



ENVIRONMENTAL COMMUNICATION STRATEGY

for municipal solid waste management in
Sao Paulo, Brazil



CLIMATE &
CLEAN AIR
COALITION



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Foreword

Communication as a tool for citizen participation

Communication plays a fundamental role in the social process of environmental education. Without this indispensable tool, citizens have no access to information that may foster attitude changes and the full exercise of citizen participation.

The Communication Strategy for solid waste management in São Paulo must be understood and welcomed under that basic premise, as well as all initiatives related to the document. Developed in a collaborative process that brought together the Municipal Secretariat of Services, ISWA and Abrelpe, the Plan covers different aspects on the topic, such as governmental dialogue with companies, adoption of good practices by institutions and broader sectors in society. The inventory of several actions carried out in the city and suggestions for improvement of these projects are also included. In short, we seek to bring the most effective understanding among the leading actors involved in this debate.

Noteworthy is that whereas recognising the progress in waste management in recent years, the Plan points to the future, thus it will certainly be an important compass in building an increasingly cleaner and more sustainable city. Aware of the goals accomplished, let's look forward to new achievements!

Simão Pedro Chiovetti

Municipal Secretary of Services

Executive summary

The challenge of implementing modern environmental solutions for the treatment and recovery of solid waste in the city of São Paulo requires courage, determination, innovation and resilience. The technical and human dimensions of the solutions to be implemented are as large as the approximately 12 million people and 4.7 million tons of municipal solid waste they produce per year.

To deliver efficient information to such a large number of people is a challenge that shall be faced professionally, in alliance to the technical decisions to be implemented, so that behaviour changes become a reality in the shortest time possible.

This Strategic Environmental Communication Plan focused on solid waste management is the result of Activity 2.2.5 - Preparation of a communication strategy to promote citizen awareness about recycling and selective collection of solid waste, developed under the Second Phase of the Assessment Project of the Climate and Clean Air Coalition Municipal Solid Waste Initiative (CCAC MSWI). Implementation is carried out by the International Solid Waste Association (ISWA) and local coordination is under responsibility of the Brazilian Association of Public Cleansing and Waste Management Companies (ABRELPE). The first phase of the project included diagnostic procedures and the design of an Action Plan for the city of São Paulo, in agreement with goals and objectives of its Integrated Solid Waste Management Plan (PGIRS); in its second phase, the project aims at providing technical and strategic guidance on compliance with the Action Plan, training on operation of waste treatment units and on public communication.

In the process, we were able to listen to organisations responsible for planning and implementing continuous improvement processes in solid waste management. It also allowed to determine which measures have already been adopted, and to identify success and failure, expectations and decisions.

Along the development of this project, we have acknowledged the enormous potential of the city of São Paulo to improve communication actions, as a consequence of the work around solid waste management. Existing database are still limited, and the city demands the definition of a leading coordination team responsible for communication and environmental education, with the ability to work cooperatively so as to achieve results that benefit all.

The document considers successful experiences from around the world, suggests feasible implementation, and presents some communication solutions for the many challenges to come. These challenges refer to the volume of separate collection for dry and organic recyclables waste, implementation of solid waste recovery units, identification of target groups and the most effective communication actions regarding the quality of messages to be transmitted.

As important as defining technical strategies for recovery of solid waste in the city, is the definition of an integrated environmental communication strategy which allows presenting the various solutions proposed and promoting engagement and awareness of citizens and key stakeholders. This work is not a mission for a single individual or organisation - it is a collective mission demanding partnerships, alliances and motivation of all São Paulo society.

The current conditions are favourable and we are certain that São Paulo meets the necessary conditions to be a world reference in successful implementation of an environmental communication strategy allied to technical options for waste management, and that this experience can be replicated in cities with similar dimensions.

Ana Loureiro

Lead Author

ISWA Specialist in Environmental Communication

Introduction

The city of São Paulo is a challenge case in many areas, not only for its geographical and human dimension, but also for the complexity of the organisational structure in management. Management of municipal solid waste, for its grandeur and peculiarities, is a responsibility of the utmost importance to ensure all salubrious conditions are fulfilled, as well as public health, environmental protection and life quality to everyone.

São Paulo faced a significant urban sprawl, especially in the last 110 years. Human settlement, that used to be held only in central areas of the city, has been extended, in a process intensified by industrialisation, expanding the urban area. Thus, there was a steep increase in population. The last census of the nineteenth century in the city of São Paulo indicated 240,000 inhabitants (Prefecture of São Paulo - Census 1900); currently, this value is 11,895,893 (IBGE, 2014), a sprawl that inevitably demanded more space for housing in peripheral areas. Added to urban sprawl, another key factor is migration. According to the Brazilian Institute of Geography and Statistics (IBGE, 2010), 35% of the population live outside the city where they were born, a fact that contributes to the increase in number of inhabitants of the largest cities, especially São Paulo. In this context, the acculturation process in the city involved a multitude of people of different ethnicities. In the twentieth century, with agricultural development, there has been migration of people from various regions, intensifying the metropolisation phenomenon, leading to the mixture of cultures (Baeninger, 2005). Given these factors, it is complex to establish communication initiatives that are able to reach everyone.

1 BRIEF DESCRIPTION OF SÃO PAULO

Population	11.895.893 inhabitants (IBGE, 2014)
Area (km ²)	1.521 (IBGE, 2013)
Urban solid waste production	<ul style="list-style-type: none"> • 4.7 millions of tons/year • 402kg/person/year
Collected urban waste	97.8% (IBGE, 2010)
Waste collection	<ul style="list-style-type: none"> • The collection of wet and dry waste carried out by 2 concessionaires for collect and destination of household wastes and 2 companies hired for urban sweeping and conservation. • 21 registered cooperatives of waste pickers • 20,000 informal waste pickers
Waste composition	47% organic wastes; 16% paper/paper card; 10% plastic; 2% metal; 1% glass; 1% rubber; 22% others
Official operating equipment of waste treatment and recovery	2 landfills; 3 transfer stations; 2 mechanised sorting centrals.
Projected equipments	2 mechanized sorting centrals; 8 small sized composting plants; 4 composting centers; 3 mechanical-biological treatment centers.
Funding	No tax/fare for urban waste management is charged. The city spends R\$170/person/year in the management of this wastes, less than R\$0,50/person/day, funded by the municipal budget.

CCAC, Solid Waste Management - City Profile, 2015.

To define and implement an environmental communication plan accompanying the city's strategic decisions, its necessary to follow the process from the beginning and provide information to the public, not only about the plan for future, but also about the current stage of the project development; and, eventually, communicate reasons for corrections that have been made.

To participate in discussions and reinforce the need to invest in infrastructure and human resources to ensure management of municipal solid waste are activities that require the development of

appropriate communication strategies aimed at various audiences, so that they understand the reasons for the decisions taken by its leaders. Communication also helps citizenry to assume their role as citizens, in this case, that means to produce the least amount of waste and to send the waste produced to environmentally proper solutions available.

This is an ongoing mission, and those who lead the process must face the problem - most part of the citizenry do not feel informed, nor realize that keeping the city clean is a responsibility of every one, that is, waste management service has an environmental, economic and social cost that must be shared by all.

The act of simply delivering information to the population isn't enough, it is necessary to build a sense of belonging, an emotional bond that allows the improvement of attitude towards the city. Attitudes such as discarding what is now regarded as unnecessary shall be replaced by attitudes that can recover value of things people see as garbage.

Environmental Communication

Environmental Communication (EnvCom) is a planned and strategic use of the communication process to support development of effective policies and implementation of projects that are able to promote environmental sustainability.

In Environmental Communication, OCDE, 1999

Communication is a continuous process; defining goals to accomplish and looking for strategies to make communication effective allow better reception and interpretation of messages. Communication is always going on: if one decides not to communicate, silence, lack of words and contact shall continue to be interpreted, for or against will.

According to The Organisation for Economic Co-operation and Development (OECD), planning communication processes implies a perception that citizens do not make direct links between personal behaviour and environmental improvement.

There is a long road between what is Said and what is Done. It is important to deconstruct misconceptions. This is about realizing that what is said is not heard yet; and what is heard is not understood yet; what is understood is not yet approved; what is approved, it is not executed yet.

Deconstruction of Said and Done, by OECD



3R Communication: Responsible, Rational and Relevant

Reporting issues about the environment concerns the global community, so the responsibility and credibility of those who report influence the way the message will be received from broadcasting. This is one reason for associating to concepts such as the 3R Communication: Responsible, Rational and Relevant.

Planning a communication campaign encouraging people to separate their waste will not conform to any of these concepts if the campaign does not coordinate technical resources for the beneficiary to act as they are being advised to.

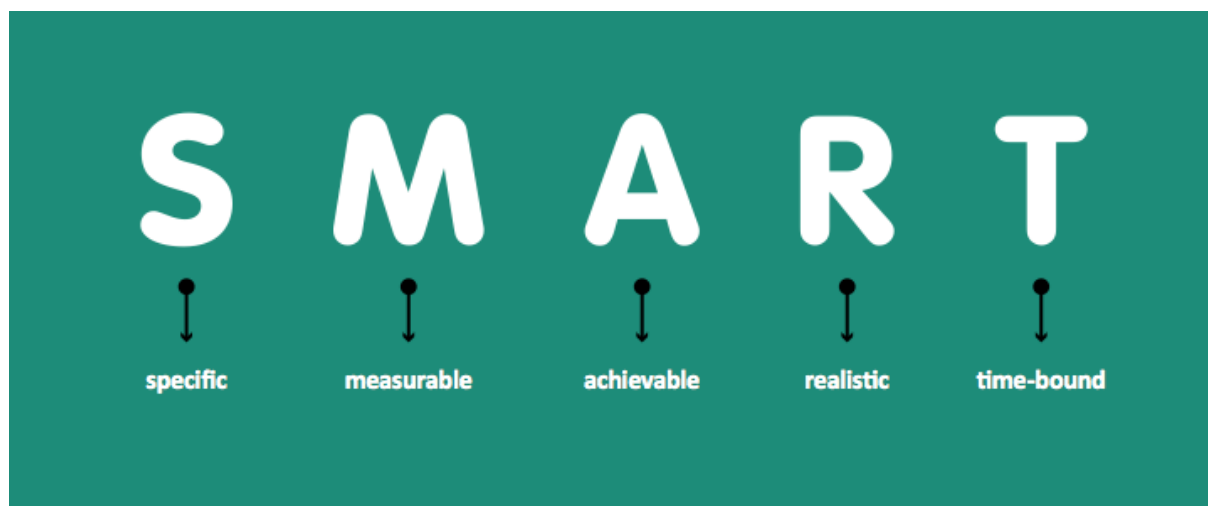
How to motivate urban dwellers to adopt good environmental practices, if their leaders or organisations do not cultivate them? Setting an example of good environmental practices increases credibility of those who communicate.

