

The George Washington University  
IBI - The Institute of Brazilian Business and Management Issues

**MARKETING AND CONSERVATION PROGRAMS OF BRAZILIAN ELECTRIC  
POWER: THE IMPORTANCE OF PROCEL (THE NATIONAL PROGRAM FOR  
ELECTRICITY CONSERVATION)**

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## **Presentation**

The invention of the incandescent lamp to these days many things have changed and today we can not imagine a world without light, it means, without one of their main sources of energy, which enables the use of a series of features that are part of everyday life: electrical energy. Responsible for a real revolution both in use as in manufacturing, the indiscriminate consumption of energy, also caused a great waste, which caused a crisis of supply in several countries with a risk of blackout, or "the world of darkness."

Brazil, with its increasing industrialization and one of the highest population on the planet is one of the countries that use electricity on a large scale, but also parallel to the use of programs that need to rationalize the consumption of energy in order to avoid waste while not impacting the country's productive capacity.

The present work is to a study on PROCEL (**THE NATIONAL PROGRAM FOR ELECTRICITY CONSERVATION**): a program created by the Brazilian federal government with the primary goal of avoiding the waste of electricity and its marketing strategies to raise awareness of the importance of the program.

## **1. Introduction**

Brazil, as well as Latin America as a whole went through a period of rapid industrial expansion after the war, demanding a thorough restructuring of its energy sector. The crisis of the eighties had implications on various dimensions of this restructuring. In this sense, it was necessary to create programs with the aim of conserving the various energy sources.

According to Bell and Pavitt (1992), the importance of conservation, or more strictly rational use of energy is linked to the savings in investments to expand and improve global economic efficiency. There is empirical evidence that efficient companies are also efficient in terms of energy consumption.

However, it does not make sense to conserve energy if there is potential for major improvements in overall efficiency, linked to a correct appreciation of the efficient use of energy, including the co-generation and waste combat. (Oliveira et al., 1995, Araujo et al., 1993, 1994, 1995)

In Brazil, was released in 1981, the Conservation Program of the Industrial Sector (CONSERVE), which was the first national program for conservation of energy. The CONSERVE was active in two areas: industrial and technological developments.

In 1985 it launched the National Program for Electricity Conservation (PROCEL), the first systematic attempt to focus on energy efficiency in Brazil.

The Brazilian power system experienced its major supply crisis in 2001 and 2002. As a result, the country was forced to implement an aggressive energy rationing plan from June 2001 through February 2002. Rationing encompassed the most important areas in the country, corresponding to about 80 percent of its population, GDP, and electricity consumption. Twenty two out of the 27 states of the Federation were subject to some degree of rationing. Aggregate consumption was reduced by almost 20 percent from the previous year's levels, and, more importantly, the system was able to overcome this long period without blackouts and brownouts.

Because of disruption caused by the crisis of energy supply are issues of discussion in all of Brazilian society. PROCEL played a key role during the crisis. Not on the conservation program itself, but it provided valuable information to customers on how to choose appliances. Interestingly enough, after the crisis, people started looking at the labels (seal), something they did barely paid attention before. Having PROCEL in place was of great value.

However, in order that PROCEL meet the goals it sets itself requires that the society knows the program, its meaning and importance to both the individual and for the whole country. In this sense, marketing has an important role, because through its tools, can identify the needs and wishes of citizens and devise strategies that meet these assumptions so that both consumers and organizations to get satisfactory results.

## **2. Methodology and rationale**

This chapter describes how well designed, methodologically this study.

### **2.1. Type of research**

The purpose of this research is to test the effectiveness of marketing strategy to target different socio - economic groups of consumers in metropolitan residences in Rio de Janeiro.

PROCEL is a federal program aimed at combating waste and conservation of electricity, through the promotion of energy efficiency, a significant condition for the development of the country. To cope with this task, the managers of the Program implemented a series of actions to raise awareness of the importance of its purposes.

The marketing aims to meet social demands efficiently and effectively, seeking to target both manufacturers of industrial products, such as service providers to understand customer needs and desires. For this, marketers use tools that help organizations to perform their tasks in the best possible way, always having the satisfaction of the customer / consumer / user as a target.

Programs utility as PROCEL also uses marketing to achieve its goals and objectives. In this sense, is significant concern about describing how the program makes use of marketing to suit

their purposes and to identify how the strategies used have achieved the expected results. How PROCEL implements a variety of actions, monitoring and control of these actions is extremely complex. Therefore, studies like this are important because they help managers to program settings and the appropriateness of marketing tools at the present moment and the changes occurring in society.

According to Henriques Simões (2004:42), "in the context of scientific methodology" can be seen that the method can be viewed as a set of rules used to try to solve a problem. However, the authors warn that for the same phenomenon or problem, students may try to solve it using a number of hypotheses and theories and show the importance of the domain of scientific method, because "in science, the method should consist of general rules," which will guide the selection of the best hypothesis and critical theory more suitable for solving the research problem.

Roesch (1996:98) endorses the argument of these authors, and states that "defining a methodology involves conducting a choice of how it intends to investigate the reality. The method is not only the instrument of data collection or analysis, but is much more comprehensive. "

In this sense, it was in this work using the taxonomy proposed by Vergara (1997:44-45), according to which scientific research can be delineated as to the purposes and the means.

Following the guidance of the author, this work can be defined as to its purpose as a descriptive, because "exposes certain features of a particular phenomenon" (Vergara, 1997:44). As for the means, the research can be classified as documentary literature and is also a case study.

In this work a research was conducted, where information and facts were obtained through bibliographic and documentary survey, which not only referenced theoretically work as a data source for analysis of marketing strategies of PROCEL. To obtain such information, data were also collected in studies and internal documents of Eletrobras. In addition, we performed a field survey in the metropolitan region of Rio de Janeiro to enrich the analysis and spot opportunities unexplored.

To Mattar (1994), the case study is a thorough study, but not broad, through which they seek to know only one or a few elements of the population on a large number of aspects of the object of study and their interrelationships. For this paper, was chosen intentionally, just a government program: PROCEL, justifying the method chosen for the case study.

## **2.2. Universe and Sample**

It is understood by the universe or population, according to Lakatos (1990), the set of animate or inanimate that has at least one characteristic in common. Since the sample is defined as a portion or selected portion of the universe, in order to study a phenomenon studied.

