USING CORPORATE SOCIAL MARKETING IN THE POWER SECTOR: A CASE STUDY ON ENERGY EFFICIENCY

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ABSTRACT

This research was conducted both in Portugal and Brazil and explores energy efficiency (EE) behavioral change programs implemented by a non-state-owned company selling electricity to residential consumers in both markets. In order to understand to what extent the corporate social marketing (CSM) framework is being used in these programs, the motivations of non-state-owned companies to implement EE programs and the approach underpinning these projects are analyzed. Furthermore, this study compares the approaches used by the multinational company in its EE programs implemented in the Portuguese and the Brazilian markets. Data collected from interviews are submitted to comparisons, using the grounded theory. The perspectives of competing companies with similar programs, and other stakeholders are included in the analysis. The research seeks for a substantive theory emerged from the data suitable for the analyzed context. The findings of this predominantly qualitative study suggest that the corporate social marketing approach contributes to achieving the goals of energy efficiency programs, while adding corporate gains to the companies, such as positive corporate image, business strategy improvement and stakeholders' engagement. Links between international climate public policy goals, specific governmental EE programs goals, and companies' behavioral change programs are presented.

Keywords: Corporate Social Marketing, Behavioral Change, Energy Efficiency, Non-state-owned Companies

JEL Classification: M39, M31

1. INTRODUCTION

Behavioral change programs that aim to benefit society and the environment have been a practice, in the recent past, attributed to nonprofit organizations for which social marketing is an already recognized discipline (Bloom, Hussein and Szykman 1995). Non-government organizations (NGOs) and governments carry on supporting behavioral change programs, such as energy saving programs, aligning these programs with the country's public policies, such as energy efficiency and climate policy goals (Cismaru, Ono and Nelson., 2011; Gynther, Mikkonen and Smits, 2012). Nevertheless, non-state-owned companies trading electricity to the residential consumer have also been contributing to meeting energy efficiency (EE) policies' objectives by performing EE behavioral change programs, even if these programs aimed to accomplish less consumption of their main selling product – electricity. This is the case of EDP (Energias de Portugal, S.A), a company established in Portugal which is the largest generator, distributor and supplier of electricity in this country, and operating

worldwide in countries such as Brazil, where it has electricity distribution, generation and supply activities. The EDP group follows specific EE policies, since government's regulations differ according to each country's greenhouse gases (GHG) reduction responsibilities (specifically the GHG emissions from the electricity sector) in agreement with the Kyoto Protocol.

Electricity consumption per capita in Portugal is about two times higher than in Brazil (IEA- International Energy Agency, 2009a, 2009b; World Bank, 2015), as is the domestic electricity consumption per capita (World Energy Council, 2015). According to the Portuguese Environment Agency (APA–Portuguese acronym) (2014), most emissions come from the energy and transport sectors. The Portuguese Regulator of Energy Services (ERSE–Portuguese acronym) (2011) stated that the electricity sector contributed approximately 28% of CO2 to the total Portuguese emissions in 2007. Conversely, the electricity generation sector in Brazil contributes little to the total GHG Brazilian emissions, since the country's energy matrix contains mostly clean sources (EPE – Empresa de Pesquisa Energética, 2012). The electricity sector contributes about 1.2% to Brazil's total emissions (Instituto Acende Brasil, 2012), while 75% of Brazilian emissions come from deforestation and land use (GreenPeace, 2015).

The Kyoto Protocol is an international document associated to the United Nations Framework Convention on Climate Change (UNFCCC) that aims to reduce GHG emissions. In fact, researchers link the increase of GHG to global warming, the developed countries being identified as those mainly responsible for high levels of GHG. Thus, developed and developing countries are bidding to reduce their emissions at different levels. After a first commitment period ended in 2012, the Conference of the Parties (COP) are now calling nations around the world to negotiations for the 2015 agreement, to enter into force in 2020 (UNFCCC, 2014d; UNFCCC, 2015). According to the Intergovernmental Panel on Climate Change (IPCC, 2014), global warming should be limited to 2° C above pre-industrial levels. Observed impacts of climate change have been suggested as already affecting agriculture, human health, ecosystems, water supplies and some people's livelihoods. Hence, as a complex problem that affects various domains, answers are being sought by coming from all disciplines and fields of research and development (UNFCCC, 2014a).