Just like children, all of us learn from experience and from attitudes and examples we are exposed to. Likewise, messages that require behaviour change are better accepted if they come from those who practice what they teach. Unfortunately, there are some bad examples of environmental communication, such as “greenwashing”, which, shortly, is when companies or organisations convey messages with environmental content that does not apply to the products or activities they actually develop.

Becoming an example involves taking measures as an individual, within the family and in cultural, religious, sportive or political associations. In short, it consists of being a citizen and promoting citizens' association, assuming economic, social and environmental responsibility.

Planning before acting

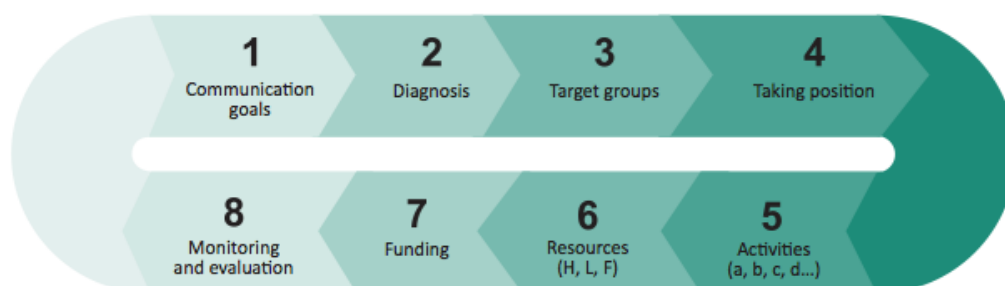
What is the purpose of a piece of communication? This definition shall be of great relevance. What do we want? To inform, to discuss or to involve? For each of these questions, there are several alternative answers, and they all start with planning. For defining objectives, it is possible to use the SMART methodology: Specific, Measurable, Achievable, Realistic, and Time-bound.



It all starts at the diagnosis - the more realistic and detailed information you get, the better. However, the diagnosis should be focused on specific objectives, and it should not take very long time to be produced. There is always research work to do and you need to move forward.

Another factor of great importance is the definition of target groups - communication is oriented in terms of language, time, resources and investment on the basis of audience characteristics. To accurately determine who is being addressed influences the amount of success of your actions; it is, therefore, a fundamental task.

Steps for running a communication plan



Then, it is time for the action plan. This is the step in which we define what to do with human and financial resources available, duration and location of the project, and means of monitoring and evaluating the process. The action plan should be put to work, monitored and adjusted whenever necessary.

After implementation, or at any time scheduled, analysis and evaluation shall be carried out, conclusions shall be developed, and, often, the beginning of a new phase is settled.

Internal environmental communication applied to municipal solid waste management

For a more targeted communication into the theme of municipal solid waste, reference should be made to a consolidated hierarchy of content priorities, endorsed by environmentally responsible organisations: waste prevention and reuse; recycling; energy recovery; adequate disposal. Any organisation that intends to promote environmentally friendly behaviour, should adopt these values within the organisation: we believe message shall be supported in attitudes. This hierarchy of content priorities in solid waste management can be translated into good internal communication practices, as shown in the following table.

2

10 EXAMPLES OF GOOD INTERNAL ENVIRONMENTAL COMMUNICATION

- 1 • Define and disseminate organisations' environmental policies.
- 2 • Involve leaders and managers in activities that promote awareness on the topic.
- 3 • Promote sessions of rising awareness activities targeted to workers after implementing waste sorting within the organisation; give recipients for home separation of waste, according to the system of collection available.
- 4 • Promote sessions of rising awareness activities focused on home and community composting, coordinating eventual delivery of composting boxes.
- 5 • Spread appropriate food waste reduction habits, for instance, stimulating employees to bring in food for lunch and enabling workers to eat healthier foods in rooms designed for this purpose.
- 6 • Distribute scrap books and reuse the waste produced by the organisation.
- 7 • Quantify waste produced, reduction and recycling. Do not forget to communicate results by available means.
- 8 • Associate social causes to good environmental performance; reward teams, workers or causes due to performance.
- 9 • Guarantee that souvenirs distributed to stamp the environmental position of the organisation are appropriate. Objects produced out of recycled or reused material and gifts printed with non-toxic paint are good examples.
- 10 • Organize sustainable events and meetings, where good examples lie on every detail. Using plants for decoration, avoiding food waste, calculating carbon emissions of participants displacement to attend the event are good examples.

The beginning of this process involves adopting good environmental practices in each organisation and setting an environmental position based on solid foundations. In addition to implementing energy efficiency practices, internal waste management and efficient use of water, there are ways to send a message to the internal public in order to show value for all these measures and make employees ambassadors of the institution and of environmental causes.

Message content

The content of the message should be defined according to the goals of the campaign. It is always important to bear in mind that conveying more than one message is to reduce the success of the initiative. There are, however, ways to highlight the main idea (the message that will stick to the minds of the audience), adding supporting ideas.

When the goal is to give information about waste prevention and reuse, messages should focus on every and each material and the good practice to adopt. As a rule, it is the organic waste that responds to the greater amount of all the waste produced, so preventive messages should focus on the combat to food waste (with social gathering food programs and nutritional implementation programs), as well as campaigns dedicated to household and community composting (diverting organic matter from the amount destined to landfills or recovery facilities).

There are many good examples to observe, such as Re-food (Portugal). Re-Food is an independent organisation, run by citizens who voluntarily integrate an eco-humanitarian charity community, which works to eliminate food waste and hunger in every neighborhood.

Re-food operates in and for the community, working without wages and avoiding all cost or investment that do not serve its mission. Results achieved are significant. More information about this project can be found at: <http://www.re-food.org/pt>

When the topic is **household and community composting**, the message content should be focused on the procedure of composting. It is also important to deconstruct the idea that composting is a difficult procedure to carry out at home. It should be helpful to refer to successful initiatives, such as the one promoted in the town of Bareggio, province of Milan, and all around Italy, where training and debate sessions on the topic are being offered to a variety of target groups.

When the theme is **recycling**, action does not only depend on the participation of citizens in the process of sorting organic matter from dry waste, but also on the ability of the city to collect the separated waste, and to manage dense flows of information between different actors.

Messages delivered to the population should focus on the reason for adopting the appropriate waste sorting attitudes, as well as the rules on how to do it, weekly schedules, information on containers for each type of waste, information services in case of doubts and complaints.

Portugal is implementing new signaling for waste containers, using the same colours, icons and text across the country. This work was led by “Sociedade Ponto Verde” (www.pontoverde.pt), in close partnership with all companies receiving waste in the country, so that it was possible to reach a national consensus on common rules for disposal.

Messages related to **energy recovery and final disposal of waste** are likely to be informative messages about the activity of companies and organisations responsible for receiving, recovering and disposing material.

These messages do not need to promote attitudes involving reception of raw material, but rather to report on how these companies work, if they comply with regulation and safety rules, if they show indicators and operating results, among other technical information for public consult.

Those engaged in this activity should be agile to the need to respond to contact and complaint. Developing positive communication is also important, such as offering visitation dates, engaging in civil celebrations, participating in local events and monitoring committees. Developing the ability to communicate in moments of crisis is also desirable.



Refood / Sociedade Ponto Verde / Bareggio

<p>DEPOSITAR ✓</p> <p>embalagens de plástico, garrafas de bebidas, latas, sacos de plástico</p>	<p>PLÁSTICO E METAL</p> <p>Linha Valorsul 808 200 115 www.valorsul.pt</p>	<p>NÃO DEPOSITAR ✗</p> <p>papel e cartão, pilhas, eletrónicos, outros plásticos que não embalagens</p>
<p>DEPOSITAR ✓</p> <p>caixas de cartão, revistas e jornais, papel de cozinha e impressão</p>	<p>PAPEL E CARTÃO</p> <p>Linha Valorsul 808 200 115 www.valorsul.pt</p>	<p>NÃO DEPOSITAR ✗</p> <p>sacos de plástico, produtos tóxicos, papel sujo, fraldas, papel vegetal, papel plastificado, autocollantes</p>
<p>DEPOSITAR ✓</p> <p>garrafas, frascos, botes</p>	<p>VIDRO</p> <p>Linha Valorsul 808 200 115 www.valorsul.pt</p>	<p>NÃO DEPOSITAR ✗</p> <p>lacas e cerâmicas, sacos de plástico, vidro plano e janelas, cristais e espelhos, lâmpadas, frascos de medicamentos</p>
<p>DEPOSITAR ✓</p> <p>resíduos alimentares sólidos, sobras de chá e bebidas de café, tostadas e guardanapos de papel</p>	<p>RESÍDUOS ORGÂNICOS</p> <p>Linha Valorsul 808 200 115 www.valorsul.pt</p>	<p>NÃO DEPOSITAR ✗</p> <p>embalagens, latas e talheres, cartões e betas, líquidos e sopas, baterias, medicamentos</p>
<p>OBRIGATÓRIO ✓</p> <p>fechar bem o saco</p> <p>manter a tampa do contentor fechada</p> <p>colocar o contentor depois das 19h</p>	<p>LIXO COMUM</p> <p>Linha Valorsul 808 200 115 www.valorsul.pt</p>	<p>NÃO DEPOSITAR ✗</p> <p>embalagens recicláveis, jornais e revistas, resíduos eletrónicos e electrónicos, resíduos de grande dimensão</p>

Com il **COMPOSTAGGIO DOMESTICO**, una parte dei tuoi rifiuti (circa un terzo: sono gli avanzi di cucina e gli scarti verdi) diventa presto una risorsa preziosa:

- un fertilizzante naturale e nutriente per il tuo giardino;
- quello che da sempre fa la natura, ma che anche tu puoi fare con una semplice tecnica;
- un modo ecologico e intelligente per gestire bene i rifiuti (per te e per intera comunità).