The universe of this research consisted of all citizens who use the electricity for domestic use.

Since the universe is vast, it was chosen to select the target population for this research: users of electricity for households living in the city of Rio de Janeiro. The choice was made taking as parameters the following points:

- \* The city is located in southeast Brazil, which accounts for the highest consumption of electricity in the country.
- \* It has a population with good education levels and access to information, with headquarters PROCEL and ELETROBRAS.

To delimit the sample was used for the non probabilistic traffic. In this type of sample, according to Mattar (1996:134), the respondents are chosen randomly in places where they commonly go.

To perform the field survey, 200 questionnaires were applied, however, for the purpose of this study was abolished only 172, 28 were discarded due to confusing and inconsistent information.

## **2.3. Instrument of data collection**

To achieve the proposed objectives were used to collect data, the following instruments:

- Publications and documents

- Semi-structured interviews with vendors and managers at stores that sell home appliances
- 200 questionnaires were applied consisting of closed questions, in the City of Rio de Janeiro. Site selection was very heterogeneous and the extent of the search, which allowed the realization of the same locations, days and different time for which no probability samples, transit, have accuracy and credibility.

### **3. BRIEF HISTORY OF BRAZILIAN ELECTRIC SECTOR**

#### **3.1. Overview**

In Brazil, the first experiments with electricity service dating from the late nineteenth century, the same time that the United States and other developed countries of Europe began to explore this service. Despite Brazil's pioneering and most advanced countries, the experiments were aimed mainly for public lighting.

By the time the technological development in the electricity supply began in the country, the existing hydraulic potential had not yet evaluated compared to other energy sources, like coal, much used in European countries for thermal generation. (Pereira, 2004:472).

At that time, national development was still tied to monoculture agro-export, so technology investments remained in the background. Indeed, the pioneer of providing electric power with proprietary technology was aborted by a weak economy and technologically dependent upon other countries. Thus, Brazil was giving way slowly to the place of foreign capital companies.

Due to the global crisis that peaked with the "crack" of the New York Stock Exchange in 1929, Brazilian coffee prices experienced a sharp drop and the mechanism used by the government to help balance trade was the exchange rate depreciation. The immediate result was the increasing price of imported products and the diversion of capital into the domestic market.

The increasing industrialization of the country and the growth of cities and the use of appliances caused the first crisis in the energy sector. These crises have begun to be felt from the Second World War, with blackouts and consequent power rationing. It was in the post-war that the federal government in Brazil has decided to deploy a network of basic infrastructure to attract investment, both internal and external, and thus promote the acceleration of economic development. Then there was the need for structuring the electricity sector. (Palm and Tenorio, 2002:34).

To overcome the crises the consumption was limited. This measure has led to demand the expansion of the national generating, by the concessionaires. For this, the Brazilian government has proposed to Congress the adoption of the Plan for Rural Electrification and creating the Brazilian Electric Power Company (Eletrobras), which would be used to plan and coordinate the policy of national power.

But the authorization for the creation of Eletrobras only occurred in 1962. Operating since the beginning of its establishment in 1963 as the company and federal sector holding company, Eletrobras is a mixed capital company that coordinates, plans, oversees and funds the expansion, operation, transmission and distribution of electric energy in Brazil, through its subsidiaries.

Santos e Silva (2005) explain the functioning of the national electric system, characterized by a strong predominance of hydroelectric plants (95%), supplemented by power plants, as well as its landmarks. According to the authors' thanks to the diffusion of objects and ways of doing similar, it becomes possible to communicate through the lines of interfaces and conversion stations. They constitute, therefore, two major subsystems within the national territory: the North-East and South / Southeast / Midwest. The first began with Paulo Afonso plant in 1955, reaching Salvador, Recife and Fortaleza in 1966. In 1981 comes into operation transmission line linking "Sobradinho", "Imperatriz", "Tucuruí", "Vila do Conde" and "Belém", and in 1984, Tucuruí plant starts operating . The second subsystem, denser one, has been linked since 1963, with the plant of Furnas in Rio Grande and the interconnection of Rio de Janeiro, Sao Paulo and Minas Gerais (Santos and Silveira, 2005:69).

Peiter (1994:139) complements the information of the previously mentioned authors, explaining that even in a system whose logic integration, a country of continental dimensions like Brazil, there are still some isolated systems that provide electricity to about 310 locations, Northern area and in “Mato Grosso”. Small hydroelectric plants supply the isolated systems of “Porto Velho” and “Manaus”. Most of the generation in those places is provided by diesel and fuel oil thermoelectric plants, being responsible for meeting the other demands of the region. However, all these systems are under control and supervision of Eletrobras.

### **3.2. The crisis of supply**

The year 2001 was marked by power rationing in the country. The Federal Government, through Cardoso (2001), implemented an emergency program to reduce energy consumption in order to avoid a collapse in the economy. For the nine months between June 2001 and February 2002, all sectors of Brazilian society were forced to curb consumption. According to research by the National Federation of Urban (2001), the crisis hit the Southeast, Northeast and Center-West interconnected system of the country and was caused primarily by two factors:

- Low level of hydroelectric reservoirs in the regions affected;
- Significant growth of the electricity market.

Another factor that contributed significantly to the supply crisis was the energy policy of the federal government prevailing in the 90's, which had privatization as logic, so that changes in the industry were made.

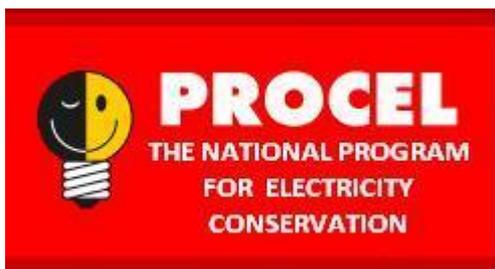
The reduction in energy supply and sales has resulted in immediate loss of utilities. The electric utilities fell in billings during the eight months of intervention because of reduced energy consumption. (Abdo, 2002).

However, not always the reduction of energy supply and consumption are sufficient to prevent crises of energy supply. More effective solutions can be implemented concurrently with the return of investments in the sector. Among these solutions, we highlight the fight against waste, a less traumatic to "save" energy, but that requires broad support from society.

On December 30, 1985 it was launched the National Program for Electricity Conservation (PROCEL). The next topic works more specifically this program, motivation of this work.

