

Corporate Socio-Environmental Responsibility Integrated to Cleaner Production: Case Study in Industry in Recife, Brazil

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Abstract: Organizations are increasingly aligned with consumer demands. These demands are propelling companies to guiding its processes under the basis of sustainability, unbridled advances of economy have strong impact over society and, due to this, the population has positioned itself against organizations and local governance in order to have responses that contribute positively to social, environmental and economic issues. A corporate socio-environmental responsibility refers to a business approach that aims to attain sustainability throughout its supply chain, from suppliers, customers, employees and how they relate to the environment. This can be aligned to the principles of Cleaner Production (CP) if the organization has some integrated action in the company; CP is intended to make a complex analysis of the production process in order to increase efficiency. The aim of this paper is to describe actions of socio-environmental responsibility and verify their alignment regarding to principles of Cleaner Production in the productive sector organizations, employing as a case study a chemical industry in the sector of cleaning and hygiene located in the city of Recife-PE, here regarded as Industry X.

Key words: socio-environmental responsibility, cleaner production, industry, sustainability

1. Introduction

“Since the company-stakeholder relationships have different objectives and accommodate numerous conflicts of interest, it is necessary to understand how companies formulate processes in order to integrate heterogeneous stakeholders during the formation of its corporate social and environmental strategies” [1]. It is known by the corporate world that the environmental issue constitutes of an extremely influential factor for consumers, laws and pressure

groups [2]. Due to this, companies are considering socio-environmental issues in their short, medium and long-term strategic plans aimed at business sustainability and market competitiveness.

The concept of sustainable development in the business world was designed by the World Business Council for Sustainable Development (WBCSD), as the balance between environmental, social and economic factors that influence the entire production chain [3].

From the second half of the 20th century may be noticed high growth in consumption that therefore denotes an environmental degradation, either by the uncontrolled use of natural resources or by the generation of waste and pollutants [4]. Economic growth should occur, however limits should be established for this, aiming at use of resources in a more rational and sustainable manner, since the

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uncontrolled growth has consequences for environmental and social spheres, causing troubling damages [5] that may not have the capacity of reversibility. The author also mentions that already can be seen that there is a growing concern about the environmental issues by the enterprises, as well as to the health and safety of its employees and social responsibility to the community. "Sustainable development requires that the business sector to adopt a socio-environmental protection policy in line with economic development" [3].

The economic and ecological goals have not contradictory reasoning, and productive systems are dependent on the sustainable development of its existence and continuity [6]. Concluding his thought the author corroborates that "the continuity of production systems and life on earth depends on the existence of natural resources that cannot be wasted."

For organizations, the Corporate Social Responsibility (CSR) appears as a potential to increase or mitigate social and/or environmental problems in some communities [7]. Increasingly aware consumers are pressing, even indirectly, companies to take more responsible positions and they come to highlight their investments in the social responsibility speeches, denoting business strategic changes that can be related only to discourse as being subject to effective changes that will bring impacts on environmental themes [7]. The relationship that companies have with their stakeholders is no longer just producer of goods and services on one side, and consumers on the other, they began to incorporate in their transactions more ethical values that change the usual way of achieving profitability [8]. The same author also mentions that "the social responsibility practices are becoming increasingly important in business, as a means to create value for all stakeholders."

"The social responsibility refers to the company commitment in building a fairer and environmentally sustainable society, including issues related to human rights, labour, community relations and society and

relations between suppliers, suppliers of suppliers and consumers"[9]. Companies, through their speeches, demonstrate their considerations pointing out that corporate responsibility must be comprehensive, extending the classical approach of return to shareholders, since social responsibility actions add value to the company's image with its stakeholders [10].

CSR under global perspective, emerged in the 1960s, but in Brazil only took shape in the 1980s [11]. The legal aspect of corporate social responsibility in Brazil is based on the 1988 Constitution in Art. 170 and other sections of the Constitution which are cited general principles of economic activity in order to ensure free enterprise through a consideration of the company, which should participate in the integration of the citizen to the community, ensuring well-being and a dignified existence [12].

CSR actions taken by organizations that have a positive outcome for society are commonly reported. In various media, corporations communicate to their customers and to the general public how they have contributed to the development and sustainability of the environment, where they have been implemented, as well as which social projects have been developed and direct communication channels with the company. These social and environmental actions may be related to philanthropy, community training, mitigation of environmental impacts, social, business management and collaboration with external stakeholders. All these forms of interaction surely contribute to the development of business activity on a sustainable basis, not excluding the need to care for the minimization and mitigation of environmental impacts in procedural business (from extraction of raw materials, industrial processes, waste and disposal of products or their reverse logistics).