PARTECIPA AL CORSO CHE ABBIAMO ORGANIZZATO
 Conoscetevi meglio, grazie al contributo di docenti qualificati, le tecniche per praticare bene il compostaggio domestico.

Il corso, che è gratuito, è articolato in due lezioni:
 > lezione teorica. **Martedì 30 maggio 2000 alle ore 21.00;**
 > lezione pratica. **Sabato 3 giugno 2000 alle ore 10.00.**

- La lezione teorica si terrà presso il **Salone Polivalente di Comerio**;
- La lezione pratica in otto luoghi, che ti verrà comunicato attraverso del corso. Per partecipare puoi iscriverti direttamente frequentando la prima lezione;
- In concomitanza con la lezione pratica saranno distribuite le compostiere;
- Per i cittadini che partecipano di casa è prevista una riduzione della tassa sui rifiuti.

Where are we now?

Over the past few years, the city of São Paulo has put considerable effort in the implementation of technical decisions which constitute the first steps for the recovery of solid waste produced by the population. The closure of spots of irregular disposal throughout the city and concession contracts with the Municipal Authority of Urban Cleaning (AMLURB), the regulatory public entity of this sector, are two of the experiences interesting of mentioning. At the time of this writing, concessionaires in this area were responsible for the operation of two landfills, three transfer stations and two mechanized sorting plants. Similar to what happens all over Brazil, in São Paulo, informal work in this activity is robust, accounting for 20,000 waste pickers and 72 organisations, from which 21 are cooperatives and associations (1200 waste pickers) supported by the city government.

In 2016, investments were made in the search for social solutions that could integrate the potentials of cooperatives. The celebration of contracts with these associations should be mentioned, as a form of bringing new models of participation in this market, which should be supported and regulated.

Nevertheless, São Paulo is a megacity: its 12 million inhabitants produce 4.7 million tons a year of municipal solid waste. This management challenge has been converted into a strategic plan, Integrated Management of Solid Waste Plan (PGIRS), published in 2014.

The city will diversify technical solutions for recovering municipal solid waste: expansion of dry waste collection system; beginning of separate collection of organic waste from households; promotion of domestic and community composting; construction of new sorting plants (of medium and large sizes) and new units of mechanical-biological treatment and composting.

The manner in which such large number of simultaneous technical decisions will be made operational is surely a case study to be monitored. Robust investments will certainly be necessary, but also strategic vision and strong leadership that should rather be a collective decision for the future of the city, than submitted to electoral interests.

Environmental education and communication

The followings are some of the most significant activities on environmental education and communication in the last two years:

- a) Campaign "Eu jogo limpo com São Paulo", in which the meaning of the word "jogo" (play, throw), and the meanings of the word "limpo" (fair, clean), lead to two interpretations of the slogan: "I act fairly" (when) "I throw things in the dust bin" (because) "it helps keeping the city clean". The campaign was promoted by municipal authorities and the Union of Municipal Cleaning Companies of the State of São Paulo, (SELUR), in 2014. It aimed at strengthening the concept that the population has an essential role in cleaning the city, especially when not littering in public places.

More information at: <http://www.capital.sp.gov.br/portal/noticia/845#ad-image-0>

- b) Project "Compost, São Paulo", released in 2014 by the company "Morada da Floresta" with the support of municipal authorities. 2,006 domestic composters have been distributed, reaching 7,033 residents and ensuring that 2,525 more people started to compost their organic waste on their own. This initiative works on promotion of home composting as a good practice to be cultivated and passed on to others. High quality teaching materials and suitable strategy of approaching the target group have been essential qualities of the project.

More information at: <http://www.compostaSãopaulo.eco.br/>

Problems and solutions

In the second phase of CCW MSWI City Assistance Project, a workshop for training and exchange of experience in strategic environmental communication was held on January 20th, 2016. The workshop focused on solid waste management and it was attended by main actors of the project and leaders of key organisations responsible for solid waste management in the city of São Paulo.

During the workshop, participants were asked to list problems and possible solutions in order to improve environmental communication on solid waste management in the city.

From the list of problems, we would like to emphasize the following:

1. Poor interest on the subject – solid waste management is not at the top of citizens' agenda. Poor interest is reflected in low adherence to waste sorting and to using compost from organic waste. Citizens do not feel they have their own responsibility for cleaning the city or are unaware about the cause / effect of their attitudes;
2. Deficit of planning and evaluation of campaigns and communication services – campaigns are discontinued and they are not in agreement with entities working in the area. The absence of a standard visual identity also does not facilitate communication to citizens;
3. Inadequacy of information and little uniformity in communication between all agencies and entities that promote solid waste management among the population;
4. Absence of good examples to be followed - distress between what institutions say and what they do: institutions communicate the need for behaviour change by the population, but do not act as advocated;
5. Lack of human, financial and logistical resources;
6. Negative perception by the population about the existing equipment for treatment and recovery of solid waste.

From the solutions listed, we would like to emphasize the following:

1. The need for a solid public policy that explicit laws and provides mechanisms to ensure compliance with the law; that guarantee long-term investment in implementing environmental education policies; and that put urban solid waste as priority on the city agenda;
2. Defining an operational action plan, which shall present clearly the form of articulation between all entities (public and private) and shall transmit specific and useful information to citizens (e.g., waste collection weekly schedules);
3. Setting good waste management practices in our own organisation, so that citizens have good examples to follow;
4. Building up good environmental practices among promoters, organising a common agenda, and communicating work in progress and results to the public.

Reliable information for a better planning

Any planning process begins with collection of data and diagnosis, in order to create a reference scenario. This step is important to ensure that solutions to be adopted are as suitable to reality as possible. Nevertheless, it should be a limited process, that is, planning should bring clear deadlines for data collection and analysis.

Sources of information are key for data collection. They should be reliable and possible to be recovered. However, experience has shown that sometimes data does not come from credible sources, still they give clues to either find ways to validate information or to find new sources.

Information sources

As far as official information sources are concerned, it is not unusual that data does not bring enough detail. Yet, creativity must play its role: looking for associations and universities that might have made research on the field is desirable. Also, it is possible to look for organisations from other sectors of activity that can help in data collection. However, the government must consider leading the process of diagnosis.

When implementing collection of organic matter, it is important to identify generators (restaurants, markets, canteens and households) and to estimate production of this kind of waste. These are central information in order to cost implementation, as well as to decide on communication strategies. In this case, it is desirable to survey target groups; the examination of opinions and behaviour are important to make decisions guided by information that is not available otherwise.

3 APPROPRIATE INFORMATION SOURCES

- 1 • Statistics and data published by international, national and regional authorities.
- 2 • Research from reliable organisations, such as universities, granted associations or specialists of recognition with validated work.
- 3 • Information gathered by personal means, such as interviews, surveys, data collection, following proper methodological criteria for each case study so as to find specific information every time groundwork data is not available.

Requests for information and complaints reported to concessionaires are valuable sources of information on the main necessities of the population concerning solid waste management. If each and every incoming complaint is seen as an opportunity to get acquainted with beneficiaries, solutions will emerge. This is so because information needed to improve services will become source for decision-making.

The whole context of waste management is fragile and undermined by constant exposition to public opinion. Waste collection is often something to complain about, for different reasons: the container is too far; the container is too close; collection failed and garbage is accumulating; the floor around the container is dirty; schedule is not suitable; and many other reasons that make people unhappy. People also complain of lack of information, misleading information, and also because they did not pay attention to directions. Usually, technical reasons are at the top of the list of complaints. It is appropriate to solve technical problems first, and, just then, communicate a new campaign to the public, since it is not productive to encourage people to recycle packages, if, at the place concerned,

collection failures, no containers are available, or the spots where people can bring in their waste are dirty or full.

4 MOST COMMON COMPLAINTS IN SÃO PAULO

- 1 • Collection and removal of bulky waste
- 2 • Collection and removal of debris
- 3 • Household waste collection
- 4 • Cleaning of public roads
- 5 • Street sweeping and cleaning

Complaint analysis

From the analysis of complaints about solid waste management addressed to the city of São Paulo by various media (Phone 156 for Customers' Service of the City of São Paulo and Internet: <http://sac.prefeitura.sp.gov.br>), from 01/01/2014 to 01/14/2016; comes a list of top five reasons for complaint:

1. Collection and removal of bulky waste

This is the main reason for complaints, far more recurrent than the other ones. There are several ways to respond to the problem, although a strong communication strategy is essential (connected to technical problem-solving). Local campaigns on the types of waste that are collected in the bring-it-yourself system and information on addresses for collection; tracking software; community "patrols" working cooperatively for local supervision; permanent signaling for bring-it-yourself collection centers; partnership with local stores to give information to consumers in the act of purchase (eg, how to dispose of a sofa); and publicity on the operations carried out by the Municipality to collect bulky waste and large objects.

More information at:

www.prefeitura.sp.gov.br/cidade/secretarias/subprefeituras/catabagulho/index.php?p=19780

These are examples of attitudes that can be part of strong communication campaigns to discuss technical and communication problems.