#### **4. PROCEL - THE NATIONAL PROGRAM FOR ELECTRICITY CONSERVATION**

##### **4.1. What is “PROCEL”?**



Logo withdraw of Procel site – [www.eletrabras.com/procel](http://www.eletrabras.com/procel)

Tackling waste is the cheaper and cleaner source of production that exists as it does not harm the environment. It is important to understand the concept of fighting waste associated with the idea of conservation. Combat waste means improving the way we use energy without sacrificing comfort and the advantages it provides. In summary: reduce consumption, reducing costs, without losing at any time, efficiency and quality of services.

PROCEL was established in December 1985 and deployed the following year by the Ministry of Mines and Energy for Industry and Commerce, and managed by an Executive Secretariat Subordinate Eletrobras. On July 18, 1991, PROCEL was transformed into a Government program, and expanded its scope and responsibilities. The National Program for Electricity Conservation uses Eletrobras resources and the Global Reversion Reserve (RGR), federal fund set up with funding from dealerships, commensurate with the investment of each one. It also uses features of international entities.

These are some companies and institutions contributing to the already vigorously encouraging the streamlining and optimization of energy use: Bank of Brazil, Santander Bank, energy Dealers (Through Legislation ANEEL), Blue Moon found, CTNERG (Administered by FINEP), IEA Technology Cooperation Program among others.

## 4.2. Goals of “Procel”

PROCEL main objectives in accordance with its guidelines reduce wastage of electricity in the country and pursue energy efficiency in the electricity sector, which aim to achieve four main purposes: technology development, energy security, economic efficiency and environmental protection.

The search for energy efficiency through technological development, involves scientific research, laboratories and training of technicians, to improve the quality of life. Energy security aims at ensuring in energy quantity and time needed. Economic efficiency means producing and distributing goods and services the economy with the best possible use of inputs needed for production and distribution of products. Energy is one of the basic inputs of economic activities, so economic efficiency is the energy. Since environmental protection emerges as a goal and concern in ensuring the quality of life for this and future generations.

PROCEL sets reduction targets for energy conservation are considered in the planning of the electricity sector, measuring the needs of expanding energy supply and transmission. Among these are:

- Reduction in technical losses of the utilities;
- Streamlining the use of electricity;
- Increased energy efficiency in electrical appliances.

With the adoption of the PROCEL Seal to energy-efficient appliances, we expect an average increase of 10% performance of the equipment to participate in the program.

### 4.3. AREAS OF PROCEL

In the brochure for internal distribution of Eletrobras - PROCEL, we can view the various areas of operation of the program:



#### 4.3.1. Main highlights

##### 4.3.1.1 Education

PROCEL AT SCHOOL is an interdisciplinary project ELETROBRAS / PROCEL and electric utilities in the country, and works in education, in the environment subject, and involves teachers from all disciplines in schools.

PROCEL at technical school offers the course "Environment and Energy Waste" for high-school students in the areas of electrical engineering, electronics, mechanical and civil. The course relates the waste of energy and environmental issues with regard to didactic material in text form, so that there is a change of attitudes that lead to wasted electricity, giving students the issues related to combating waste energy.

PROCEL in schools in 2007/2008 reached about 2.2 million students, providing a total savings of energy KWH / year of 330,000,000.

#### **4.3.1.2 Environment.**

PROCEL performs a powerful role in environmental protection in Brazil. The energy efficiency programs of PROCEL allow meeting the growing electricity demand without which the offer is extended proportionately.

In a consumer society that demands more and more comfort, power generation, transmission, distribution and use of energy can cause negative impacts to the environment.

Energy production necessarily involves the exploitation of natural resources and emission of wastes into the environment. The wastes from industrial and agricultural activities are discharged into soil, water and air, changing the landscape and climate, affecting ecosystems, fauna and flora.

The higher is level of economic activity, greater use of energy and greater ambient impacts of this use. Thus, energy efficiency can bring many benefits, including:

- Increasing security of energy supply;
- Contribute to improving economic efficiency and environmental protection.
- Reduction of environmental impacts, to ensure the quality of life of present and future generations.

These benefits imply the reduction required per unit of economic output, increasing the efficiency of the economy and ensuring that such production can be achieved with less energy and therefore with less use of natural resources and less environmental harm.

The waste combat of the electric energy, a benefit to society and the environment, brings benefits the consumer.

#### **4.3.1.3 Marketing**

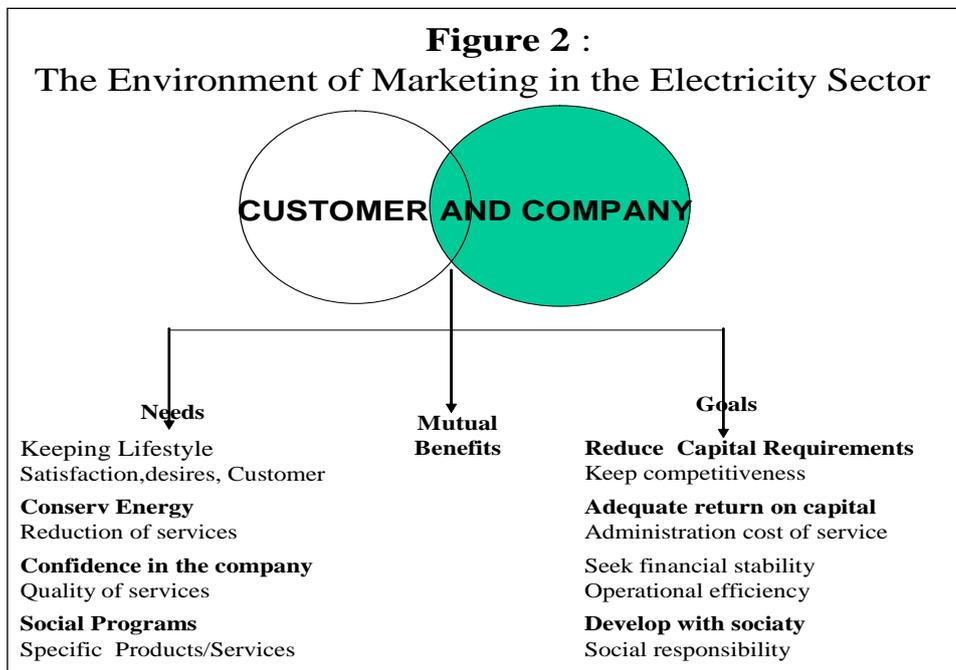
Actions and projects inspired in this premise open a market for new services and products to more energetically efficiency. The consumer involvement in this matter is essential to increase

the market potential of energy-efficient products. By raising awareness of the problem, benefits of combating the waste of electricity, purchases efficient equipment and projects are adopted which have energy efficiency as a philosophy.