The corporate socioeconomic vision has some guiding principles inherent to the own business activity, which are, "focus on long-term profits for the business; obtain better image in society and less

government regulation for business; incorporation of larger social obligations for the business; better environment promotion for all” [13]. However, there is an increasing concern about the development of CSR actions, as well as the incorporation of environmental management techniques that reduce the impact on the sector.

Accordingly, CSR can be aligned to the principles of Cleaner Production (CP) because to achieve environmental sustainability and contribute to the development of the company and the environment, changes in industrial processes for greater efficiency and waste reduction, may minimize the impacts of its activities and its effects over the society. “The CP can be adopted in any business segment and consists of a detailed technical, economic and environmental analysis of the production process, in order to identify opportunities that allow improving efficiency without increase in costs for the company” [2]. Summarizing, CP is a tool that not only brings improvements of conduct for the companies, but can also contribute in other spheres of business activity [14]. For the authors this may help to “reduce production costs and increase efficiency and competitiveness; reduction of fines and penalties for pollution; easier access to credit lines; improvement of health conditions and worker safety; improving the company’s image with consumers, suppliers and government; better relationship with environmental agencies and the community; greater customer satisfaction.”

The purpose of this study is to describe Socio-Environmental Responsibility actions in a given industry and verify the alignment of these with the principles of Cleaner Production in production-segment organizations, employing as a case study a chemical industry in the sector of cleaning and hygiene located in the city of Recife-PE, here regarded as Industry X.

2. Methods

In order to analyse socio-environmental responsibility actions and initiation to Cleaner

Production, an industry in the city of Recife–Pernambuco (Brazil) has been selected since it already has been acknowledged and consolidated before the stakeholders. The studied company is a chemical industry that operates in the segment of cleaning and hygiene, here entitled as Industry X, regarded being a large company with over 700 employees and nationally known.

The research was divided into two stages: (a) Survey of secondary data: through literature review in scientific articles, books, dissertations, theses and websites; (b) Survey of primary data, of qualitative nature, via participatory observation, application of questionnaires by the socio-environmental responsibility team of the company, information available on the company’s website, formal records provided by the company and through interviews with some shareholders in Industry X. Data analysis was performed by plotting, classifying responses and crossing with published data. In order to have a better understanding about the company’s format being able to make critical interferences for its continuous improvement, principles such as mission, vision and values of the Industry X were taken into consideration.

3. Results and Discussion

Organizational culture is configured as a factor of competitiveness and differentiation between successful companies [15]. In this sense, corporate culture can create actions for the future targeting results, being this an inherent characteristic belonging to all human and organizational functions [16]. Therefore, it is of utmost importance to structure an appropriate strategic planning to institutional goals, to monitor and have a control over the business positioning before the initial settings, in alignment with the values that the organization believes that are important to build its heritage. This directory of values must embed concerns not only with the company’s

employees, but also with consumers and with special attention to the whole society.

3.1 Triple Bottom Line as a Basis for CSR Program

The Program contributes to the preservation of natural resources, because working on environmental education and providing structure for the selective collection of oil, it prevents most of this waste from being disposed improperly contaminating soil and water and affecting the biodiversity of ecosystems. "If frying oil reaches water bodies such as rivers, lakes and oceans it is degraded by microorganisms, particularly bacteria, which in this process consume dissolved the oxygen present. The lack of oxygen causes the death of aquatic wildlife such as fishes, crustaceans and molluscs, which need that to breathe. There is another impact associated with viscosity and surface tension of the oil which leads to formation of floating film on the surface, which acts as a barrier, damaging the aeration by wind. On the ground, the oil is also harmful, causing undesirable proliferation of microorganisms and fermentation and even damage to the root system of plants, in the case of large volumes" [17].

Besides the environmental impacts, there are also socio-economic impacts that can be generated by the inappropriate disposal of frying oil. When people throw away frying oil through the sewage, it adheres to the pipe walls and consequently it clogs the pipes by the gradual reduction of the actual diameter due to the overlapping layers of fat. This interruption of the passage of sewage can cause reflux into the interior of buildings, and flooding on public roads due to the difficulty of storm water runoff into the sewage system.