2. Collection and removal of debris

The second reason for complaints relates to debris. In addition to appropriate technical solutions, communication strategies are the same as mentioned above. In this case, there should be information addressing building material local stores, so as to they can provide clients information about the deposition of debris.

3. Household waste collection

The third most recurrent reason for complaint is lack of garbage collection. This claim can be pursued on environmental communication by mapping complaints to identify areas of the city where management of waste must be reconsidered, and where there is no public system operating at all.

4. Cleaning of public roads

The fourth position in the rank is dissatisfaction with cleaning on public roads. This aspect requires improvement, in addition to local campaigns and the mapping of areas where the problem is perceived. Communication should aim at rising awareness in order to take citizens to cooperate, keeping the city clean, and avoiding improper disposal and waste disposal at improper places.

5. Street sweeping and cleaning

The fifth position is similar to the fourth, but it is focused on sweeping and cleaning service. Beside improvements to be made in these services, mapping allows understanding which areas of the city present the same problem, and, once again, it makes awareness campaigns to inhabitants possible.

One conclusion derived from this analysis is that the mapping of complaints is a significant tool to solving problems reported by citizens, who, in doing so, contribute to improving quality of life at the cities.

Municipal authorities are able to analyse data and make decisions, not only by providing technical solutions, but also by responding adequately to the complainant, who should be informed on what is being done to minimize problems.

Acknowledgement of recurrent problems being reported by population enables preventive actions that guide strategic communication actions. Addressing these aspects that cause discontent can occur either by providing detailed and specific information through channels that effectively reach the citizen, or by guiding future behaviour in order to curb deviations.

To dialogue with the citizen who complains is a way of demonstrating that the City is attentive to the needs of the population, but it is necessary to give realistic and well-founded answers, so as to guarantee that institution's credibility is strengthened. The objective is that claimants can tell others the story about how services were good, and how this action was important to the city.

Target groups in São Paulo

When it comes to communication challenges, the first question one should ask is who to communicate with, that means, what is the group? What is the target? And what position should be adopted? Target groups definition is fundamental to draw suitable strategies, and appropriate means and investments. The more targeted the message is, the greater the chance of success.

One of the strengths of this project development is to have permeated the network of contacts and partnerships involved, which allowed rich and detailed compilation of information about specific audiences when defining an action plan or a campaign with the theme of solid waste for São Paulo.

Target groups for strategic environmental communication were identified after the first contact with organisations and the completion of the strategic environmental communication workshop with participation of main actors to the project. The table below brings target groups and numbers.

5 STRATEGIC ENVIRONMENTAL COMMUNICATION – TARGET GROUPS IN THE CITY OF SAO PAULO					
Population in 2013	11.253.473				
Population in 2030	12.258.968				
HORECA (Hotel, Restaurants and Cafeterias)	Hotels	Hostels	Restaurants	Bars	
	410	62	12.500	15.000	
Street markets	879				
Community associations	Not accounted				
NGOs	Not accounted				
Condos	Not accounted				
Places of worship	Not accounted				
Companies	Not accounted				
Media	Not accounted				
Schools	Children Education	Primary School	1 st cycle Primary School	2 nd cycle Secondary School	Graduate School
	2.547	2.497	2.128	1.355	146
Students	Children Education	Primary School	1 st cycle Primary School	2 nd cycle Secondary School	Graduate School
	171.961	485.494	389.748	309.397	Not accounted
Public equipment	Library	Culture	Sports	Health	Parks
	Not accounted	Not accounted	Not accounted	834	103

Tables on attachment are the result of data collection gathered by the team responsible for implementing this document, between December 2015 and February 2016. They are groundwork for all those who need to define target groups of a campaign or communication action. Data are presented by sub-prefecture; blank cells are information that could not be found during the time this document was being prepared.

Sources of information were all official, with emphasis on the information provided by the City of São Paulo.

Although target groups have been defined and quantified, campaigns or communication actions do not always fit such group distinction. For example, carrying out separate collection of organic waste in a particular area of the city or along a route defined according to technical criteria, may have as target groups large generators and families - the approach to each audience is different, as are different the amounts of waste generated and the needs and concerns of each.

This is the starting point of a diagnostic approach to audiences that have a lot to say about the city. The end point depends on desire and ability, diagnosis may vary in extension of detail, depending on the objectives of the communication project.

Consumer behaviour

When communication aims at changing behaviour, it is necessary to consider messages that lead to action. Acknowledging who and how many are the target groups is a first step. If an organisation wants to promote recycling in a particular place, either at an early or at an advanced stage of action, consumer habits shall be surveyed, such as what are the conditions of living and collection system

installed at the site, among other things. Often, the most peculiar detail about the way of life of the audience give the right clues to whether action will make a difference and lead to a voluntary and informed membership.

Consumers are whom campaigns are designed to and the ones to influence and motivate behaviour change. The better the information gathered on consumers' behaviour, the easier you can communicate with them. It is not the most elaborate and expensive campaigns that accomplish goals, but those that hit the heart of the problem and are the levers of change. There will be cases in which change might require numerous efforts, but there are also cases in which personal contact with the leader of a group is enough (eg, trade union representatives, religious leaders are often opinion leaders and behaviours promoters accepted in society).

Consider, as an example, that one wishes to develop a communication campaign to families at a determined community, key information to survey are listed in the table below:

6	MAJOR INFORMATION	EXAMPLES
Target group profiles	Walk of life (kids, elderly, young, single...); life style (economic status, demographic characteristics); cultural issues (litteracy, social conventions, foreign communities, religious beliefs).	
Number of houses and type	Appartment buildings, small houses, demographic concentration.	
Waste management systems available	Waste collection type – door-to-door; bring-it-yourself; pay as you throw; none. Day or night collection.	
Levels of competence in the separation of solid waste	Extent of participation – not aware; able to sort waste for disposal	
Challenges to recycling	Consider lack of containers, inefficient management, lack of space at homes, lack of awareness, resistance to behaviour change, among others.	
Complaints	If systems for complaint analysis are available, it is worth looking for feedback on people's most common plaints.	
Waste characterization	If results from previous characterization campaings are available, real feedback about amounts and type of waste will be of great value. Based on this information, it is possible to detect and solve problems related to consumers' behavior.	

Communication strategies applied to the goals of solid waste management

Environmental communication applied to solid waste management relates to the concept of education and should be understood rather as a continuous and persistent investment than as a short-term investment. Like all educational fields of study, environmental education is often perceived as a marathon, a vocation or even a mission. It is a process that goes through generations, and although it may have memorable moments of specific actions in time or space, it should rather develop as part of the culture of a society. For this mission to be faced and envisaged for the future, it demands strategic and planned investments of time and other resources, in order to profit from human and economic investment.

This is a task crafted by society on several fronts - teachers, technicians of municipalities, companies with public responsibilities in the sector, private and state sector, and media. In order to optimize resources in which many partners are developing similar or complementary work, the ideal situation would be a coordinated network led by public authorities, based on a national strategy. Even though, in most cases, it is not how it happens. In spite of the fact that many countries are witnessing widespread unconcern for partnership strategies designed to promote environmental education as a purpose, or a mission, some laudable initiatives are arising from different organisations and individuals committed to changing such pessimistic scenario.

Communication strategies by content

As it was mentioned before, we intend to convey multiple messages regarding solid waste. These themes obey a hierarchy of priorities: prevention, reuse, recycling, recovery and final disposal.

Each of these themes has its specific approach, which must be worked bearing in mind the characteristics of target groups. Whatever the action is, it should be framed in an integrated strategy. It should always have a clear visual sign in it, with the follow information: the names of the promoters of the action, how to know more about the action, and its relation to a larger strategy.

1. Avoiding waste generation:

- a. Promote actions of domestic and collective composting, and develop programs to enable the participation of citizens.

Examples: composters offer, complemented by a program of training and awareness actions (face-to-face, web-based or other formats); implementation of community gardens that include shared composters; distribution of the compost produced by the users and community; organisation of workshops and publicizing and promotion events; practical guides (printed and digital versions).

- b. Promote actions against food waste, highlighting social, economic and environmental gains.

Examples: Promote structured and volunteer services to collect ready food or leftovers in good condition in restaurants, canteens, hotels, markets, catering events (among others); Acquire the necessary means for food preservation, in order to guarantee the best condition of food; Establish partnerships with trusted entities to register families or needy citizens and to entitle them to the food products reception service; Promote partnerships with organisations that can deliver their remaining food; Promote programs associated to nutritional advice; Promote the dissemination

of this good practice and associate it with actions against hunger and poverty as a social lever for the implementation of projects.

- c. Promote family and organisation aimed campaigns (with the suitable language for each), with practical examples to show that the economy of resources leads to money saving.

Examples: Storing food in reusable containers (instead of using aluminum or plastic film paper); Avoid the use of disposable tableware or napkins; Promote the use of reusable bags (with the obligation to purchase them from the trade and the provision of bags); Promote the use of shopping lists; Promote the purchase of family packs or bulk products; Promote the adoption of post box stickers that declare not to receive unaddressed advertising; Promote the use of electronic invoice service; Promote the acquisition, when available, of products of local or national origin; Avoid unnecessary document printing, and consider double sided printing or using scratch paper whenever possible..

2. Waste reuse:

- a. Promote the reuse of materials to families and organisations, highlighting that this practice can increase lifetime of materials and saves natural and economic resources.

Examples: Promote "exchange fairs" or "open garage day" in specific days and locations to foster occasions when people may bring in material to sell or trade; Promote web pages aimed at selling or trading goods no longer required; Promote repair services of electrical and electronic equipment, as well as furniture and other goods, with participation of the community; Support the donation of unfitted or no longer needed clothing to networks of reputable entities that ensure their distribution to poor people; Promote the creation of waste exchanges by companies and foster the participation by other entities; Promote workshops with information concerning material reuse that may disseminate the benefits of reuse.