Against this background, this research aims to analyze how the corporate social marketing (CSM) framework is being used in EE behavioral change programs in Portugal and Brazil, which are classed by the Kyoto Protocol as developed and developing countries, respectively. In order to understand the motivations of non-state-owned groups that trade electricity to the residential consumer in implementing EE programs, and to compare the approaches used in Portugal and Brazil, the following research questions are addressed: i) Why are non-state-owned groups (that sell electricity to residential consumers) interested in performing EE programs focused on behavioral change, even when these programs encourage reducing consumption of the companies' principal product?; and ii) Are EE programs focusing on behavioral change promoted by non-state-owned groups designed and implemented by following a CSM approach?

In order to achieve the proposed research goals, this study explores the EE programs conducted by the multinational company EDP in Portugal and Brazil. The project "A Tua Energia" (*Your energy*), targeted at schoolchildren, was developed in Portugal, while the Brazilian's analogous EE program named "Boa Energia nas Escolas" (*Good energy in schools*) is targeted at schoolchildren and youth. The EDP's approach to both EE programs will be submitted to comparisons, since these programs are developed and implemented by the EDP as a group following a process of adaption to the legislation of each country, considering that these countries have "common but differentiated responsibilities" regarding climate change (UNFCCC, 2014d). Similarly, EE programs implemented by competing companies, under

the same energy efficiency policies, will also be addressed considering data from 2012. Thus, this research considers the perspectives of participants from EDP, in Portugal and in Brazil, EDP's competitors that have implemented similar EE programs, and other stakeholders. The grounded theory will be used, seeking a substantive theory grounded on the data, suitable for the analyzed context. The originality of the research is based on the analysis of the motivations underpinning the EE programs implemented by non-state-owned companies and the contribution it makes towards understanding to what extent social marketing instruments are being used to achieve behavioral change by these programs, which aim at benefiting both society and the company. Additionally, by addressing two programs with similar aims in both a developed and developing country it is possible to explore how public policies are influencing their development.

2. THEORETICAL FRAMEWORK

2.1 Corporate social marketing and the environment

The classic article 'Social Marketing: An Approach to Planned Social Change' by Kotler and Zaltman (1971) defines social marketing as a discipline and since that time its approach and definition have been discussed (Andreasen, 1994; Dann, 2010). A common line of thought is that the social marketing framework aims to achieve behavior change and that it should go beyond providing information by using all marketing instruments. Kotler (1975) grouped social changes according to their extent and stated that a social marketing program can reach different hierarchical levels: 1) cognitive change; 2) action change; 3) behavior change; and 4) value change. In addition to the social marketing approach, Kotler and Roberto (1989) report different strategies to implement social changes that ideally should work together in optimizing results, namely: technological strategy, which consists of modification, replacement or product innovation; legal-political strategy, which derives from laws; and educational strategy, which is achieved through education. Nevertheless, Andreasen (1994) affirms that the volunteer aspect of accepting behavior change should be the central goal in the social marketing approach, by meeting the needs and the profile of the target audience (Takahashi, 2009), and following all the stages of the mainstream marketing plan, including the monitoring and evaluation phase (Kotler *et al.*, 2012).

Despite there being less social marketing research on the environment than on the health sector, an increase in the use of social marketing in this area can be expected since environmental awareness is growing (Bowerman and Delorme, 2015; Takahashi, 2009). Furthermore, society is pressuring organizations to implement more sustainable behaviors, particularly with respect to the use of natural resources and energy (Lowe, Lynch and Lowe, 2015; Schultz *et al.*, 2015). Takahashi (2009) identifies various articles of social marketing applied to environmental interventions and claims that literature is dispersed and scarce. The researcher also identifies that of a total of 62 scientific articles, recycling is the most studied issue (18%) followed by energy conservation (8%). In this context, Kotler (2011) points out that "companies will need to add an environmental dimension to their profile" (p.133). In order to make consumers and stakeholders aware of the companies' environmental actions it is not only necessary to disseminate them, but also to involve stakeholders in a common goal: the quality of life for the present and future generations, provided by a clean environment. The company is now expected to take on an added responsibility, i.e. to be not only societal but also social (Kotler, 2011).