This role of marketing in the electricity sector supports the idea of Kotler (1998) where an organization must consider their actions with the whole society.

However, to achieve the objectives proposed by the Societal Marketing, healthcare professionals should be aware of the complexity that involves the establishment of sidewalks in the care stock market through the activities of the marketing mix, especially since the electricity sector has an enormous diversity of performances.

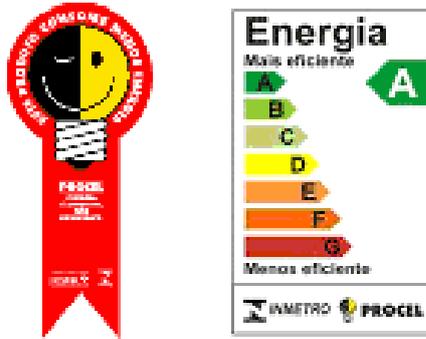
The concept of how the company and customers interact can be characterized in a "Marketing Environment", which seeks mutual benefit, as showed in Figure 2, which represents the marketing environment in the electricity sector:



Source: Marketing Power Sector 2000/2010 - Rel 197, ex. 2, PROCEL.

## 5. THE ACTIONS OF THE MARKETING PROCEL

To accelerate the involvement of consumers in this process, PROCEL created a brand to symbolize the fight against waste of electricity and to act as an "umbrella brand" for all projects and actions that have this purpose.



PROCEL Seal Energy Saving / Efficiency Label INMETRO (National Institute of Metrology, Standardization and Industrial Quality)

Source: Catalogue PROCEL

According to Ikeda (1995), in this way, aims to make "energy saving" an important attribute capable of influencing the consumer's decision, both as an individual, business or public decision on the choice of products or services.

An important strategy that has been adopted is developed for each specific audience (Industrial, commercial, utilities, etc.), a communication approach, in addition to generic approaches such as advertising, in order to promote actions and strengthen the brand of PROCEL as well as expand the prize and the PROCEL seal for new categories and equipment.

Most of the actions of the marketing area are essentially qualitative character which makes a quantification of results in terms of energy savings and demand reduction.

### 5.1 THE RESULTS OF MARKETING ACTIONS OF PROCEL

According to the evaluation report of the results of PROCEL, prepared by ELETROBRAS SA through the Directorate of Special Projects, Department of Planning and Studies in Energy

Conservation - DPS, the work to disseminate the principles of conservation and use of energy has been conducted through three strands:

- Award and PROCEL Seal.
- Customer service (website, call center and "contact us")
- Participation in events and media placement of information on energy efficiency, such as tips for reducing consumption and utilization of electricity.

The results of these actions are described below.

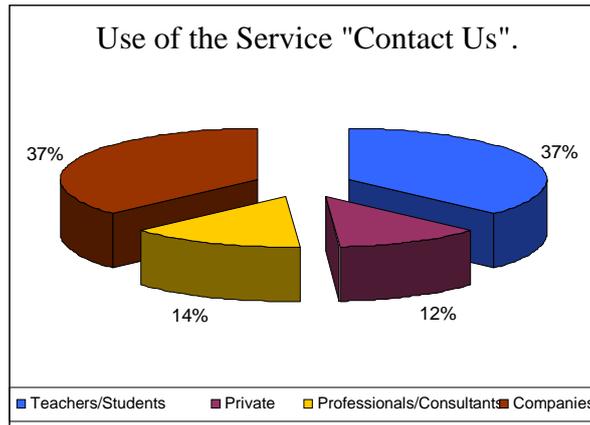
#### **5.1.1. Award and PROCEL Seal**

According to the report of assessment results, the area of marketing and events develop actions aimed at augmenting the role of PROCEL along with various audiences and partners, and strengthen the brand PROCEL market through two basic instruments: the PROCEL Seal and PROCEL award.

#### **5.1.2 Customer Service (website, call center and "contact us")**

The service "Contact Us" received an average of 180 emails per month, concentrated primarily at the request of didactic material (books, CDs, technical guides, manuals, etc.) and information search techniques.

Among the emails received we can highlight the users who basically comprises the academic and business, as shown in the chart below.



Source: Prepared by PROCEL from a sample of emails received

### **5.1.3. Participation in events and media placement of information on energy efficiency, such as tips for reducing consumption and utilization of electricity.**

Responsible for brand awareness seminars, fairs, conferences and other events related to energy, ELETROBRAS enters into service in the stands or its subsidiaries and affiliates, distributing specific materials such as brochures with tips on saving on energy consumption and gadgets branded PROCEL (Locksmiths, T-shirts, caps, bags and others).

## **6. Field Research**

The purpose of fieldwork is to expand the scope of the study, making a connection between the theoretical concepts described in this work and the actions of the Program. For this, we conducted a field survey in the metropolitan region of Rio de Janeiro. The aim is to research, and define whether the actions taken by PROCEL are perceived by electricity consumers.

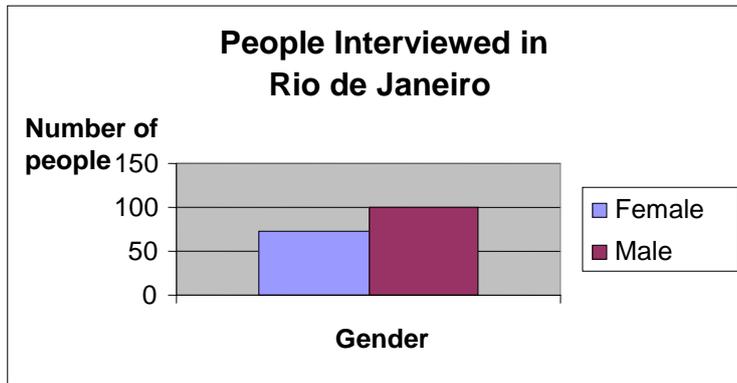
In this sense, the analysis and interpretation of the collected data had as a reference the theoretical proposal of Shultz et al (1994) that puts the customer as the center of the marketing activities of any organization.

