste confessed that *"working here is an honor, the people now know who we are and I have access to schools and health clinics"*. Another said that *"having a uniform and a badge brings me respect"*.

With respect to the creation of an association or a cooperative, one of the difficulties encountered by the managing agencies is precisely the lack of leadership among the agents.

It is important to remember that the target public of the Program is not limited to the scavengers. Most of the selective collection programs have the ability to bring about changes in social and community behavior, above all in raising questions about excessive consumption of goods and the resulting generation of waste.

Here it is essential to evaluate the degree of involvement of the community as a whole. It could be said the community of Cascavel is going through

a process similar to that of the ecological agents. They identify regular signals of the establishment of a social commitment to the Program. Some of the more socially aware residents have already assimilated the habit of separation of waste materials and the later donation to the Municipality or to the agents. However, it is important that a collective commitment to the Program is developed and that the community becomes stronger as it perceives itself as an agent of change in the process.

Lessons learned

The strengthening of the community and the formation of leadership groups depends on the kind of relationship that is created between the community and the managing agency of the program. In the case of the "Ecolixo" Program it might have been better to involve the population, and the scavengers in particular, from the very beginning of the Program. When community participation occurs in all stages of the program, it makes it easier to establish a solid dialog between different social segments, conferring greater legitimacy and making possible collective input to the program. Furthermore, with the appropriation of the program by the community, the risks of possible administrative discontinuity are reduced, given that the community can now exert collective pressure for the survival of the program. The same is true for the ecological agents. The creation of an association, and the training of leadership, would allow the group to organize and gain more space, positioning it for a more equal relationship with the administrative agencies.

The working conditions of the scavengers make any initiative to strengthen the community difficult. They work alone, by themselves, without any real social or professional link to the community and do not enjoy minimum working conditions. For years, their work has been invisible and closely associated with something dirty -refuse. Therefore it is essential to begin the process of recovery of their individual self-esteem in order to later begin to discuss the strengthening of the group.

It should also be remembered that the number of people that are involved in scavenging is far greater than the number of ecological agents. Therefore it would be opportune to adopt certain strategies to integrate the informal scavengers into the process of recovering of citizenship, provided by the "Ecolixo" Program.

3.5 Gender and social inclusion

Social inclusion does not refer merely to economic conditions; it should also be treated as a recovery of citizenship, touching all dimensions of the right to a dignified quality of life. The "Ecolixo" Program believes that there is a need for a greater effort to combat social exclusion. In dealing with other projects, the "Ecolixo" Program has achieved positive results in the sense of including the agents into community life. Two areas of activity are important in this regard. One is at the

material level, by providing better working and living conditions for the ecological agents. The other transformations occur at the level of community perception, changing the image the community has of the scavenger while at the same time raising their self-esteem.

With respect to the first issue the "Eureka" Project, which came out of the "Ecolixo" Program, shows the perception of the managers of the necessity of working with the ecological agents from a family perspective that involves everyday improvements. A large number of scavengers live in areas where there are high indices of violence and where there is a lack of basic sanitation. When Project "Eureka" was implemented, some of the institutional connections made it possible for this population to gain access to residential trash collection and other basic services. In addition to these structural benefits, the availability of recreational and leisure spaces, and training for the children and young people, including here some of the children off the scavengers, was very positive. *"The children that beforehand had stayed on the streets around the schools are now learning to do manual labor and attending classes in theater and music"*, says the coordinator of the Project. The integration of the children of the ecological agents in educational activities is made even more necessary by the large number of agents that have children, especially the women, who have no place to leave their children while they are working. (CHAGAS, 2002).

In addition to the space for leisure, the Project has attempted to make training courses available to the young people and their parents. Among the courses offered are baking, sewing and typing. As this initiative came out of a partnership, now terminated, with a Governmental Agency, it has not been possible for it to continue. The young people, when questioned about the Project responded: *"I thought it was cool, and I was learning something while my mother was scavenging paper to support us". Another believes that: "here I can get to be a teacher, who knows, and maybe help my Grandmother"*.