Studies have suggested that behavior change can lead to energy savings of about 20%. In particular, the BEHAVE Project, supported by the European Commission, evaluated 41 programs from a prestructured template of 100 energy behavioral change programs

and concluded that the social marketing framework, including synergies with the private sector, can contribute to programs' effectiveness (Gynther *et al.*, 2012). For that reason it is recommended that social marketing programs must be long running in order to accomplish the desired social change (Andreasen, 1994; Bloom *et al.*, 1995).

Amongst other social responsibility practices – including community volunteering, philanthropy and cause-related marketing – social marketing is distinguished by its ability to comprehensively benefit society by making a measurable impact on a social issue, through behavioral change (Kotler and Lee, 2005). Considering that behavioral changes are needed in order to benefit society, apart from public and nonprofit organizations, consumers are also pressuring for-profit business to behave as citizens, which results in them carrying out social marketing activities. In this sense, corporate social marketing can be approached as the activity that "uses business resources to develop and/or implement a behavior change campaign intended to improve public health, safety, the environment, or community well-being" (Kotler, Hessekiel and Lee, 2012: 111).

While social marketing programs are implemented mainly by nonprofit organizations, focusing on voluntary behavioral change that benefits society rather than the marketeer (Andreasen, 1994), CSM has the additional purpose of facilitating market development, increasing sales or improving corporate image (Bhattacharya *et al.*, 2005; Bloom, *et al.* 1995; Kotler and Lee, 2005). In order to optimize benefits, CSM behavior change programs should be connected with what the company stands for, to their products or services (Bloom et.al, 1995; Inoue and Kent, 2014; Kotler and Lee, 2005). Partnerships between corporations and nonprofit organizations can be favorable for both parties, and society can also benefit from them, since nonprofits have experience on social issues and companies have marketing know-how, which, together, can improve CSM programs. Nevertheless, it is crucial to guarantee certain aspects, such as a long-term commitment from the corporation, since changing behaviors is a long-time process (Bloom *et al.*, 1995). Kotler and Lee (2005) point out that some companies do not understand the aims of CSM, which impedes the correct implementation of programs designed to accomplish behavior change or sometimes companies are implementing CSM programs and calling it something else.

2.2 Energy efficiency programs in Portugal and Brazil

"The Kyoto Protocol legally binds developed countries to emission reduction targets" (UNFCCC, 2014a., para.2), and Europe recognizes energy efficiency as a method of competitiveness and energy independency by which Europeans can lower their energy bills while protecting the environment, thus undertaking to save 20% of annual primary energy consumption until 2020 (European Commission, 2015). To meet European Union EE policies, Portugal developed the EE governmental program "Efficiency Portugal 2015", the Portuguese Regulator of Energy Services (ERSE) being responsible for encouraging the implementation of EE programs on the electricity demand side. Through the Program to Promote Efficiency in Consumption (PPEC – Portuguese acronym), ERSE accepts applications of tangible and intangible efficiency measures in electricity consumption and supports those selected through a competitive contest (Diário da República, 2ª série – Nº107, de Junho de 2008; ERSE, 2010). Tangible measures refer to technology such as efficient lighting measures, including, for example, public street lighting and consumption management systems, while intangible measure comprise information and behavioral change projects. Energy companies can apply with EE programs designed by themselves, which means that they have no obligation to adhere to PPEC, as long as PPEC is a voluntary instrument of funding with approximately 23 million euros available (ERSE, 2010).

The ERSE (through PPEC) funds selected intangible EE programs by up to 100%, which is the case in the initiative designed by the EDP company "*A Tua Energia*," whose aim is

for the "… child population to acquire energy-efficient habits, this measure also intended for these habits to be transmitted to their peer groups, age peers and family" (ERSE, 2010: 49). In 2012, the truck used in "*A Tua Energia*" performed 26 action days in 15 districts and 128 classes to students of 151 schools, totaling 4904 students (EDP, 2012c). The program has two more platforms beyond the itinerant one (the truck "*A Tua Energia*"): a *microsite* where contents such as news and interactive games are placed (EDP, 2011b) and the EDP Sustainability Area in Lisbon. The latter is related to renewable and non-renewable energies issues and is not financed by ERSE (Saraiva, 2012).