Moreover, improper disposal of waste can still attract disease vectors such as insects and rodents to the residences of the population. Accordingly, the CSR Program of Industry X contributes positively to society and the environment since it reduces the impacts caused by the improper disposal of oil

whereas society increases the volume of donated oil, and giving an appropriate destination to this residue. In accordance with the business economic activity, the program is presented as an approach between the corporation values and the surrounding community values.

3.2 Strategic Business Planning

In the business focus, registered in the Industry X website, it has been observed a direct concern about two main points: (a) the competitiveness when considered the "stimulation of productivity" and the "development of ideas" and (b) when CSR emphasizes the "well-being of people" recorded as the "goal is to make more quality of life for people through products that facilitate their daily lives." Industry X complements the information by directing corporate actions in an appropriate manner, respecting employees, business partners, consumers and the environment. In these initial lines of the website, it is noticed an institutional commitment that goes beyond the commercial vision (Fig. 1), giving a greater sense of products of Industry X, guiding its employees and targeting the business sustainability.

The Mission of the Industry X is established as "developing, producing, marketing and distributing products and solutions with quality and profitability which meet market needs", while the view is focused on "becoming the most competitive Brazilian group in food supply, hygiene and cleaning". In both cases, it has been observed a direct concern with the alignment of CSR principles. Regarding to the corporate values there is the "commitment to the community and the environment", and these are arranged in small pictures in the sectors, being characterized by a visual appeal. Another way found by the company to align values to the activities performed by its employees was the creation of an internal project aimed at management with greater profitability and results, passing through all sectors. This is mainly based on the involvement of the sales team and marketing, and being spread to the

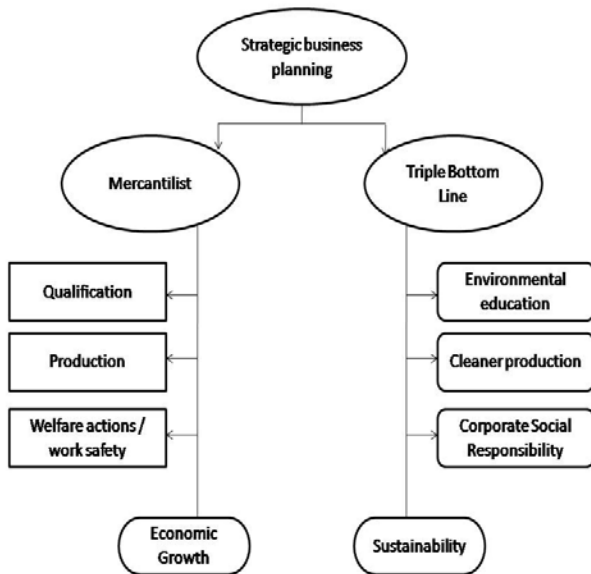


Fig. 1 Strategic Business Planning and Macro Operational Steps, Guided by Commercial Vision or the Triple Principle Bottom Line

other teams of the company through teasers and news via institutional email with messages of encouragement and appreciation of the work developed. To assert this value, Industry X has been developing since 2010 a CSR program based on the three pillars of sustainability (social, economic and environmental). This program aims to contribute to socio-environmental actions, adding value to the community and cooperating for the preservation of the environment, and alignment with the economic activity of the company.

3.3 Programs Environmental Education and CSR

In the Informal Environmental Education approach there are projects aimed at raising environmental awareness of the community. Operating in 28 cities in the state, the company is responsible for carrying out the selective collection of cooking oil at several facilities, regarded as being institutional partners of the company. This oil is received, recycled and used as ingredient in the soap bar making process. The social contribution is also given by donating monthly financial resources to a supporting institution of a reference hospital, proportional to the volume of oil collected by the community. This action adds various

institutional links, and is based on the Triple Bottom Line of sustainability (Fig. 2).

The Informal Environmental Education Program developed by Industry X occurs at various levels, adding different social agents, as well as internal employees. With the internal employees, the company carries out awareness-raising work by its media such as institutional email, bulletin board, newspaper and motivational competitions. All these approaches of awareness are used, as well as training and lectures for the employees contribute to the growth of the company's program, making suggestions for continuous process improvement. The work involves transparency in the results obtained by the program and the training of workers from different sectors involved, which had their work routines modified with the implementation of the program. Some industrial processes were modified, and it required a leadership commitment to mobilize to empower the work teams. These actions are seen as essential for the consolidation of CSR initiatives, which should be internalized by the whole company before expanding its operations to the external environment.