The "Ecolixo" Program also allows an increase in the average salary of the ecological agents. Despite variations in the market prices and the differences in performance among the agents, they have begun to earn an average of up to a minimum wage per month, something that had not been possible before. This increase in income is due to the better prices paid at the CPTMR for the material, giving them the (modest) tools they need and the social recognition of the group changing them from invisible workers to ecological agents. According to a survey of 25 agents, the majority, especially the women, were able to acquire material goods and make improvements in their dwellings thanks to the money they earned from their scavenging activities since the start of the "Ecolixo" Program. Some of the goods acquired are refrigerators and TV sets. It is interesting to point out that men do not use this resource to buy domestic appliances, as opposed to the women, but rather to diversify and improve the quality of their food.

Another initiative for social inclusion is the Minha Casa housing program that has benefited various families, including some scavengers, by offering dignified housing with a fixed address. Previously marginalized, living at the bottom of the

Valley, today this population is more integrated within the city and has access to basic municipal services like basic sanitation, trash collection and running water. The goal of the Housing Program, using municipal funding, is that its beneficiaries would assume a monthly payment of US\$ 7,71¹³. The families will pay for their houses through a 20 years leasing contract, at the end they will be able to hold a full property title. During this time, the family is not permitted to either rent or sell the property. Given that the monthly income of the scavengers varies considerably, depending on the kind of material collected and the number of hours dedicated to the task, it is not possible to make any general statements about the cost of the Program within the total family budget. On the other hand, recalling that the income of many of the agents is around one minimum wage, the amount dedicated to housing is about 7% of the budget.

Some of the statements show that, despite the recurring problem of alcoholism, its incidence is diminishing. *"The way that others see us has changed because we have changed, some of us have stopped drinking, says one of the ecological agents"*.

An issue raised by one of the agents and shared by others is the desire to participate in other stages in the processing of recyclable materials, such as the operating the presses or the preparation of the bundles. *"Working in the streets pushing a cart doesn't have much of a future. They can calculate how much we make a day scavenging and pay us to keep working here, and this is good because we get some training, and those who get the training pass it along to others"*. This suggestion should certainly be considered by the project managers because it represents in fact an effective training process.

With respect to the social division of labor between men and women, this goes beyond the biological differences and incorporates a series of cultural expectations that conform to the roles men and women play in society. A gender profile of the Program points out some interesting differences. First, note that of the 74 agents registered, only 26 are women. The reduced presence of women may be explained by the fact, among other factors, that this is an activity that takes place mainly in the streets, which is still viewed today a predominantly masculine space. On the other hand, the tasks of the scavenger are viewed by the community as activities of cleaning and maintenance, activities that are more often associated with women. It is therefore not surprising that even in smaller numbers, the women stand out in the group because they are more organized and dedicated and the local population prefers to give material to them.

For this kind of work, from the biological point of view, women are at a disadvantage because of the physical force required. However this challenge seems to have been overcome more easily than that of fulfilling the traditional role assigned to women, which is almost exclusively the care of the home and the children. Therefore although the work requires much physical force, they believe that the

¹³ The currency amount were converted from Brazilian reais to US\$ dollar mean exchange rate the February 2003. US\$ 1,00 = R\$ 3,50.

greater problem is the double workload of the working mother. *"We can get used to pushing the cart, like we got accustomed to the broom, the difficult part is having to do the two things in the same day"*, said one ecological agent.

Lessons learned

The concern that all the family members of the ecological agents be granted benefits from the Program was essential for the success of the program's activities with regard to social inclusion. The housing projects, for example, even when located in the more isolated areas of the city, are still integrated, which assures the recovery of the identity of the residents with the city. Another factor is child labor. It is important to make sure that conditions are such that the children of the scavengers do not have to accompany their parents. This was assured under the "Eureka" Project.

In terms of recognition for their work, the formalization of a partnership between the Municipality and the scavengers leads to a renewed sense of citizenship and provides various social benefits. The most important is the recognition that the activities in which they are engaged are no longer considered marginal – that in fact recently this activity has been recognized by the Ministry of Labor as a category or kind of profession. The daily relation established with the CPTMR through the sale of materials will accommodate the deficits and the difficulties of the category. As the Manager of the Center says *"every agent has a story. They are individuals and differ from one another and this has to be taken into account in our daily interaction"*.

The most important thing now is to assure that the process of social inclusion of the agents expands to include a greater number of agents. For this to be accomplished, as indicated above, the formation of a cooperative or association is essential. When the group is formally or legally constituted, it will gain greater autonomy, an important element in establishing the continuity of the program and one that can be used as a pressure mechanism on the Municipal Administrators.