200 questionnaires were applied, but for the purpose of this study, only 172 were listed, as 28 were discarded because of errors in filling, which could lead to distortions in the analysis and results obtained.

In research, we tried to know the client. For this, we traced the profile of responders by grouping them according to some demographic variables, to then identify the different perceptions within the same segment.

Profile of respondents:

Chart 1: Gender

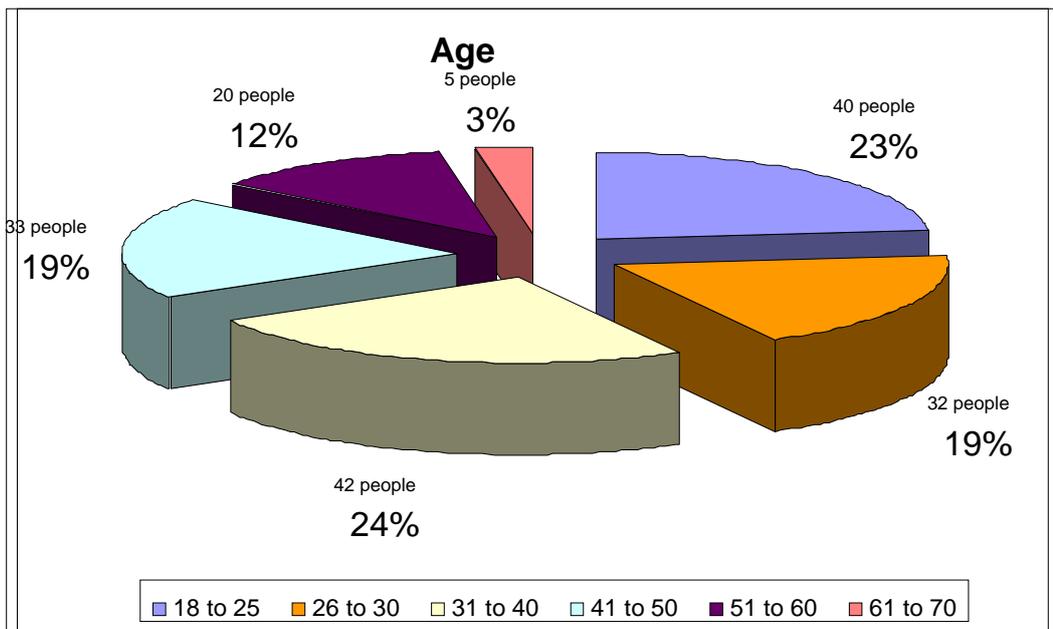


Source: Field research

Regarding to gender, males predominated among those interviewed (100 men and 72 women).

In terms of age, people between 18 to 70 years old were interviewed, and they were divided into six track.

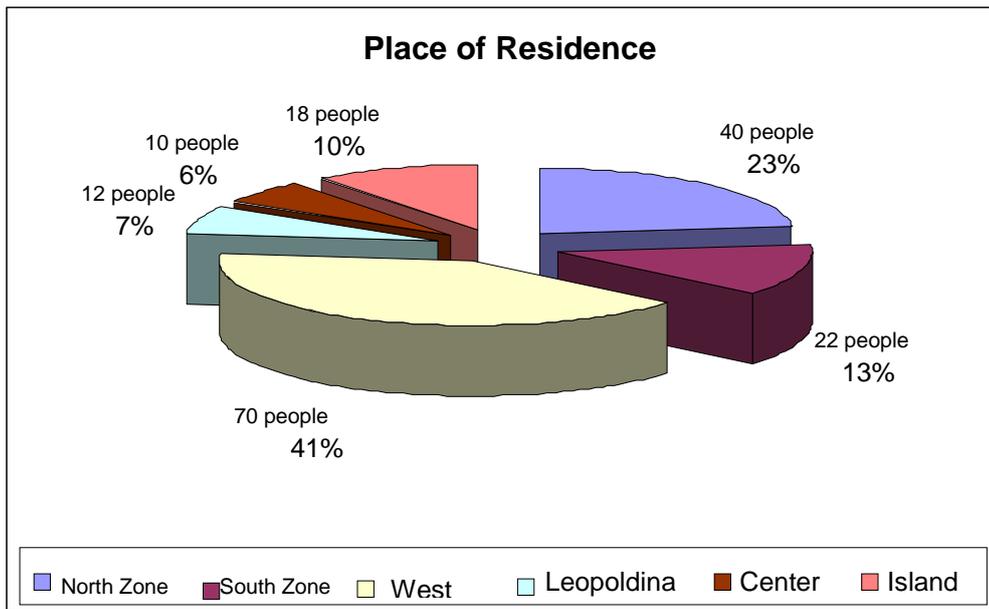
Chart 2: Age range



Source: Field research

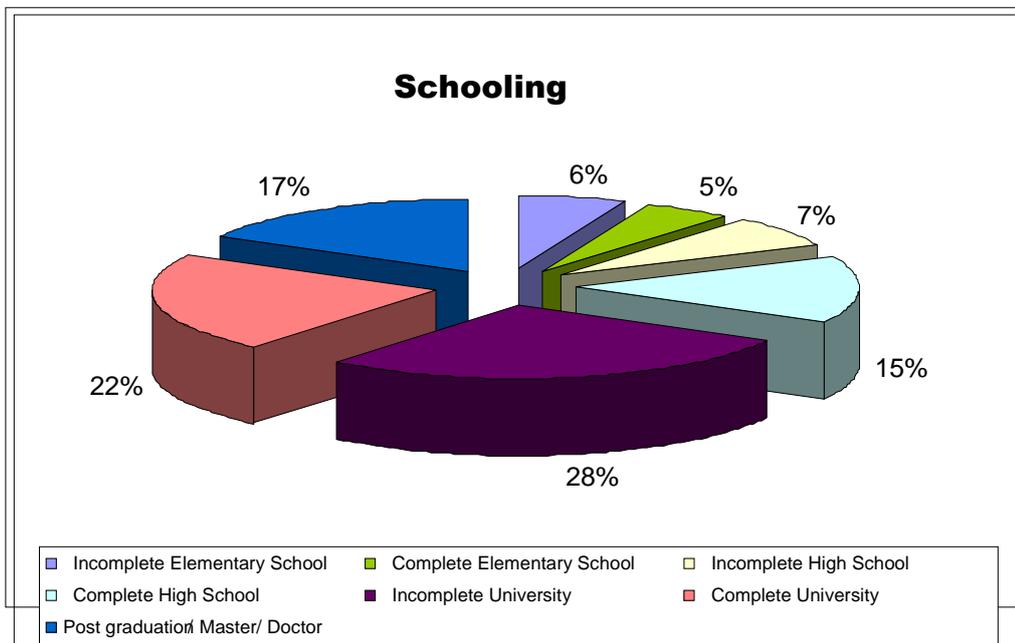
It is observed that the age distribution among respondents is relatively balanced. The lowest concentrations are found among people above 51 years old. As the survey was conducted in the City of Rio de Janeiro, where concentrates most of the economically active population, explains the small percentage of adults over 51 years old, as many in this age group are retired. As for housing of the respondents the result of the distribution in geographic areas of the city is defined in Chart 3.