As a developing country, Brazil is listed on the Kyoto Protocol Non-Annex I and according to this is not bound to reduce GHG emissions (UNFCCC, 2014b; UNFCCC, 2014c). Although these countries do not have mandatory targets, they need to help in achieving the international objectives (United Nations, 1998). Brazil is committed to reducing GHG through their Nacional Energy Efficiency Program, from which originates the Energy Efficiency Program to Electricity (PEE – Brazilian acronym). The National Electric Energy Agency (ANEEL – Brazilian acronym) manages the PEE, which mandatorily requires that electric companies apply a minimum percentage of their operating revenue to EE programs in order to fulfil the PEE's guidelines. Firstly, the PEE defines the types of EE programs to implement and then each company designs and manages their own program. Amongst the varieties of EE programs that the energy companies can choose to implement – such as the ones that aim for the replacement of inefficient equipment or the energy efficiency projects in industrial or commercial places – the educational behavioral change projects are preferably to be implemented using the PROCEL methodology (ANEEL, 2008). The PROCEL (Brazilian acronym – National Program of Energy Conservation) is another EE governmental program under the responsibility of Eletrobras (a power company controlled by the government), which in turn includes PROCEL in schools, and which aims to apply the same methodology to all the companies' EE educational behavioral change programs. This process allows to monitor the results, which emphasizes the role of PROCEL through the years (Eletrobras, 2005):

> *"When you use electricity efficiently, there are more savings and less waste. Saved energy can be used by another consumer, reducing or eliminating the need to build new power plants and system expansion. This procedure is called "building virtual power plants." "Virtual power plants" postpone the construction of "real power plants,", reduce costs and waste, eliminate environmental impacts, increase efficiency and, above all, the procedure reflects, for users of electricity, attitudes of responsibility and citizenship." (Eletrobras, 2005, p.11)*

Similarly to the Portuguese EDP program "*A Tua Energia*," the EDP in Brazil also implements an EE program – Boa "*Energia nas Escolas*" – which is carried out in 277 public schools located in EDP's Bandeirante and EDP Escelsa areas. The project reaches 140,000 students and aims to make changes or introduce the acquisition of positive habits related to electricity conservation (EDP, 2011a; EDP, 2012a).

3. METHOD

A mainly qualitative research with an interpretivist approach was followed, designed through a case study and using the grounded theory to analyze the data. Grounded theory sought to emerge a substantive theory from the data, suitable for the context analyzed (non-state-owned groups' guidance on EE programs), providing generalization to similar cases (Glaser and Strauss, 1967; Martins, 2008; Tarozzi, 2011). In the present study, grounded theory was solely used at the analytical level, however, it was considered important to follow it with

a sampling method – theoretical sampling – in the sense that it is closely connected to the theory-building process (Tarozzi, 2011). Accordingly, research began with exploring Portugal's EDP EE program "*A Tua Energia*" and from this new participants were included. In the first phase of the research, four informal interviews were conducted where respondents could express themselves freely, as the objective was to explore their opinions. Through informal interviews conducted with EDP, indicators about guidance were obtained, which underpin the implementation of these programs. Interviewees referred to political-legal, economic, social and environmental factors connection with the EE programs. The field observation of the program *A Tua Energia* and the analysis of documentary sources complemented data obtained through informal interviews. Consequently, this initial data led the search to other relevant sources, considered essential to answering the research questions. Thus, as new concepts emerged, new participants and documental sources were included (Gil, 2009).