3. Waste recycling and its transformation into new objects:

- a. Promote the recycling of materials, emphasizing that this practice lowers the use of original raw materials, saves space in landfills beyond being a practice that boosts the economy and creates jobs.

Examples: Promoting awareness raising actions and visits to recycling plants and recovery of waste, so that more people come to know the process and may testify to its viability; Promote partnerships with companies and organisations, in close collaboration with public and/or private entities responsible for the selective collection of waste, to foster the selective collection in offices, schools, restaurants, public spaces - the disposal sites should be well indicated and should contain information and/or proper training to all those involved in the process (from top management to the cleaning staff); Ensure that urban events (like music festivals, races and marathons, city festivals, sporting events, among other) become "Eco events", making sure that conditions are given for participants to separate their waste and information is accessible; Foster the association of recycling work and social causes in which part of the revenues from the environmental gains of a particular initiative may contribute to a community cause.

- b. The rules of waste material separation should be as simple as possible, and it should apply to as many communication media associated with recycling as possible.

Examples: Standardise the rules and the array of colours associated with selective collection and make them applicable to all materials; Information regarding materials that can and materials that cannot be disposed in which containers should be conveyed in simple language - this information should regard the materials collection priorities, and in the case of information regarding materials that cannot be disposed and where, priority should be given to materials that

are mostly disposed wrongly or the ones that most drastically interfere in the screening process; Produce compelling communications media that can disseminate information to as many people as possible, via posters, flyers, magnets to put in refrigerators and detachable adhesives; Standardised communication should be available in all containers with stickers or nameplates.

4. Energy recovery:

- a. This is an initiative that concerns more the entity that receives the waste that were not saved, reused or recycled than the consumer. We must view the energy recovery process associated with such material a process still possible even with materials that reached this stage.

Examples: Explain and demonstrate in simple fashion how to obtain energy from waste (from biogas generated in landfills or anaerobic digestion processes, or through incineration processes) - If conveyed in a simple, graphically appealing and easy language, this technical complexity can be more easily grasped by the consumer in a very short time of his attention; Produce communication materials with different levels, considering charts with data and technical information aimed for the industry and technical personnel, and charts with more simplified information for the general public; Promote open days in waste recovery plants, occasions properly structured so that visitors can receive free and accessible information on place; Enhance the role of this initiative in the waste management hierarchy and its importance in the diversion of waste from landfill (when justified).

- b. Pay attention to the safety of installations and their social, economic and environmental performance in order to anticipate responses to the legitimate concerns of the population.

Examples: Assuming the existence of monitoring programs regarding plant activities, it is needed to present its results not only in reports conveyed in technical language, but also summaries prepared in a more simple and accessible language; Ensure the dissemination of information destined to local officials and to the vicinity of waste recovery plants, as well as to all stakeholders (workers' committees, trade unions, neighborhood associations, NGOs); Ensure social responsibility actions for the neighborhood near the facility; Promote scheduled visits to facilities, in order to ensure the highest degree of transparency in the company's activity; Ensure an effective service designed to answer inquiries and complaints, to enable that adequate and correct information be given to the incoming contacts; Develop a procedure and a guide to crisis management (not only technical crisis but also communication crisis) and ensure the right training be given to all personnel involved.

5. Final disposal:

- a. This is the action that ends the waste management hierarchy, although it is so often the one that's used on larger scale. We must however understand its key role in ensuring public health and its key role to establish the difference between landfill and dump.

Examples: almost all actions indicated in the previous case apply, with some particularities, emphasizing the differences between landfill and dump, including those related to the safety of waste disposal and to the advantages in biogas recovery and in slurry treatment (where available).

Implementation of separate solid waste collection

Before establishing strategies for separate solid waste collection, it must be clear if the starting point of the action is phase zero or if the action already develops at a further stage. The difference between these two approaches is the greater demand for knowledge in cases when the action is already in

course because in these situations the consumer has developed opinions on the subject, due to past information and experiences. When the action starts from zero, there's the advantage of novelty that usually gathers more attention on the subject, but, in this case, there's the need for more information.

It is essential to recognize limitations and seek contributions from various areas of knowledge. The goal of the whole action is to consider technical, logistical and communication issues, as well as those regarding education and culture. It is also worth mentioning that well developed communication actions adapted to target groups shall impact directly the behaviour of people who work every day in the industry. A situation in which the citizen is asked to separate his waste, but the employee of the entity responsible for the collection does not behave the same way, lessens the credibility of the action. Finally, we must bear in mind that communication works as a strategic ally of technical area. An action of this type demands collaborative work from both areas with closely aligned schedules and straight collaboration of technicians on both sides.

Whatever the format of selective collection model to be implemented (if only for packaging, organic, wet and dry), what follows below is the outline of a plan (or roadmap) of best practices in simplified form:

1. Target group definition

The goal of next phase is to define who will be the target group for the campaign - the conveyed message must vary according to the public to which it is aimed at, since the need for information varies greatly from group to group. A misdirected campaign runs the risk of not being seen at all or of being misunderstood.

To set the campaign target group, it is necessary to know and define the target groups of the organisation, both internal and external. After this mapping, actions and initiatives may be more properly directed and aimed at specific publics, saving resources and reducing error.

As an example, assuming our target is a school level campaign, we must take into account at least the following public: teachers; students; school officials; educational personnel; cleaning personnel. After this definition, different strategies of action may be designed, such as those indicated in the table below.

Too often, a communication campaign is aimed only at students and teachers, and this action does not get the expected result. It fails to inform schools as a whole of the proper framework, or sometimes it even fails to inform those responsible for the cleaning and disposal of containers about the logistics of separate collection.

7	TARGET GROUPS	EXAMPLES
	School's direction board	Institutional letter presenting the program; Posters and leaflets of the actions; Direct mail with a clear explanation text showing the benefits and gains for the participating school; Awareness raising actions concerning the advantages of the program; Interviews given to specific press media or to organs of social communication (regarding the participation gains and the results)
	Teachers	Guides and specific material supporting the issue; Web and otherwise available lists of learning resources; Manuals of practical content regarding recycling activities in the classroom (like programs, practical workshops, multimedia presentations, etc.); Set up of an email or phone number aimed to clarify doubts and answer complaints; Promote study visits to centers of disposal sorting; Awareness raising actions presented by technicians regarding various issues.
	Students	Distribution of learning oriented leaflets that may stimulate curiosity and promote family debates on the matter; Gifts and learning materials that may generate interest in the initiative; Stickers and objects indicating the method of waste separation, aimed specifically at each age group; Awareness raising actions also specific for each age group.
	Learning personnel Cleaning personnel	Distribution of learning oriented leaflets; Awareness raising actions informing the activities to be held in the school; Specific actions regarding the importance of giving the best destination to wastes; Lists of frequented asked questions and the respective answers concerning rules of waste separation (so they can correctly inform students).
	Parent/responsible	Homework activities to be afterward taken to school; Interviews with parents; Activities of selective collect that include that students take packages from home in order to participate; Carnival and fashion parades (parents must collaborate with students in such occasions).

2. Starting point — diagnosis

After deciding on the area where the selective collection will be implemented, it is necessary to consider which stage the selective collection in this specific area has reached. If it is at the zero point, full coordination between all actions and the technical area must be ensured. It is also important to establish the target public, the advantage of the novelty factor may be favorably used, and it is necessary to ensure credibility and coordination to the program.

When the action is aimed at a target public that already uses some model (formal or informal), it is necessary to get information on these systems of waste collection, taking into account the complaints and barriers to recycling, the knowledge and experience developed must be used, and the key messages focused on problem-solving must be determined. When the case is to improve the quality of the collected material or intervene in areas with poor performance, it is necessary to know in detail the waste collection system installed, analyse the complaints and problems identified, replicate the best examples, prepare selective messages and provide constant feedback mechanisms to the target public.

The diagnosis should strictly regard the facts concerning the reality of the moment for the target audience. If it is an organisation, consider the availability of human and material resources, constraints and limiting, dependence on third parties, if opportunities are at hand, among other key factors to the development of the action plan. External factors should also be taken into account, and are easily summarised in a so-called PESTEL analysis (political, economic, social, technological, environmental and legal). After this analysis of reality, whoever is responsible for the action should be able to list the strengths, weaknesses, threats and opportunities in a model called SWOT analysis.

The purpose of this diagnostic activity is to firstly define clearly where we are before tracing the route of where we want to go.

3. Setting realistic goals

It is essential to write the goals objectively. First, one should formulate the goal of an action, despite of greater or lesser amplitude as related to the ambition. To reach the goals, it is necessary to consider an educational methodology that envisages the transformation desired. The simpler and more quantified this formulation, the easier its implementation. This outline of goals must be as simple as the following examples:

- a. Implement collection of organic waste on site X, starting on day Y and with regular collection on day and time W and Z;
- b. Increase participation in the selective collection of dry waste from X% to Y%;
- c. Ensure regular answering to inquiries and complaints through the X contacts beginning on Y day.

Examples of vague formulations:

- a. It is intended to implement a selective collection system in the city;
- b. It is intended to ensure the collaboration of the entire population;
- c. It is intended to increase the selective collection of dry waste

These ill-defined goals are doomed to failure, because those who read them do not realize what has to be done and when, turning the program as vague as its goals.

Goals should follow the SMART methodology - Specific, Measurable, Achievable, Realistic, Time-bound, that is, to be specific, measurable, attainable, realistic and with a defined duration.

After setting the goals, it is also important to set the indicators, so that the actions can be correctly evaluated and performed the best way possible.

4. Position taking

Setting a position is also crucial - Are we innovators and leaders in the industry? Are we accessible and transparent to all the public? Is the focus in mass communication or is communication rather aimed at a very specific target group? Are we bold and implement the latest innovations at higher prices, or is our goal to implement a rather simple, cheap and effective action? The positioning of the promoter entity is essential for defining the action to be achieved, because it sets the values to be highlighted in the ongoing contacts with the target groups.