The Social Responsibility sector is composed of professionals from several fields, so that the process is multidisciplinary. All this staff are qualified in the field of environment, quality and logistics, having

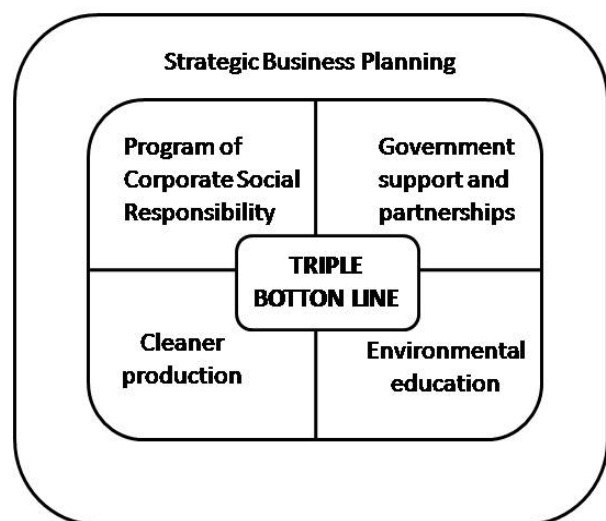


Fig. 2 Industry Strategic Planning Based on X Triple Bottom Line

closely with the marketing sector and industrial processes, work safety and environmental management, due to the need to understand the internal and external logic of the company, its challenges and market.

3.4 Cleaner Production

Regarding to industrial processes, the company started its adaptation to the principles of Cleaner Production (CP) through the CSR program's inclusion in the company and operating principles of Environmental Management. There was detailed analysis of the manufacturing process to identify steps and/or procedures that could be adjusted to increase its efficiency. The plan of the soap factory has been changed; there was the substitution of a raw material, since it used to need to go through a washing procedure, which used to generate a high volume of effluents with high potential impacting the environment, reducing consumption of sodium hydroxide and natural gas.

The new raw material used in the manufacturing process has been the frying oil, which is collected by the partner providers and society, this when compared to the earlier raw material has a lower percentage of loss and therefore generates a smaller volume of residue. The frying oil collected that arrives at industry X, goes through an industrial recycling process, and then it is inserted as an input in the soap bar production.

The full process, from the entrance of frying oil in industry, until the introduction in the manufacturing process is accompanied with quality parameters. The process efficiency increased as the new input has a greater quality. The area has in its planning the continuous improvement cycle (PDCA), which provides an optimization to the process, aimed at greater efficiency, reduction of waste generated, greater reuse of waste, new applicable technologies, better work conditions and higher satisfaction of employees.

In order to develop of new products and the integrate innovation in the industry, there is a partnership for development of academic research in the chemical field, environment, environmental management, in the field of production and improvement of processes to cross scientific knowledge with the reality of the industrial environment.

3.5 Partnerships and Governance

In the field of governance, Industry X interacts with municipal and state governments. In general, municipal and state governances have the legal commitment of the management of solid and liquid waste, in partnership with the productive sector and other sectors of society, according to the national law n. 12,305/2010 [18]. In addition to the selective collection of oil, the program assists various sectors of public administration. In the Department of Water and Energy Resources, there is the execution of training for public schools on special dates related to environmental issues, as well as support to community work organized by the state sanitation company (providing at customer service stores the "Voluntary Delivery Points" known as VDP).

Along the Executive Secretary of Resocialization there are some partnerships with penitentiaries in the Metropolitan Region of Recife, where the selective collection is performed, with the provision of recyclable materials for the manufacture of crafts. Also, the Department of Environment and Sustainability of the State Government enables the entry of the program into other many municipalities and environmental education at schools aiming the sustainability of cities.

In partnership with the Department of Education of the State Government, there is support in the field of environmental education in events organized by the secretary, and also the provision of VDP for oil, which is present in more than 60 Reference High Schools (RHS) across the state. Therefore, the Industry X

works with the State's Government performing actions integrated with the state public policies.