Since a representative of EDP (2012) stated in an exploratory interview that "energy efficiency projects are always defined and implemented by EDP as a group," this aspect led us to extend the research to EDP's EE analogous program, targeted at schoolchildren and youth in another EDP market. From all the EDP markets Brazil was chosen. On the one hand, this decision was based on its historical link to Portugal, and on the other hand, on the fact that Brazil is considered a developing country and Portugal a developed country; the latter being an important factor in understanding whether EDP's guidance toward the same socially desired behavior is maintained in different scenarios. Guidance is used in this research as being synonymous with companies' motivation to implement behavioral change programs and the approach followed. In Brazil "*Boa Energia nas Escolas*" was the EDP's program identified for analysis. Subsequently, EDP's non-state-owned competitor companies' guidance was also explored, considering comparable EE behavioral change programs, which were implemented both under the same conditions and in the same country. In Brazil, five companies with the mentioned features were available to participate in the research (AES Eletropaulo, CPFL, Iberdrola (through Elektro); RME (through Light) and Rede Energia). In Portugal, only the company GALP was selected, since it was the only holding implementing an EE behavioral change program that was comparable to that of the EDP. In-depth interviews were conducted with a representative department of each holding, during the year 2012.

In the second phase of the research, 14 in-depth interviews were conducted. Although the questions and their sequence were prearranged, respondents could answer without restrictions (Gil, 2009). These interviews were designed to establish a comparative basis for the time of data analysis. All participants were selected by theoretical sampling, through interviews. In Portugal, two open interviews were addressed to the EDP, three with teachers participating in the program, two with partners of EDP (ERSE, which is also the regulator of electricity in Portugal, and QUERCUS), and one with GALP, which was the identified competing company for the Portuguese program. In Brazil, one in-depth interview was performed with a representative of EDP and five in-depth interviews were administered to the identified competing companies in this country that had agreed to participate in the study. Documentary sources consultation (physical and online) and observation supported the construction of the interviews and complemented them in order to perform a triangulation of the information. These additional documents accessed during the research can be classified as following: business sustainability reports; studies on energy and energy efficiency; government plans for energy efficiency; business and state balance of energy efficiency programs; articles published in thematic magazines and newspapers; press releases; energy efficiency program Internet sites; institutional and corporate sites containing government documents and energy efficiency statistics.

The collection was finalized when more information from the data was no longer emerging, reaching theoretical saturation (Dey, 1999). Data from the 14 in-depth interviews were coded, categorized and compared as they were collected in order to extract regularities. This analysis was assisted by the scientific program Atlas Ti. Categories were created based on the data and not on pre-existing analysis criteria. The theory that emerged from the data was also analyzed looking at the conformity with CSM literature theory and documental sources. In the initial coding (first coding stage) data was encoded using participants' words, whenever possible, and following the "*in vivo* coding" (Tarozzi, 2011). As initial codes were created the data were grounded, which indicated that meaning was found in the data. The number of times that a code is grounded in the data is given by the left-hand digit within curly brackets (see table 1). With respect to the focalized coding (second coding stage), logical links between codes were identified, i.e. density (Strauss and Corbin, 1990), followed by the process of integration by similarity in broader categories (Tarozzi, 2011). Density, i.e. the number of logical connections, is represented by the right-hand digit within curly brackets. The final names attributed to the codes, initially labeled provisionally, were then ascribed. In the third coding stage (theoretical coding), the aim was to reach the core category that organized the set of smaller categories and contained the grounded theory.

4. FINDINGS

As observation and documental research revealed, "*A Tua Energia*" was a short program underpinned by a framework that did not incorporate an instrument to effectively measure behavioral change. "*A Tua Energia"* conveyed persuasive messages that encouraged the target to perform the action (save energy), through attractive materials, e.g. a jingle, brochures, interactive games. The program platforms (e.g. the truck, the site, area dedicated to sustainability) were part of the campaign *in loco*, however they were not designed to accompany the process of behavioral change after these initiatives had taken place, and additional data were not available to attest to behavior change. As a result, the entity that regulates the electricity sector in Portugal (ERSE), which attested to be an EDP's program partner not only in "*A Tua Energia*," stated in the interview (P5) that "…intangible measures are information and dissemination measures that, although they do not have measurable direct impacts are inducers of more rational behavior by enabling more informed decision-making regarding more efficient adoption of solutions in the consumption of energy ..."