5. Creativity and good sense

Communication campaigns are, as a rule, initiatives that generate debate, discussion, hatred and love, as the individual taste varies. It is very easy to criticize, to point defects and to have a personal opinion that can destroy or emphasize a specific action. However, rather than let ourselves be carried away by the brilliance of creativity, we need to stay focused on the goals - it is pointless to select an ingenious creative idea if it does not comply with what has been set, just because it's an interesting idea or just because it pleases the chief. The communication professional has to know that creativity is an important factor for the success of any campaign, as well as common sense and objectivity.

Around the world, many were the concepts used in different places to persuade people to separate specific types of waste, and the main goal is to set a clever and very visible campaign. As a reference, we can consider the following factors when defining or evaluating a campaign proposal:

- a. The goal is to INFORM - information to be transmitted has to be presented and understood by target group. One important idea is how media may be used to convey the message. Also, we have to consider that, in this specific goal, our target group is mere receiver of information. In order to inform, we must think of ideas that speak for themselves and that make our target receive the most relevant information. Brochures full of important information, but very condensed, are a waste of resources - creativity is a key factor to ensure that the means of communication selected may attract attention and arise curiosity.
- b. The goal is to DEBATE – in order to fairly debate and discuss, one must firstly know. The promotion of debates, constructive public discussions, seminars, discussion groups, awareness-raising and study visits are exceptional ways to promote integration of audiences and raise awareness on environmental issues. These actions are memorable due to interaction with other participants, which stimulates thinking and civic participation. To better support these initiatives, a previous moment of clarification or information should be considered, so that at a later moment, word can be given to participant in order to make questions or express ideas. A campaign that has this claim should take into account: who the speakers / moderators are, which are the media supporting the initiative, what's the credibility of those who communicate, and how they use it.
- c. The goal is to INVOLVE - Any initiative with such goal aims at sending a message to target groups and make sure that they keep that experience in mind. Significant and rewarding events full of positive energy, events, parties, contests, prizes and creative gifts are examples of actions that have these features.

Campaigns are successful when they're able to increase recycling and recovery rates of given materials, thanks to the quantity or quality achieved. Also, the goals are accomplished when campaign can engage people and turn them into active agents of change, leading them to become motivators of good behaviour.

6. Action plan

The outlined campaign should consider the variety of communication strategies and choose those that best fit the goals and the target group. Despite all media deserve consideration, there will be

many cases in which only one media should be prioritised; and cases in which a campaign involving various media will be the most effective option.

The action plan can be structured in simpler actions, or in more complex ones, taking into account the following variables:

- a. Advertisement: image ads in the press or TV; ads in the radio; signaling; advertisement in newspapers or magazines designed to look like an article; production of graphic material (leaflets, brochures and others).
- b. Public relations: events organisation, workshops and professional meetings; professional contacts with chosen target groups; management of social networks and profiles of key people of the organisation; press conferences; and regular information to journalists.
- c. Sales power: the sales power does not only refer to a group of sellers, but also includes diffusion and distribution means of the product, service or idea. This variable also applies to the analysis agents, delegations, and telephone numbers set specially for the campaigns, customer care services, telephone operators, and communication representatives. In this specific case, it is important to consider a manual dedicated to the theme with the main questions and answers, so that monitors or anyone who come to interact with the public is able to know the basic information to answer on behalf of the organisation. Anyone who talk about recycling, must know how the process works in a given country, from collection to recovery; the rules of waste separation, including colors and types of recovery; this person must also know what products can be created out of which recycled products and give examples; know the contacts of all stakeholders in the process and basic information about where to complain or how to take part on specific actions that may be developed.
- d. Sponsorship and patronage: this topic assesses the ability to sponsor or be sponsored. According to the situation and the organisation, it may be interesting to sponsor events organised by recognised entities, events dedicated to the topic or which may contribute to increase in recycling by implementing good practices. If the situation demands the search for donations or sponsorship, a strategy to contact potential sponsors should be outlined, and the material that persuade them to support the cause must be worked out.
- e. Promotion: it is an attraction, which motivates our consumers to buy something, to act or to adopt a certain behaviour. Promotion deals are often quite attractive, and this field can use awards or recognition associated with good practices. It may be achieved by the allocation of domestic eco-points, vouchers and discounts, credits associated with the amount of well-separated waste or more or less elaborate schemes that increase the environmental, social or individual benefit.
- f. Merchandising: gifts and offers may create emotional ties, and are excellent to turn an idea or a feeling into something more tangible. Should this variable be used in a complementary way, it can be an excellent element of communication continuity, at home or in the workplace of the target group. Reusable bags, magnets containing the rules for recycling, or the telephone line to answer questions are just a few examples of merchandising adopted by entities that promote recycling among citizens.
- g. Direct marketing: surprising the target group with a unique action that comes to him by mail, email or in person can be a catalyst experience. This variable has special impact at the moment of launching a campaign; when the goal is to give prior knowledge to leading opinion groups about an idea that will be launched; and when sending special invitations.

- h. Internet: this is a new and unavoidable variable these days. Having a web page with interactive and multimedia content and an active participation in social networks is the most basic thing to be done in a world where this feature is increasingly popular.

The available budget is also a vital element. You need to know how to use the financial support available and how to conduct a detailed monitoring, in order to avoid unpleasant surprises or reallocation of costs

7. Monitoring and evaluation

No campaign is complete without a fair evaluation and monitoring system, so that you can somehow control what is going on, evaluate, and, if necessary, revise the action plan.

As far as communication effectiveness is concerned, it can be measured in several ways: through satisfaction surveys with the target group (which can be applied to all or a predefined sample, according to the number of people involved); online research, if the action operation is based on the Internet; audience studies (if the radio and television have been used); through the feedback request (in cases where interactivity is requested, the result thereof and the number of contacts are also good indicators); the number of adherents to initiatives promoted; the number of news on the subject that come out in various media; and most importantly, the results achieved and verified in recycling rates of the target materials. In this regard, if the message is not well-targeted to a specific material, the complexity of assessment increases - the broader the message, the harder it will be to evaluate its effectiveness.

The production of indicators is an active process that should be shared by all authors of a specific action. When the job is well defined from the beginning, it may develop in a database of valuable information about success and failure, in order to improve performance hereafter. Although there's a trend to associate a higher degree of success to those who invested more money in communication campaigns and vice versa, this isn't always the case. We may cite campaigns based on volunteer work that are able to recycle more material than expensive and poorly targeted campaigns.

After the processes of analysis and interpretation of the indicators gathered, it is very important to give feedback to people or organisations involved. If viable, feedback should also be given to the defined target public. Thus everyone will have the opportunity to improve in the future and share the success of the campaign. This procedure works to motivate all parties to continue with their work, spreading the good practices. It may also enhance people's perception of the organisation.

Importance of school community

Schools are the engine of education, a unique place where people go to learn and work concepts for considerable periods of time. These conditions turn the school into the ideal place to establish continuity programs extended to families. This concept is valid all around the globe, although there are significant differences in media organisations and access to knowledge worldwide.

Where the basic learning needs are secured and students have access to knowledge in a regular basis, the conditions to include environmental education in school curricula are present. Ideally, this inclusion should be ensured by national authorities responsible for education curriculum, but this is still not a reality in most countries. This issue is sometimes addressed by more responsive and dynamic teachers who seek to make a difference, often with small day-to-day gestures that inspire students.

If a given school practices separate collection, the conditions are created to implement a school program, which may involve the preparation of activities in various formats; acts of awareness-raising at school (for students, teachers and assistants); event celebration (such as World Environment Day, June 5th); construction of bring-it-yourself collection in the classrooms; selective collection contests

of packages; among many initiatives the imagination of children and young people can develop (they are very creative, once rightly stimulated). These simple activities may also be improved with outside school activities that promote contact and partnership between various entities and families, hoping that the behaviours worked out at schools are able to reach families, a situation which is a reality in many countries. It is common when children draw the attention of parents for not having placed certain waste in the correct container or for having thrown a cigarette butt on the floor. Our investments in children and young people are motivated by this kind of behaviour. It is a long-term investment but with the wish and hope that in the future, adults who recycle will be the majority of the population, and will also demonstrate more adequate environmental behaviour.

Communication role in solid waste plants

Raw material sent to solid waste treatment plants has already been a property of someone, who later discarded it. It has value by type of material. Thinking of communication strategies in these plants evokes an institutional component (as in all societies), but it also brings specific issues that deserve to be considered when leading a waste recovery plant or a landfill.

NIMBY – Not in My Backyard

The NIMBY (an acronym for "not in my backyard,") phenomenon is known as a popular reaction against the implementation of unwanted activities, and which applies to waste recovery plants, landfills and dumps.

Fear, based on previous negative experiences or horror things that happened elsewhere, can actually motivate less positive reactions, however not less important. These fears and concerns vary from case to case: increased air pollution; risk to public health; presence of unwished odors; risk of accidents and explosions; increasing traffic and with it, a drop in air quality; deterioration of road bringing risk of accidents; devaluation of the property; lack of cleanliness; increase of pests; contamination of wells, rivers and seas; among other concerns that can be listed in a specific way.

It must be considered that there are more or less favourable times for the beginning of the activities in these plants, and that, in fact, there are competing interests that enhance this effect, such as the proximity of an electoral year and local businesses supposedly threatened by this plant.

A warning should be reinforced - the tendency on the part of the organisations of the plants to associate the NIMBY to ignorant people or to motivation by other interests is a mistake. Another mistake is to call NIMBY a syndrome, as if it were a disease. The size of these reactions may be higher or lower, depending on the quality of the installed equipment, and according to the commitment devoted to communication with neighbors, local leaders, environmental organisations and stakeholders.