The identity of the group and working as a team are linked to the building of individual and collective self esteem. It is important to point out that the professional self esteem of the scavengers should have a gender profile, given that in general this construction is more difficult for women who suffer discrimination both in the home and on the job as a result of social inequalities.

In this case it is interesting to discuss with the scavengers the question of the role of gender, including the double workday that women are required to perform in various professions. The discussion should focus on demonstrating that these roles can change and that everyone benefits from a more equitable distribution of domestic chores.

In Brazil providing urban sanitation services is the responsibility of the Municipal governments, and the experience of Cascavel undoubtedly provides valuable information that can be used for the replication of the Practice in other Municipalities. This analysis covers two phases of the "Ecolixo" Program, combining a review of the principal motives and goals of the initial Program with the process of planning and improvements; evidence of, and reasons for, the success of the Program, as well as pointing out the difficulties present in the Practice and the means by which these were overcome.

This initiative reinforces the need to reconsider models for the management of residual waste that take into account not just the techno-operational factors, but that also include the social, environmental, financial and cultural dimensions of the Practice. This experience also demonstrates the need to create an interconnected vision of the various operational stages of the sanitation system, from the generation of waste through to its final disposition.

The support of the Legislative Authorities in the preparation of important legal instruments, the concern with a more equitable fee structure for sanitation, a broader view of the Program, placing it in the context of a municipal system of integrated management of solid residuals, and finally the perception of the need for a partnership with the scavengers, are some of the variables that help to explain the success of the practice.

In a program such as this that actively seeks to provoke changes in behavior and perceptions, the results are often not visible in the short run. The planning stages should take into account the time required for each one to assimilate the ideas and should also take care to remain flexible so that the activities can be modified according to the situation and possibilities that present themselves.

Another point to consider is the financial question. Note that resources are scarce and the perspectives of financial sustainability are fragile, which could turn out to be a real barrier to the continuity of the Program. It is extremely important to anticipate the costs and guarantee the necessary financial resources, because the interruption of a program like this one carries with it a significant loss of credibility in the community and has serious consequences for future initiatives. It is much more difficult to regain the confidence of the community once it has been lost than is the case at the start of the program. It is not recommended that all of

the resources be funded through the Municipality, as has been the case in Cascavel. The financial responsibilities should also be shared with other actors, such as companies in the private sector who may be large generators of waste and therefore may be important potential partners.

The results achieved by the Practice should not be measured by numbers and quantities alone. Social achievements, above all in the gradual process of recovery of citizenship, that have occurred with the ecological agents cannot be evaluated in a quantitative manner. The process of social inclusion that these agents have been experiencing will be strengthened by reformulations and modifications of the Program, according to how this population is trained to move in the direction of self management of the system of selective collection. But the role of the Local Authority is crucial, whether as manager, facilitator or even as a monitor of the process. The partnership between these actors may be redefined, but should be preserved. Still with reference to the role of the Local Authorities, it is important to remember that the continuity of the Program was possible, in large part because of the commitment assumed by each of the Municipal managers involved in the process.

In addition to the public will and the structural possibilities for the implementation of a program of this scope, another essential ingredient is enthusiasm. When a program is going well it is important that the results be shared with all of the actors involved. Representatives of the CAIXA and the Municipality cannot hide their pride in the Program and their desire for continuity. It is important that these sentiments be spread throughout the community and that an ever growing number of people are encouraged to exercise their citizenship as they share in the social and environmental benefits that the Program brings.

Finally, the experiences of this Program should contribute to the formulation of public policies specific to the urban sanitation sector and that are designed to minimize the generation of residuals, maximize social participation and strengthen the partnership with the scavengers / ecological agents.

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Municipal Laws:

Law n.º 2.366/93 – Authorizes the Local authorities to sponsor the treatment and recycling services of the trash from Cascavel.

Law n.º 3.205/2001 – Alters the organizational structure of the Municipal administration and provides other measures.

Law n.º 3.354/2001 – Establishes the amount of the fees to be charges for the collection of trash for fiscal year 2002 and provides other measures.