Chart 3: Place of residence



Regarding to the education the highest percentage found among the respondents was 28% (incomplete University), followed by 22% with graduation, of half the population interviewed. Only 6% had Incomplete Primary school and 17% have post-graduate, master or doctor.

Chart 4: Schooling



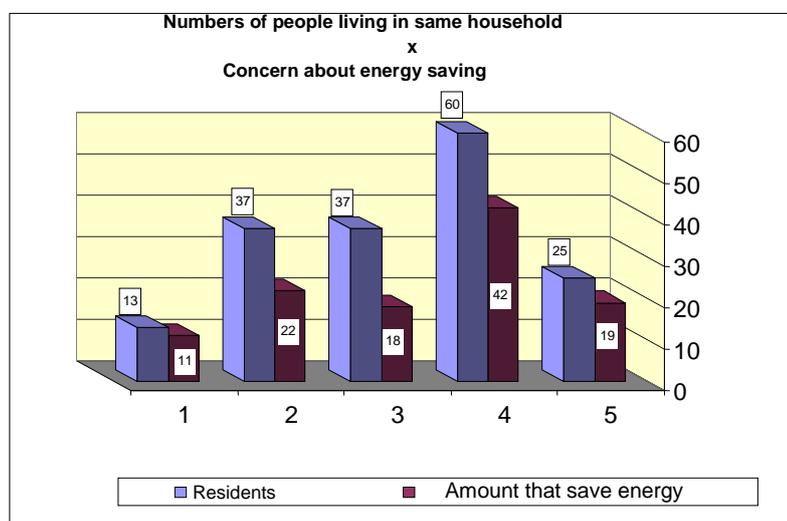
The current market in addition to being composed of diverse groups and segments of consumers, we find niches within those segments that have diverse interests and habits and slightly different segment where they are sorted. Regarding the consumption of electricity and the concern in combat waste and PROCEL knowledge and efficiency of marketing actions of the Programme were identified within the public surveyed, the following aspects:

### Habits and concern about energy consumption

To determine whether consumers understand the Program's objectives and the actions taken to educate the citizens were efficient, we sought to identify how many people live in one place and then if the greater number of people results in greater concern to avoid waste and rational use of electricity.

In this respect, the research shows that in houses where only one person live, where theoretically the consumption is lower and where the only resident is responsible for paying the costs, a concern for economy in power consumption is at its highest, as we can see in Chart 5.

Chart 5: Number of people in residence

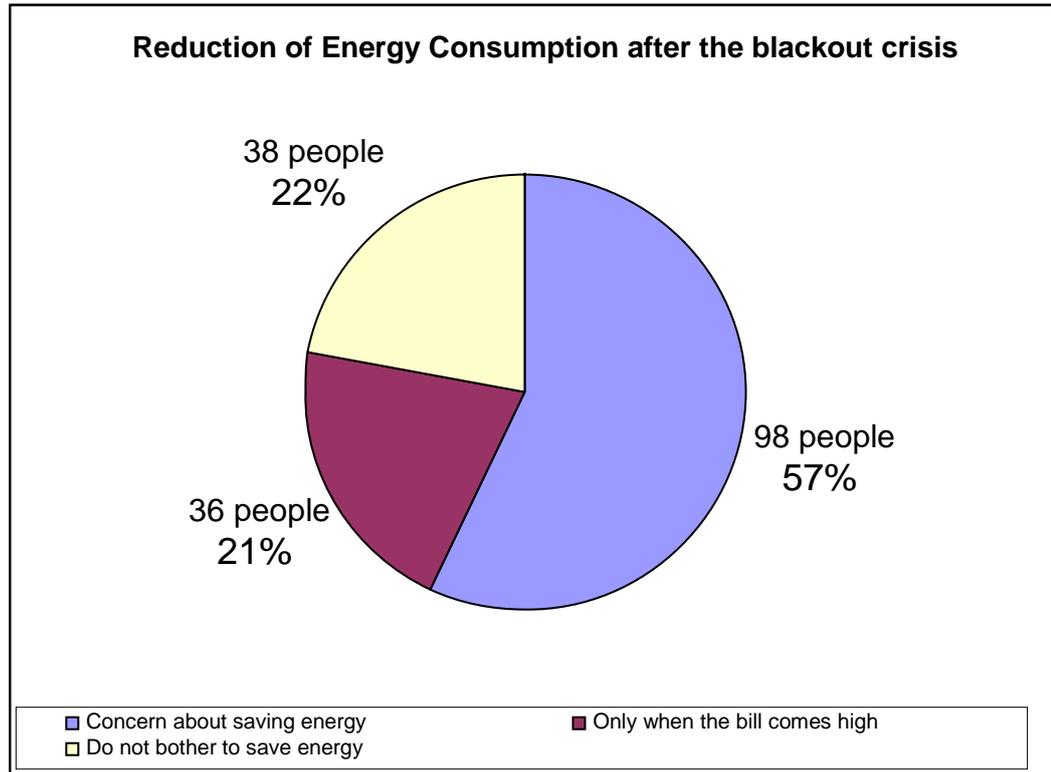


Source: Field research

The chart also shows that the concern about energy conservation is lower in households with 3 to 4 people.

In regard to the habits of energy consumption, the chart below shows the responses of respondents when asked after the blackout crisis of 2001 is still going to save energy.