Implementing a waste recovery plant

Regardless the equipment to be used, it is essential to consider straight communication with all stakeholders since its inception. The key moments of action should be set. The identification of all stakeholders is the starting point of the whole process, followed by the usual steps: diagnosis, objectives, positioning, action plan, monitoring and evaluation.

What most immediately calls the attention is the lack of information. Some examples of possible answers to this issue follow: create a monitoring committee with local leaders in order to provide regular information on the construction and operation of the facility; promote visits to sites with similar equipment to come in contact with something similar to what is intended to be built; develop simple learning materials with details of the facility to be built and the underlying benefit provided by it; ensure the availability of environmental, social and economic information for constant

consultation; Highlight the job posts generation that the equipment will provide; Highlight the security issues as a way of demystifying fears; Implement social responsibility programs among the community's clubs and associations; Ensure that those who request information or send their complaints receive immediate and adequate answer; Invite local stakeholders to the opening of equipment or to relevant local events; promote the dissemination of information in local media.

Brand communication should not be overlooked. All the institutional image of the company should be expressed in its profile. Investing in logo design, create a website or standardize the company's communication is essential to ensure continuity and recognition of actions to be developed.

Crisis communication in waste management

Waste management sector workers occasionally have some awareness of the dangers and crises that they may be subject to, but this awareness is not always shared by all employees. The expectation that the crisis only happens to others and the vague hope that everything will work out fine leads often to the postponement of this critical issue. The problem is that crises occur, and often an event that was virtually controlled at early stages may assume devastating proportions if overlooked.

This approach has the objective to face communication of crisis. Each organisation will define its technical procedure set. Usually, technicians are so busy solving problems that they hardly focus on this part of the equation, which may increase the problem.

What is a communication crisis?

Crisis is a negative event that may potentially affect the reputation or credibility of an organisation.

All organisations have already faced a crisis or may face it at any time. It usually appears suddenly, causes hasty decisions, creates situations of uncertainty or panic, alternates between eminent control and uncontrolled situations, and generates much noise in communication. It usually starts in the private domain of the organisation, has public exhibition time, which might continue or not, according to responses given, but it remains in the organisation even after public domain is controlled.

Any crisis, even that exclusively in-house crisis, if not properly treated, may cause a dramatic impact on the organisation, affecting its profitability, reputation, or its ability to keep up with the operation. Crisis situations arise in two contexts: they may be predictable (more than 90% cases) or unpredictable. The sooner one identifies a virtual crises, the better one can determine actions and define the most suitable method for each situation. It would be desirable to write a complete crisis management manual, bringing the most effective responses to each situation listed, definition of responsibilities and procedures, organisation's spokespersons actions, and strategies for controlling damage.

Crisis types

There are several types of crisis which may affect the reputation of an organisation of the waste management sector, whatever its size. Some possible situations are: public accidents; judicial actions; actions of consumers; defect on product; resignation of executives; financial damages; fusions and acquisitions; sexual offences; allegations of crimes; crimes of corruption; violence in the workplace; shady relationship with government authorities; natural disasters; environmental problems; labor relations; changes to the shareholder structure; among many others.

The best guidance to prevent crisis is to be prepared, and what follows are samples of preparation for a communication crisis: having updated contact lists may facilitate and ensure fast contact with decision-makers; have a list of prepared answers made from broad and comprehensive base scenario;

big decisions must be pre-authorized, for they can trigger responses; at least two individuals must be designated for every major decision.

To make it simple, we may organize responses following these five steps:

1. Solve the problem that caused the crisis and stop production of victims (if any);
2. Assist victims and give support to the ones directly affected;
3. Communicate with employees;
4. Inform those who are indirectly affected (members, partners, distributors, agencies...);
5. Manage positively the "self-appointed" as involved ones (including the media, critics, non-governmental departments, competitors, etc.).

Assessment and Control

The assessment of activities is a very significant step to determine the most appropriate approach to correct decisions and to align planning continuously. Therefore, after setting goals, we must define the main indicators and subsequently assess and monitor the ongoing processes. Pre-defined indicators are a precious file in decision-making and the basis for future investments and more polemic decisions.

Waste management activity obtains most information from economic activity, but there are indicators that need to be built based on the knowledge of the sector. In the communication field, when promotion of an activity of selective collection is started, indicators are not easy to quantify. However, whenever possible, we recommend the following items, or a more specific agenda, that an organisation can institute.

8	INDICATOR	Description
	Recycling rates	Ciphers and charts must be defined previously to the beginning of the campaign in order to set a correlation with the developed actions. The more close the focus of a campaign, the more direct results will be achieved.
	Waste characterization campaign	For a more precise assessment of behaviour changes, a waste characterization campaign may turn out to be a trustful information source. It will inform us about what products people are actually disposing. This action may be realized in selective collection circuits or other relevant sites.
	Satisfaction surveys	Satisfaction surveys may be held with the target public of a given campaign (applied in its totality or in a pre-established representative sample). This surveys may have several formats and be held door-to-door, by phone, by mail or in chosen places, according to the campaign.
	Online satisfaction surveys and/or analysis of available data on web	There are several ways of developing internet based survey – the survey may be directly sent to the target public; may be available in the social networks; it may still collect statistical data already available in internet.
	Audiences	Some actions may be evaluated through audiences share especially if TV and radio are the main medias of the campaign. If it is necessary to choose a TV channel in which to announce, or if a specific TV program is desired to the soft sponsoring actions, one must have previous information about the shares of this specific program and evaluate the results.
	Volume of received answers	Some actions may be evaluated considering the responses given after a feedback has been asked. E.g. – the number of people that attended a particular event. Number of contacts to obtain a promised benefit; number of participations in a contest, etc.
	Volume of subscribers	When a private involvement is asked, the number of subscribers of a service or cause is a good indicator. E.g. – subscribing of petitions or of a given political movement.
	Volume and quality of news published	This evaluation may be done through a clipping service. With this evaluation in hands it is possible to know how many news have been published concerning a given issue; know if this news are negative, positive or neutral; locality and date of publishing; among other meaningful indicators for an evaluation about presence in social communication.
	Volume and types of information and complaint received	The register of the questions and complaints received, as well as the answers to these questions and complaints are precious and trustful information sources about the service to be evaluated.

Use of feedback as a management tool

Feedback is essential to ensure communication between the parties, to correct the route, to evaluate the work and performance, to engage, to include and to improve. Some alternative ways to promote feedback are the implementation of a system to receive, sort and respond appropriately to requests for information and complaints; reactions to campaigns by the audiences and the media; participation in public sessions; in-person meetings.

As an example, one way of ensuring a better relationship with the claimants of an installation is to invite them to visit the facility and to discuss with them the problems experienced in a previously arranged session that anticipate the problems and possible solutions. Thus, it works to involve these participants in a feedback program in which they are able to send information whenever there is reason to complain, as well as receive information about what is happening. In a more mature relationship it is possible to anticipate the occurrence of a problem (a scheduled maintenance that

may indicate the presence of bad odours, uncommon noise, less frequency of collection due to strike, etc.). This issue is communicated in advance and thus, these claimants become spreaders of official information. The recognition of the importance of these issues brings advantages, if ignored these issues may foster potential crisis.

Conclusions and recommendations

The research, analysis and evaluation work starting from the information received have proved fruitful and, in the specific case of the city of São Paulo, it allowed to draw some conclusions and suggest some recommendations. These recommendations to the City Hall are suggestions of possible ways to deal with issues — the next step is to ensure that the work become more productive, and that the city's communication challenges may achieve the desired solution.

9	NECESSARY IMPROVEMENT	RECOMMENDATIONS
	Environment communication hasn't got self coordination, and leadership is diffuse. Interlocutors agree that the communication project needs leadership. The environment communication projects is evident.	Form a team of multifunctional coordination, autonomic and able to deal with communication projects. This team demands motivation and resilience to embrace a project in which partnership, alliances, search for consensus and strong interest conciliation moves.
	Existing campaigns failed to implement proper communication and coordination of technical services, including direct services of management of solid waste. Major responsibility and interest in promoting good environmental practices falls over people who only become aware of campaigns when they are communicated to the public.	Implement an internal communication plan and involve employees who must follow up initiatives and put them into practice. These ambassadors of institutions are often the most visible contact with the citizen, and must be informed in order to inform correctly.
	Companies dedicated to environmental communication have many flaws in managing their waste. They are not an example of the good practices they promote (with rare exceptions).	Implement internal communication campaigns in each organisation that are promoting environmentally friendly behaviour, so that the organisation can be recognised as an example for citizens.
	Human and financial resources are insufficient. Although recent campaigns have presented high investment in outsourcing, coordination is inadequate and poorly organized.	Implement a strategic environmental communication plan that clearly expresses the demand for human infrastructure necessary for the development of activities, as well as financial and logistical resources necessary for this accomplishment.
	Past communication actions used to be spaced in time and had no relation to each other, leading to waste of resources and synergies. Absence of indicators and evaluation stops them from adjusting or learning from practice.	Set a schedule of actions, with specific goals; include monitoring strategies and moments for evaluation, enabling necessary adjustment; obtain as much information as possible to inform the public.