In the society, the program contributes to debate aimed at developing environmental awareness and its analysis itself. It is structured on educational lectures with varied audience from several municipalities in the state, where there is an exchange of ideas and the improvement of the program itself. This work contributes to the awareness of sectors of society and to build leadership from internal employees at Industry X regarding to environmental and social issues. These moments do not have information purposes; it is an integration and exchange of knowledge, with a moment of stimulation of critical thinking to change habits and disseminate new praxis for all involved.

At the beginning of the program the main form of awareness was given through the dissemination and stimulation of memberships at schools, during class time and/or through activities with prizes. Over time there was a need for awareness strategy change, due to the diversity of the audience and the large number of participants. The training to form multipliers partners were started from key-persons in each of the spaces, thus they were trained to act as disseminators of knowledge and stimulating new partnerships. Among people involved directly and indirectly, the program has reached approximately 50,000 people. This number tends to multiply, since everyone who participates in the program may be acting as environmental multiplier, encouraging others to join the program.

To reach the society in general, the selective collection of oil door-to-door is not feasible to carry out a service of quality. Thus, were inserted Voluntary Delivery Points (VDP), in strategic points of the municipalities, to enable that the frying oil delivery for greater portion of the population.

The contribution occurs in several municipalities across the state, through the volume collected in the VDP of customer service stores in the Sanitation

Company of Pernambuco, being a place of great flow of people, being collected about 40 litres of oil monthly in each of these points. VDP present in churches, facilities, public markets still have a low rate of oil collection. Currently, around 5,000 households are partners in the program, being an alternative to condos joining the program for the allocation of frying oil, as an attitude of social responsibility to meet state laws.

3.6 Partners-Suppliers

The partners were here labelled as "partners-suppliers" for cooperating with the CSR Program at Industry X, but at the same time are suppliers of a raw material used in the manufacture of a product by the company.

According to the State Law 14378/2011 [19], establishments that make use of frying oil should provide for the proper disposal for waste materials. Industry X provides this service free of charge, given the particularities of each vendor partner as volume/generation term, and physical space for storage, setting the right collector and the frequency of collection, making available the service of emergency collections. To prove to the supervisory authority the environmental commitment, partners and suppliers sign an adhesion agreement with Industry X and in every collection they receive a certificate proving the environmentally friendly final disposal of waste.

The partners-suppliers receive targeted training, according to the needs of each segment and their respective requests, which are for training in related topics with the CSR program, as well as waste management, standards, environmental legislation and environmental education trainers. There is a great diversity of segments of society and economy that contribute donating the frying oil. These were divided into: Associations, Condominiums, Food sector, Hospitals, Educational Institutions, Industries, Bakeries, Penitentiaries, Supermarkets, among others. The number of partners-suppliers is around 1,600

donors units, and received up to now about 1,700 tons of cooking oil in the five years of existence of the program.

4. Conclusions

The CSR program of Industry X consolidated the environmental value of the company and ensured greater visibility to the consumer public and involved significant number of people sensitized. With the release by these people, the company's image added values in the social and environmental fields, as well as stimulated organizations to implement it in their strategic planning in the short and medium term actions aimed at sustainability. This is because, indirectly, the industry reaches other institutional goals, such as increased visibility to the market, reaching other public and making room for new actions.

It is vital that the actions taken by organizations are based on the guidance of senior management and its strategic planning, so that they do not distance themselves from their ideals and goals, and the work should be continued. The Industry X case shows that it is possible to have this alignment, and that actions may be structured to be self-sufficient, in other words, sustainable. Due to the waste collected (cooking oil) being recycled in the company and being implemented in the production process, the company is able to close the production cycle by minimizing the generation of waste and making its processes more efficient.

The CSR program of Industry X demonstrates its objectives achieved through the tripod of social, environmental and economic sustainability. This is developed by actions focused on supporting social institutions through donations and incentives, preserving the environment through environmental awareness raising, disposal and recycling of frying oil, in order to increase the population's quality of life and optimize its industrial processes focused on the principles of Cleaner Production. Therefore, it is observed that the case study is fully aligned with the

principles of sustainable development and is recognized as a case of business success.

The possibility of interaction between the business community and researchers, having as subject of study the challenges or the daily life of a company, can be set up as competitive advantage, as well as passes to outline a new space of academic thinking. This partnership can boost studies and implement projects of Science, Technology and Innovation (STI) at a lower direct cost, since the work product is the study itself. Inferences about the process can be made and based on a positive relationship for both sides: through "win-win" since researcher have room to exercise their skills in the corporate world, being a space for learning and training new professionals in the field of research and in the operational field itself. Furthermore, it may be an opportunity to get work experience for trainers, besides being beneficial for the organization to obtain high quality academic work, as well as assisting skilled labour training in face of this interaction. Thus it is believed that this interaction should be encouraged, as it has been in the industry X, which receives researchers and makes itself available for study and research purposes.