APPENDICES

APPENDIX I Acronyms

Acronyms	
UNICEF	United Nations Children's Fund
CCTT	Cascavel Transportation and e Traffic Company
CEMPRE	Corporate commitment for Recycling
CPTMR	Materials Recycling, Processing and Transfer Center
FUNDETEC	Foundation for Scientific and Technological Development
IBGE	Brazilian Institute for Geography and Statistics
ICMS	Tax on Circulation of Goods and Services
ISAM	Institute for Environmental Sanitation
OGU	Union General Budget
PASS	Program for Community Action in Sanitation
PEVs	Voluntary Collection Points
PMC	Municipal Government of Cascavel
PNSB	National Survey of Basic Sanitation
PUC	Pontificio Catholoc University
SEDU	Secretariat of Urban Development of the President of the Republic
SEPLAN	Municipal Secretary of Planning
UNIOESTE	University of East Paraná

APPENDIX II

Case Study Identification File

Identification of the case study

Title	ECOLIXO – Selective Collection and Recycling in Cascavel
Location	Covers the Urban area of the Municipality of Cascavel, State of Paraná. Focused on 10 neighborhoods (Canadá, Cancelli, Centro, Claudete, Coqueiral, Country, Guarujá, Independência, Parque Verde and Recanto Tropical).
Principal Objective	Implementation of a program of selective collection in the urban area of the Municipality of Cascavel involving the social actors (scavengers) that perform the actual scavenging in an informal way.
Secondary Objective	<ul style="list-style-type: none"> ▪ Provide opportunities for the generation of income and social inclusion of the scavengers; ▪ Reduce environmental impacts through the reuse and recycling of raw materials; ▪ Increase the working life of the sanitary landfill.

Institution responsible for the initiative

The Municipal Government of Cascavel, through the Municipal Environmental Secretariat

Partner institutions

Federal	Caixa Econômica Federal Secretariat of Urban Development of the President of the Republic
State	Pontifício Catholic University of Paraná/Institute of Environmental Sanitation
Municipal	Municipal Social Action Secretariat Cascavel Transportation and Traffic Company Embalagens Bacarin Ecological Agents

Financial resources

YEAR	VALUE OF THE INVESTMENT (US\$)	VALUE OF THE INVESTMENT (US\$) / PERCENTAGE OF THE BUDGET			
		FEDERAL SAVINGS BANK		MUNICIPALITY OF CASCAVEL	
1999	120,872.02	85,714.28	70,9%	35,157.73	29,1%
		OGU/SEDU PASS			
2000	29,167.57	22,857.14	78,4%	6,310.43	21,6%
		OGU/SEDU Programa Morar Melhor			
Total	140,039.59	108,571.42	72,0%	41,468.16	27,6%

February 2003: US\$ 1.00 = R\$ 3,50

Components of the Program

- "Eureka Project"-social project for children and youth from poor families
- "Minha Casa" Project – housing project;
- "Ecoônibus" - Sensitivity projects for the Population

APPENDIX III Methodology

The methodology used in this case study is based on the guidelines described in the Terms of Reference, that includes the following analytical variables: impact, partnerships, sustainability, leadership and strengthening of the community, and gender and social inclusion. The study evaluated the processes of development and implementation of the Practice and the impact generated by the project.

To accomplish this objective and attempt to recover a record of the process of formulation of the project and place it in the socio-economic context of the community. This required first consulting secondary sources, such as the identification card of the Practice used in the selection process for the competition promoted by the CAIXA and other available documents. The systematic organization of these data allowed the preparation of instruments that were then applied in the field, such as the outline for the in-depth interviews and the constituent elements for the focal groups.

The stage of the field work involved combining qualitative and quantitative data. During a period of five days (October 21 – 25, 2002) secondary and primary source materials were consulted and some of the strategic locations were visited. The field work was supported by the managing agency of the Program, the Environmental Secretariat, through its representatives in the division of environmental education and the CPTMR. Representatives of the CAIXA also participated in some of the activities in the Municipality.

The first direct contact with some of the institutional actors involved in the Program came about through a meeting with representatives of the CAIXA and the Municipality. The purpose of the meeting was to present the proposed methodology to be used in the preparation of the case study. This meeting was also used to establish a schedule of work according to the planned program. The field surveys including consultations of the documents already produced about the project such as reports, educational materials, interviews and visits.

For the collection of data we believed that the Program should be analyzed from a wider perspective, involving indicators that would verify the integration of the Program with the other stages of the Municipal Sanitation System; that would permit an evaluation of the level of participation of the community and the ecological agents, and that involved the diverse dimensions of sustainability.