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Attachments

SUMMARY INFORMATION

NEIGHBORHOOD	POPULATION 2012	POPULATION 2030	SCHOOLS	STUDENTS	HORECA	STREET MARKETS	COMMUNITY ASSOCIATION	NGO	CONDOS	PLACES OF WORSHIP	PUBLIC EQUIPMENT	COMPANIES	MEDIA	TOTAL
NORTHWEST														
Butatã	428 217	512 806	-	-	Hotels: 410	35	-	-	741	5105	-	-	-	-
Casa Verde	309 376	274 230	-	-	Hostels: 62	29	-	-	-	-	-	-	-	-
Freguesia do Ó	407 245	400 525	-	-	Restaurants: 12.500	26	-	-	-	-	-	-	-	-
Jacanã/Tremembé	291 867	350 884	-	-	Bars: 15.000	15	-	-	295	-	-	-	-	-
Lapa	305 526	367 035	-	-	-	25	-	-	291	-	-	-	-	-
Mooca	343 980	395 105	-	-	-	46	-	-	-	-	-	-	-	-
Penha	474 659	429 917	-	-	-	53	-	-	1352	-	-	-	-	-
Perus	146 046	269 279	-	-	-	10	-	-	-	-	-	-	-	-
Pinheiros	289 743	299 704	-	-	-	24	-	-	-	-	-	-	-	-
Pirituba	437 592	517 242	-	-	-	37	-	-	-	-	-	-	-	-
Santana/Tucuruvi	324 815	291 945	-	-	-	31	-	-	-	-	-	-	-	-
Sé	431 106	526 086	-	-	-	30	-	-	-	-	-	-	-	-
Vila Maria/Vila Guilherme	297 713	261 333	-	-	-	30	-	-	-	-	-	-	-	-
NORTHWEST TOTAL	4 487 885	4 896 091				391								
SOUTHEAST														
Aricanduva/Formosa	267 702	246 298	-	-	-	28	-	-	-	-	-	-	-	-
Campo Limpo	607 105	880 436	-	-	-	25	-	-	-	-	-	-	-	-
Capela do Socorro	594 930	603 114	-	-	-	35	-	-	-	-	-	-	-	-
Cidade Ademar	410 998	458 725	-	-	-	17	-	-	-	-	-	-	-	-
Cidade Tiradentes	211 501	236 272	-	-	-	15	-	-	-	-	-	-	-	-
Ermelino Matarazzo	207 509	194 699	-	-	-	15	-	-	-	-	-	-	-	-
Guaianases	268 508	267 507	-	-	-	19	-	-	-	-	-	-	-	-
Ipiranga	463 804	491 641	-	-	-	45	-	-	-	-	-	-	-	-
Itaim Paulista	373 127	365 775	-	-	-	26	-	-	-	-	-	-	-	-
Itaquera	523 848	548 869	-	-	-	47	-	-	-	-	-	-	-	-
Jabaquara	223 780	221 938	-	-	-	16	-	-	-	-	-	-	-	-
M'Boi Mirim	563 305	692 474	-	-	-	22	-	-	-	-	-	-	-	-
Parelheiros	139 441	201 025	-	-	-	8	-	-	-	-	-	-	-	-
Santo Amaro	238 025	259 935	-	-	-	26	-	-	-	-	-	-	-	-
São Mateus	426 764	496 891	-	-	-	36	-	-	-	-	-	-	-	-
São Miguel	369 496	320 279	-	-	-	29	-	-	-	-	-	-	-	-
Vila Mariana	344 632	381 010	-	-	-	37	-	-	-	-	-	-	-	-
Vila Prudente	531 113	495 989	-	-	-	42	-	-	-	-	-	-	-	-
SOUTHEAST TOTAL	6 765 588	7 362 877				488								
TOTAL	11 253 47	12 258 968				879		2 051						

SCHOOLS

NEIGHBORHOOD	SCHOOLS	CHILDREN EDUCATION	PRIMARY SCHOOL FIRST CYCLE	PRIMARY SCHOOL SECOND CYCLE	SECONDARY SCHOOL	GRADUATE SCHOOL	TOTAL
NORTHWEST							
Butatã	-	122	110	94	59		385
Casa Verde	-	64	74	66	42		246
Freguesia do Ó	-	84	95	86	50		315
Jacaná/Tremembé	-	48	54	46	22		170
Lapa	-	103	77	59	48		287
Mooca	-	121	97	85	70		373
Penha	-	131	111	104	69		415
Perus	-	24	38	32	15		109
Pinheiros	-	90	59	47	42		238
Pirituba	-	95	120	96	50		361
Santana/Tucuruvi	-	115	104	83	61		363
Sé	-	97	73	62	56		288
Vila Maria/Vila Guilherme	-	72	75	64	42		253
NORTHWEST TOTAL		1 166	1 087	924	626		3 803
SOUTHEAST							
Aricanduva/Formosa	-	86	69	55	38		248
Campo Limpo	-	119	141	112	59		431
Capela do Socorro	-	110	125	116	73		424
Cidade Ademar	-	62	64	58	32		216
Cidade Tiradentes	-	32	40	38	17		127
Ermelino Matarazzo	-	52	46	39	24		161
Guaianases	-	47	42	39	27		155
Ipiranga	-	131	112	86	51		380
Itaim Paulista	-	66	74	69	42		251
Itaquera	-	89	98	87	53		327
Jabaquara	-	55	44	34	21		154
M'Boi Mirim	-	105	128	103	58		394
Parelheiros	-	17	29	28	21		95
Santo Amaro	-	96	74	65	43		278
São Mateus	-	65	88	83	47		283
São Miguel	-	64	87	76	47		274
Vila Mariana	-	128	93	71	50		342
Vila Prudente	-	57	56	45	26		184
SOUTHEAST TOTAL		1 381	1 410	1 204	729		4 724
TOTAL		2 547	2 497	2 128	1 355	146	8 673

STUDENTS

NEIGHBORHOOD	STUDENTS	CHILDREN EDUCATION	PRIMARY SCHOOL FIRST CYCLE	PRIMARY SCHOOL SECOND CYCLE	SECONDARY SCHOOL	GRADUATE SCHOOL	TOTAL
NORTHWEST							
Butatã	-	11 572	29 466	23 505	15 701	-	80 244
Casa Verde	-	6 478	21 245	18 228	14 441	-	60 392
Freguesia do Ó	-	12 851	32 792	25 833	20 057	-	91 533
Jacaná/Tremembé	-	6 917	18 240	15 009	8 542	-	48 708
Lapa	-	6 256	15 583	12 613	12 750	-	47 202
Mooca	-	8 740	23 138	20 523	22 540	-	74 941
Penha	-	11 274	32 771	28 502	27 310	-	99 857
Perus	-	4 366	12 571	10 128	7 515	-	34 580
Pinheiros	-	5 737	13 399	10 716	9 414	-	39 266
Pirituba	-	11 411	33 123	28 174	20 691	-	93 399
Santana/Tucuruvi	-	8 047	21 670	17 574	18 725	-	66 016
Sé	-	6 521	17 617	14 553	14 103	-	52 794
Vila Maria/Vila Guilherme	-	7 621	19 518	15 651	12 120	-	54 910
NORTHWEST TOTAL		107 791	291 133	241 009	203 909		843 842
SOUTHEAST							
Aricanduva/Formosa	-	6 128	16 697	5 689	10 798	-	39 312
Campo Limpo	-	17 725	52 447	40 708	28 197	-	139 077
Capela do Socorro	-	16 816	50 862	43 033	34 189	-	144 900
Cidade Ademar	-	8 262	28 968	22 798	15 641	-	75 669
Cidade Tiradentes	-	7 808	18 733	14 369	10 403	-	51 313
Ermelino Matarazzo	-	5 262	13 936	11 609	8 544	-	39 351
Guaianases	-	8 144	20 257	15 655	12 131	-	56 187
Ipiranga	-	10 690	28 085	22 151	17 669	-	78 595
Itaim Paulista	-	11 752	31 243	26 440	19 458	-	88 893
Itaquera	-	13 103	37 711	30 420	22 397	-	103 631
Jabaquara	-	5 525	12 901	10 365	8 079	-	36 870
M'Boi Mirim	-	14 429	45 764	39 257	29 287	-	128 737
Parelheiros	-	4 119	13 459	11 346	9 090	-	380 114
Santo Amaro	-	5 971	16 258	13 897	13 419	-	49 545
São Mateus	-	13 514	37 016	30 898	23 763	-	105 191
São Miguel	-	10 585	30 924	25 617	22 587	-	89 713
Vila Mariana	-	7 120	16 812	14 305	14 749	-	52 986
Vila Prudente	-	5 008	13 421	11 191	8 996	-	38 616
SOUTHEAST TOTAL		171 961	485 494	389 748	309 397		1 698 700
TOTAL		279 752	776 627	630 757	513 306	674 787	3 217 32

STRATEGIC ENVIRONMENTAL COMMUNICATION

CITY OF SÃO PAULO

PUBLIC EQUIPMENT

NEIGHBORHOOD	LIBRARY	CULTURE	SPORTS	HEALTH	PARKS
NORTHWEST					
Butatã	-	-	-	26	9
Casa Verde	-	-	-	23	
Freguesia do Ó	-	-	-	35	1
Jacanã/Tremembé	-	-	-	17	1
Lapa	-	-	-	27	4
Mooca	-	-	-	27	2
Penha	-	-	-	38	2
Perus	-	-	-	16	1
Pinheiros	-	-	-	9	4
Pirituba	-	-	-	38	8
Santana/Tucuruvi	-	-	-	21	1
Sé	-	-	-	29	3
Vila Maria/Vila Guilherme	-	-	-	23	3
TOTAL NOROESTE				306	39
SOUTHEAST					
Aricanduva/Formosa	-	-	-	15	4
Campo Limpo	-	-	-	45	4
Capela do Socorro	-	-	-	33	14
Cidade Ademar	-	-	-	34	1
Cidade Tiradentes	-	-	-	21	3
Ermelino Matarazzo	-	-	-	26	2
Guaianases	-	-	-	25	2
Ipiranga	-	-	-	37	1
Itaim Paulista	-	-	-	29	8
Itaquera	-	-	-	47	5
Jabaquara	-	-	-	20	2
M'Boi Mirim	-	-	-	52	4
Parelheiros	-	-	-	25	4
Santo Amaro	-	-	-	18	3
São Mateus	-	-	-	37	
São Miguel	-	-	-	31	2
Vila Mariana	-	-	-	15	2
Vila Prudente	-	-	-	18	3
SOUTHEAST TOTAL				528	64
TOTAL	10	200	286	834	103