Chart 6: Reduction of Energy Consumption after the blackout crisis



Source: Field research

According to the chart, among the respondents, 57% are concerned about saving energy after the 2001 crisis, but 36 (21%) only when the account is high, so the price influence the habit of saving, but for this 22% does not make them change their consumption habits. So people tend to forget, but in spite this, the customers is still aware about the importance of energy efficiency.

### **The meaning and importance of PROCEL**

When asked whether people know PROCEL, 36% of the respondents showed total ignorance of the program, 12% could not explain its meaning, against 52% who knew PROCEL. The following table presents the results of the survey.

**Table 1: Do you know PROCEL?**

YES	NO	I've heard but do not know its meaning.
52%	36%	12%

Source: Field research

Performing a comparison between the total of respondents who know PROCEL and the media by which the respondents had to know, it was found that the majority (40%) of respondents had knowledge through advertisements on TV. However, 33% did not recall or did not know how they learned of the program. Table 4 shows, in percentages, which channels of communication were more efficient in informing consumers about the program.

**Table 2:**

<b>How did you know about PROCEL?</b>	<b>%</b>
Through my bill	<b>16%</b>
Through advertising on television	<b>40%</b>
On billboards throughout the city	<b>3%</b>
Through the Program site on the Internet	<b>5%</b>
Through educational campaigns developed in my son's school.	<b>3%</b>
I do not remember	<b>33%</b>

Source: Field research

The degree of knowledge and education PROCEL it was found that 30% have the incomplete university, 10% are graduated, and 22% of female have some type of expertise. But 90% of respondents with more education and higher income are unfamiliar with the program.

Although PROCEL have a web site and service: contact us through e-mails a significant portion of respondents use the Internet as a work tool (54%), only 5% learned about the program through the website. This finding can be confirmed by research done by PROCEL to assess the number of users of that service, only 12% (the lower plot) among individuals who are the target audience for our research.

PROCEL marketing is in schools through PROCEL program in schools, but less than 1% of respondents who have children of school age, had the knowledge of this program through marketing activity.

About communication with the customer, 43% of respondents there are sufficient advertising campaigns for adequate consumption of electricity, but they were unable to say any. 57% think the campaigns to raise awareness about the proper use of insufficient power.

When we cross the responses with the variable, gender and income level, it is observed that the 100 men interviewed, 56% answered no, and of these 32% have income between 06 to 10 minimum wages monthly. Since the 72 women interviewed, 59% answered no, and among those who think the campaigns are insufficient, 29% have monthly income wage from 03 to 05 minimum monthly wages.

In the field research was made an issue which listed a series of tips for reducing energy consumption, without the user give up the use of electronics. These tips are available at PROCEL site, in leaflets distributed in schools and other establishments where the marketing program operates.

Among the daily procedures that were used by respondents, we found that people whose family income does not exceed three times the minimum wage there is a greater concern and information on ways to save electricity. How much of this segment does not have equipment such as air conditioners, washing machines and computers, the main actions to combat waste concentrate on: try to lower the temperature of the shower, turn off the lights of the rooms not used, and replace incandescent bulbs with fluorescent not leave the refrigerator door open too long.

In the higher income ranges, the concern to conserve energy and reduce waste through daily actions is minimal. Only 5% of respondents included in this segment show some concern, restricting the use of air conditioning only the room that is been used and keep doors and windows closed when air is on (20%).

## **Knowledge of Seal PROCEL**

For the consumer, buying products with the PROCEL seal constitutes a great advantage, because the monetary cost or value of the energy bill is lower. However, many consumers ignore or resist this benefit in trying new products, whose benefits when they are not well explained can cause behavioral and psychological costs. In this sense, the marketer's task is to minimize costs and emphasize the benefits. But how can this be done? It can be done through the development or expansion of media channels to expand the relationship between company and consumer.

The award and PROCEL Seal, customer service and participation in events and media placement of information on energy efficiency, such as tips for reducing consumption and utilization of electricity, are the actions taken by PROCEL to establish communication with the customer and also to publicize and educate the public about the importance of conservation and waste combat power.

Regarding knowledge of PROCEL seal, 28% of women and 34% of men do not know, totaling 31% of respondents. Knowledgeable of the Seal, 66% found easily in stores, with products PROCEL Seal.

## 7. Conclusions and Suggestions

### CONCLUSION:

The analysis of data collected during field research allowed the researcher to draw some conclusions about the actions implemented by the PROCEL marketing .

To combat the waste of electricity has importance for the country, there must be continued investment in this area. For society need to be clear benefits of actions to combat waste through cost-effective, thereby justifying the investments, it means, applications of financial resources in this program.

In this sense, the research confirms the theory: The consumer realizes the significance (value) of a product or service when it meets their needs and desires satisfactorily. Using all the bibliographic information from both, internal documents obtained through the PROCEL site, as from the field research we can draw the following conclusions:

- ✓ PROCEL is a government program of fundamental importance to all citizens, however their marketing efforts, while comprehensive, do not reach much of the population. The research shows great unawareness of the Program by the public and those who "have heard" could not explain the meaning of it.
- ✓ The use of simple everyday actions that aim to avoid the waste does not sensitize certain segments of society, especially wealthier and better educated. The strata with lower purchasing power seek to save energy, but this concern reflects more an attempt to reduce the monetary cost of the bill than a "consciousness of avoiding waste." This fact can be confirmed with the assertion by some respondents that only reduce consumption, "when the bill comes high."
- ✓ A residence with more than one resident assumes greater power consumption. However, the survey revealed that just those homes, the concern is much lower than in homes where the residents are single person. According to respondents there is a consensus among members of a house as energy conservation contributes to the development of the country.

Thinking in establishing a culture oriented to combat waste and electrical energy conservation from an early age, PROCEL instituted PROCEL at school. But the research shows the ineffectiveness of this action: 30% of total respondents have school-age children, but only 11% learned about the program through educational campaigns in their children's school.

- ✓ The strategies for communicating with the public are insufficient: the 800 number was disabled, the "contact us" is little known and the site is also little accessed. Television is a mass communication channel quite efficient, but perhaps due to the publicity of the program being aired on channels with low ratings, many people are unfamiliar.
- ✓ Many people look for appliances with the Seal PROCEL and found that devices with this certification are easily found in retail stores, but rates of unawareness of the seal and its advantages for consumers with higher income and purchasing products with greater energy consumption are quite significant.