Another component of the working methodology, essential for the preparation of the case study, was the time dimension. Because it deals with a program that is designed to encourage behavioral change, a retrospective view starting from the design of the program to the present day was necessary

The interviews attempted to consider the views of various actors from

project managers to local political actors and the population that benefited from the Practice. The interviews took place individually with each one of the interviewees with the exception of the representatives of the CAIXA, who answered the questions collectively. Some of the ecological agents were interviewed individually and some participated in a focus group. During the focus group there was a representative of the CAIXA, who did not reveal his identity during the activity and assisted in preparing a photographic record of the encounters.

The interviews and encounters in the street with local residents were accompanied, in some cases by the manager of the CPTMR who did not identify himself at any time. The majority of conversations took place in the center of the city during the lunch hour.

Listed below are the **interviewees** and the corresponding **institutions**:

Caixa Econômica Federal (CAIXA): branch supervisor and the marketing manager for States and Municipalities. In addition, there was also a detailed conversation with a social worker and various exchanges of information with the marketing manager. With regard to the contacts with the CAIXA, the some of the employees and staff were reassigned and the actors directly involved with the first stages of the Program were no longer available at the local office of the institution.

CPTMR: director, accompanied by the manager of the Center. In this case, in addition to the interview, there was also a questionnaire applied to the Director with the intention of gathering a greater amount of quantitative data about the operation of the Program.

Office of the Mayor: the Chief of Staff and the Planning Secretariat.

Environmental Secretariat: Secretary of the Environment, manager of the Division of Environmental education, two interns from the Division of Environmental Education (students of History and Biology). The manager of the Division of solid residuals was on leave. Telephone contacts were made with the manager's office who was on leave attending a course.

Social Action Secretariat: manager of the division in the area of community development, the aged and families, and responsible for the "Minha Casa" Project. In this case the interview was complemented with the application of a questionnaire with the objective of obtaining a better profile of the scavengers and the principal transformations brought about by the Program; the Coordinator of the "Eureka" Project who has been in charge of these activities since the creation of the "Simplesmente Cidadão" Project. This interview took place at Unit I of "Eureka". The opportunity was also taken to converse with various instructors in the Program. On this occasion some of the children of the scavengers who were participating in the "Eureka" Project were also interviewed (five girls between the ages of eight and fifteen).

Residents: formal interviews were held with seven residents from four

neighborhoods, of which two had selective collection, (Área Militar and Guarujá), and two that did not, (Caraveli and Santa Cruz). Open-ended questions were asked individually of 12 persons chosen at random in the center of the city (five men, four women and three children) and to five representatives of commercial establishments. One manager of a condominium (apartment complex) that "adopted" an ecological agent was also interviewed (in the Center neighborhood).

Company contracted for urban sanitation: interview with the Manager of the contract, and a conversation, during the visit to the sanitary landfill, with the person in charge of the operations at the landfill.

Ecological Agents: individual conversations were held with six ecological agents. Three at the CPTMR (two women and one man) and the others in different locations around the city (three women). The focus group with the agents was held at the CPTMR and was attended by 17 agents (ten men and seven women) between the ages of 17 and 52 years with the majority being between 40 and 50 years of age. The discussions were designed to develop information about the perceptions of the agents regarding the role they play in the Program and the differences between being a scavenger and being an ecological agent, the partnership with the Local Authorities, the image in the community, the social relationships within the group and their future prospects. At the end of the activity there was another interview with a smaller group of women ecological agents. This group was made up of five women between the ages of 22 and 43 years.