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References

- [1] J. C. S. Andrade, Formation of corporate social and environmental strategies: The Aracruz Celulose games-interested Parties, *Revista de administração contemporânea* 6 (2002)(2) 75-97.
- [2] G. C. S. da. Silva and D. D. de. Medeiros, Checkland methodology applied to the implementation of cleaner production services, *Gestão e Produção* 13 (2006) (3) 411-422.
- [3] H. C. D. Pimenta and R. P. Gouvinnhas, Cleaner production as a tool of corporate sustainability: A study in Rio Grande do Norte state, *Produção* 22 (2012) (3) 462-476.
- [4] A. R. de Almeida Junior and H. L. R. M. Gomes, Environmental management and corporate interests:

- Environmental image or a new relationship with the environment? *Ambiente e sociedade* 15 (2012) (1) 157-177.
- [5] A. D. Lemos and L. F. Nascimento, Cleaner production as an engine for innovation and competitiveness, *Revista de administração contemporânea* 3 (1999) (1) 23-46.
- [6] D. A. Silva and H. Ribeiro, Environmental Management Certification and sustainability: Challenges of communication, *Saúde e sociedade* 14 (2005) (1) 52-67.
- [7] A. P. Carrieri, A. R. L. da. Silva and T. D. Pimentel, The theme of environmental protection embedded in the discourse of corporate social responsibility. *Revista de administração contemporânea* 13 (2009) (1) 1-16.
- [8] C. T. Volpon and T. D. L. V. A. de. Macedo-Soares, Strategic alignment of corporate social and environmental responsibility in companies operating in social networks: search results at Petrobras, *Revista Administração Pública* 41 (2007) (3) 391-418.
- [9] F. R. C. Fernandes, Environmental responsibility and child labor in mining, in: Castilhos Z. C., Lima M. H. M. R., Castro N. F., *Gender and Child Labor in Small Mining*, Brasil-Peru-Argentina-Bolívia, 2006, pp. 94-108.
- [10] A. N. Gomes, A. L. de. Souza, F. M. G. Coelho and M. L. da. Silva, Sustainability of forest-based companies: The role of social projects in the inclusion of local communities, *Revista Árvore* 30 (2006) (6) 951-960.
- [11] C. N. dos. Reis, The corporate social responsibility: The Brazilian context behind a conscious action or a market modernism? *Revista de Economia Contemporânea* 11 (2007) (2) 279-305.
- [12] L. I. Basseto, The incorporation of social responsibility and sustainability: A study based on the annual report 2005 energy Paraná company – COPEL, *Gestão & Produção* 17 (2010) (3) 639-651.
- [13] D. A. F. Serpa and L. F. Fourneau, Corporate social responsibility: An investigation into the perception of the consumer, *Revista de economia Contemporânea* 11 (2007) (3) 83-103.
- [14] J. C. G. da. Silva Filho, F. A. Calabria, G. C. S. da. Silva and D. D. de. Medeiros, Cleaner Production Application in a company as a continuous improvement tool, *Produção* 17 (2007) (1) 109-128.
- [15] N. M. B. F. dos. Santos, Culture and organizational performance: an empirical study in Brazilian companies in the textile sector, *Revista de administração contemporânea* 2 (1998) (1) 47-76.
- [16] S. Bulgacov, P. J. P. dos. Santos and M. R. May, The configuration of the organization and its relationship with formal and emerging strategic planning, *Cadernos EBAP.EBR.* 10 (2012) (4) 911-924.
- [17] SABESP, Oil recycling program, viewed on: February 10, 2013, available online at: http://site.sabesp.com.br/uploads/file/asabesp_doctos/programa_reciclagem_oleo_completo.pdf,
- [18] BRASIL, Law n. 9.795, April 27, 1999: Establishing the national environmental education policy, *Diário Oficial da União* April 28, 1999.
- [19] PERNAMBUCO, Law state n. 14.378, September 2, 2011: Establishing disclosure and installation of collectors containers for recycling of Cooking Plant Oil in the state of Pernambuco.