## **SUGGESTIONS:**

After analyzing the data collected was verified that the PROCEL increasingly needs to intensify its advertising, promotion and brand their actions.

- The target audience should be the entire population in order to make them aware of the significance of conservation and waste combat power. But special attention should be given to people with income above 20 minimum wages, precisely because they have a large purchasing power and do not have to worry too much with energy expenses.
- One measure would be the biggest release of Seal PROCEL, their effectiveness in reducing energy consumption, but without losing the comfort of using electronics.
- Television is undoubtedly the best means of communication, considering the answers given by respondents knowledgeable about the program. It is suggested that the campaigns are broadcast on channels and / or at peak viewing hours or partnering on events that have large range of communication with the public.

- Another important fact is that after the blackout crisis, 43% did not bother to reduce consumption or does so only in reducing power consumption when the bill comes high. Encouraging people to monitor the average electricity bill, use motion sensor,
- Keeping in air conditioners is a measure that should be adopted, but requires greater disclosure. The use of technology is an extremely effective tool today. The site of PROCEL is sub used by the target audience of the research, because few people access.
- The SAC is another tool that helps organizations answering questions from users and also functions as a tool to reassess strategies for communication, looking fit them into the audience. It is suggested that marketing PROCEL make adjustments to these important means of communication with the client creating the opportunity for their greater use.

PROCEL will be undoubtedly successful if it can become an example of how to deal with the consumption X power supply, the solutions of their problems, but should not be restricted to those measures.

None of the targets is beyond the scope of PROCEL. What is needed most is commitment. The essence is in new principles, beliefs, perceptions and management philosophies with which PROCEL should interact with consumers of energy.

This is a challenge. Evidently the secret to overcome it and to its success will be flashing a marketing strategy geared to the user.

## 8. References

- ABDO, J.M.M. **Resolução nº. 31**. Agência Nacional de Energia Elétrica, publicado no Diário Oficial da União de 25/01/2002, seção 01, pág. 259, v.139, nº. 18.
- BRASIL. **Portaria MME Nº 45/04**, do Ministério de Minas Energia.
- BRITO, Osório. **Instituto Nacional de Energia Elétrica: Fomento do Mercado de ESCOs no Brasil**. Artigo. Dezembro de 2004.
- CARDOSO, Fernando Henrique. **Medida Provisória nº. 2148-1**, de 22 de maio de 2001.
- CHURCHIL, G.<sup>a</sup> & PETER, J.P. **Marketing: criando valor para os clientes**. São Paulo: Saraiva, 2000.
- DAVID, Ricardo. **Associação Brasileira das Empresas de Serviços de Conservação de Energia: Financiamento aos projetos de eficiência energética e o programa de certificação de ESCOS do painel da associação no ENASE (Encontro Nacional dos Agentes do Setor Elétrico)**
- ELETROBRAS. **Avaliação dos Resultados do PROCEL**. 2009
- ELETROBRÁS. **Plano Nacional de Energia Elétrica 1993-2015 – Plano 2015, projeto 11: A política tecnológica e o setor elétrico**. Rio de Janeiro – Eletrobrás, 1993.
- Federação Nacional dos Urbanitários: **Relatório da comissão de análise do sistema hidrotérmico de energia elétrica** – apresentação São Paulo, 2001.
- FERREIRA, Marcelo Pieri. **Estimativa dos Efeitos do Relacionamento nas Previsões de Carga Elétrica**. Dissertação de Mestrado apresentada ao Departamento de Engenharia Elétrica da Pontifícia Universidade Católica do Rio de Janeiro, 2004.
- GRACIOSO, Francisco. **Marketing: O Sucesso em 5 Movimentos**. São Paulo: Atlas, 1997.
- HENRIQUES, Cláudio Cezar & SIMÕES, Darcilia Marindir P. (orgs). **A redação de trabalhos acadêmicos: teoria e prática**. 3<sup>a</sup>.Ed. Rio de Janeiro: EdUERJ, 2004.
- IKEDA, Ana Akemi. **Plano de Marketing para o PROCEL**. Universidade São Paulo, 1995.
- KOTLER, Philip. **Administração de Marketing**. São Paulo: Atlas, 1998.

Lakatos, Eva Maria e MARCONI, Marina de Andrade. **Técnicas de pesquisa**. 2ª. Ed. São Paulo:Atlas, 1998.

LIZARDO e OLIVEIRA. **Diálogos da Energia**. Rio de Janeiro: 7 letras, 2000.

MATTAR, Fauze N. **Pesquisa de Marketing: metodologia, planejamento, execução e análise**. 2ª. Ed. São Paulo:Atlas, 1994.

MENDONÇA, Paulo Sérgio Miranda. **Contribuições ao Estudo do Marketing de idéias: Um estudo de caso no programa nacional de conservação de energia elétrica (PROCEL)**. Tese de Doutorado apresentada ao Departamento de Administração da Faculdade de Economia, Administração e Contabilidade da Universidade de São Paulo, 1998.

PALMEIRA e TENÓRIO. **Flexibilização Organizacional: Aplicação de um modelo de produtividade total**. Rio de Janeiro: FGV, 2002.

PEREIRA, André Flávio Soares. **Base de dados públicas sobre geração hidrelétrica no Brasil**. Rio de Janeiro. VOL.I.COPPE/UFRJ, 2004 (X Congresso Brasileiro de Energia)

BNDES site– [www.bndes.gov.br](http://www.bndes.gov.br)

Eletrobras site – [www.eletróbras.com](http://www.eletróbras.com)

PROCEL site – [www.eletróbras.com/procel](http://www.eletróbras.com/procel)

Sistema Nacional de Informações sobre Saneamento site – SNIS – [www.snis.gov.br](http://www.snis.gov.br)

SCHULTZ, Don E.; TANNENBAUM, Stanley e LAUTERBORN, Robert F. **O Novo Paradigma do marketing**: como obter resultados mensuráveis através do uso da database e das comunicações integradas de marketing. São Paulo: Makron Books, 1994.

VERGARA, Sylvia Constant. **Projetos e relatórios de pesquisas em administração**. São Paulo: Atlas, 1997.

MAURER, Luiz; PEREIRA, Mário e ROSENBLATT, José. **Implementing Power Rationing in a Sensible Way: Lessons Learned and International Best Practices**, World Bank, 2005.