Other EDP Portugal stakeholders, such as the teachers and the partners (QUERCUS, ERSE) considered that electricity companies should position themselves as behavior change agents. Teachers who accompanied children indicated that it was difficult to know whether children would acquire the right energy use habits, considering the short time period of the program. Nevertheless, the teachers reported that "[*A Tua Energia*] brought an opportunity to reflect on some bad habits that we all have, adults and children, without being aware of how much they cost us at the end of each month" (P3).

With regard to the analyzed Brazil EE programs (from EDP and competing companies), they were designed to effectively achieve quantifiable energy saving results as was required by the National Electric Energy Agency (ANEEL). As recommended by ANEEL, both the EDP and competing companies followed the PROCEL methodology, which is aimed at calculating savings, through a mechanism powered by the companies and the government. During the project "*Boa Energia nas Escolas*" (EDP Brazil), students received training on EE at their schools and in the program platforms (e.g. truck), the students' homes being the places where the program effects were measured, through monitoring reports. This activity was guided by teachers and combined with other activities embraced by the school during the school year.

Apart from the itinerant platform for workshops and experiments, the creative strategy of the project incorporated brochures, games, and stickers as communication instruments (EDP, 2012a; 2012b). Books for teachers and students at different levels, teaching resources, an educational game, video films, and an evaluation and monitoring process were also contemplated in this methodology recommended by PROCEL. In the period 1990–2004, PROCEL achieved total savings of 1.166.862 MWh, for a total of 13,891,224 students. In this period, each student could save 84 kWh per year (Eletrobras, 2005). In the first 10 years, PROCEL reached 16,000 schools, 120,000 teachers, 13 million students and the annual electricity production of Itaipu was reduced by 4%, which is equivalent to 6% of the Tucuruí plant's annual production (the largest Brazilian power plant) (Eletrobras, 2011).

Table 1 presents examples of citations for the final codes resulting from the interviews' analysis. The initial codes passed through a final designation process and were synthesized. There were 96 initial codes that emerged from the 14 analyzed interviews, grounded in 167 citations, which resulted in 28 final codes.