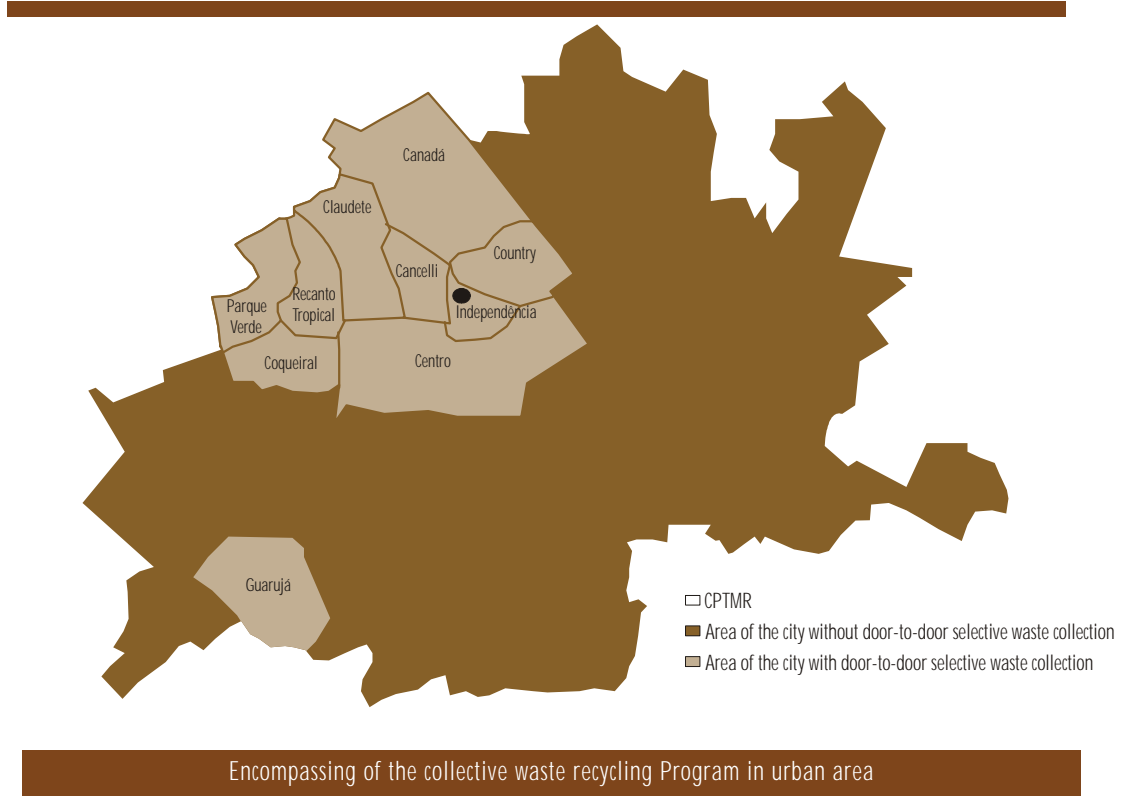
Scavengers: three scavengers were interviewed in the center of the city and two in residential neighborhoods.

Partner Company: Manager of the company.

Locations visited:

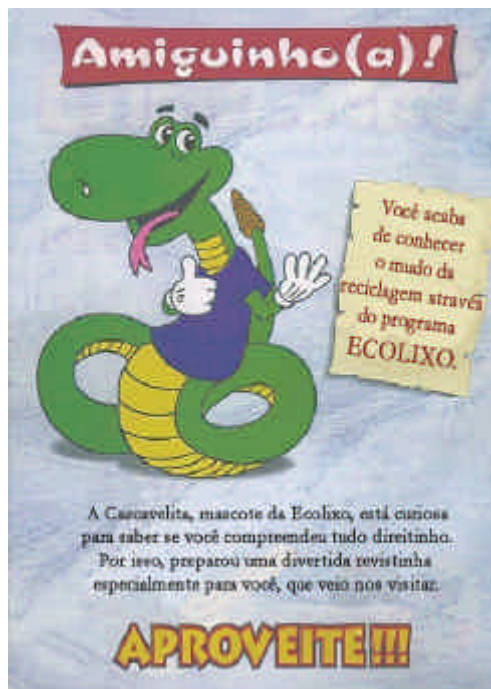
- Sanitary Landfill;
- Inert Landfill;
- Housing complex: Quebec and Citizen Julieta Bueno Home;
- Hazard areas, such as the valleys that were transformed into leisure space after the squatters were removed.
- Unit I of the "Eureka" Project;
- City neighborhoods not having selective collection services;
- Materials Recycling, Processing and Transfer Center (CPTMR).

APPENDIX IV Map of the City



APPENDIX V

Educational Materials



Some educational materials produced by the Program

APPENDIX VI Photographic Record



A cart used by an ecological agent, trash containers for the streets and baskets distributed to the residences for the selective collection.



Condominium in the Selective Collection Program



Presentation of the Ecoónibus program at the bus terminal



Ecological Agent engaged in collection in the streets.



Agents participating in focus groups



Agents participating in focus groups

APPENDIX VIII Selective Waste Collection and Recycling Program