Table 1. Final codes resulting from the global analysis

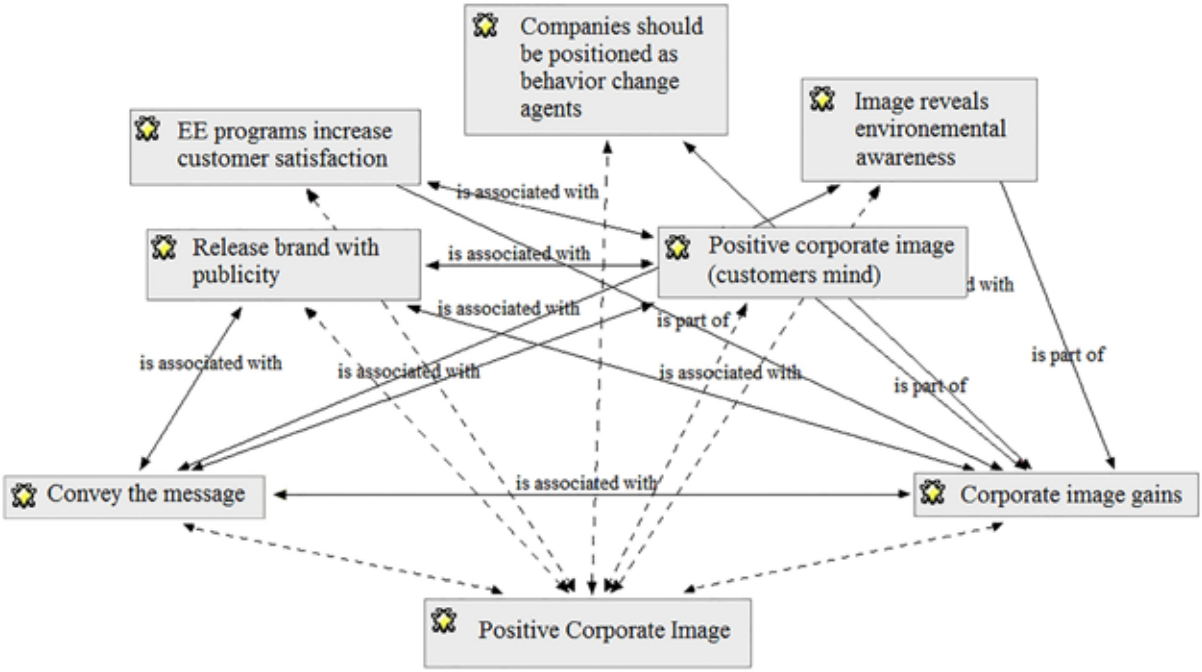
Final codes	Examples of citations
Code: Company intends to deal with EE as a social product {6-2}	"…. like any other project, a mandatory phase is the measurement and results verification... "(P9) "Because we believe that this is the best way of working. More so when the project is coordinated by the Marketing Department." (P8)
Code: Postpone investment in the system {5-5}	"Contrary to what might be thought, electric companies do not generate necessarily more profits selling more electricity, but through a balanced demand management where regulation at national level is very relevant…"(P4)
Code: Children are the future {2-2}	"….they are the future." (P8)
Code: Children are the future customers {3-2}	"Of course, not forgetting that they are our future customers." (P7)
Code: Companies should be positioned as behavior change agents {11-6}	"Obviously, because being themselves generators of 'environmental conflicts,' they will be per se responsible and blamed for damage they did and will do, moreover, companies take benefits from their own [EE] measures." (P1)
Code: Partnerships are important {5-1}	"QUERCUS has had partnerships with electricity supply companies for this this type of project development. For us these partnerships are seen as an asset in changing behavior, non-governmental organizations promotion is fundamental because in general they have a lot more credibility to the population than companies themselves. Moreover, it appears that technical measures have less and less weight or at least can only be properly enhanced when associated with behavioral changes." (P4)
Code: Release brand with publicity {1-3}	"Brand awareness with spontaneous media." (P10)
Code: Financial resources savings {5-5}	"Environmental preservation and natural resource economics will result in a saving of financial resources." (P2)
Code: EE for better electrical system management and supply security {7-4}	"… the aim is to avoid waste along the production and distribution electricity chain, only consuming strictly necessary quantities of energy." (P7)
Code: Strengthen relationships with customers {2-3}	"Better relations with communities and customers." (P11)
Code: Connection facilities with stakeholders {2-6}	"Connection facilities with stakeholders." (P10)
Code: Image gains {3-14}	"Joining the PPEC program allows reducing consumption by increasing energy efficiency but also allows suppliers to obtain image benefits, either by transmitting an environmental awareness image or concerning potential consumer clients welfare, to the market trying to capture …." (P5)
Code: Generate value to shareholders {1-3}	"Generate value for shareholders." (P10)

Code: Positive corporate image (customers' minds) {1-4}	"The release of these actions has a positive role on company image perceived by their customers." (P12)
Code: Image reveals environmental awareness {3-2}	"…either by transmitting an environmental awareness image." (P5)
Code: Improving the load factor of the utilities {1-3}	"…improving the load factor of the utilities." (P9)
Code: Behavioral change is possible through these programs {2-1}	"Encourages changes in habits and in consumption to rational use of energy." (P11)
Code: Marketing in the company is applied to actions designed to acquire efficient habits {3-1}	"Marketing inside the company aims to insert energy efficiency in the design of educational activities for teachers and students, so that they think and act in a coherent and unique way to promote energy conservation and environmental preservation. The goal is to apply the knowledge so that action can be taken aimed at acquiring new efficient habits for a better quality of life." (P14)
Code: EE programs increase customer satisfaction {1-3}	"increase customer satisfaction." (P9)
Code: EE programs need time to bring results {4-1}	"Energy efficiency programs will surely bring results in the medium to long term." (P4)
Code: EE programs transform energy market and develop technology {5-2}	"It is expected that these companies, traditionally sellers of 'kWh' will start to sell energy services in the future." (P5) "The energy efficiency program developed by Light aims to contribute to the electricity market transformation, encouraging the development of new technologies." (P11)
Code: Convey the message {6-4}	"Intangible measures are information and dissemination measures that, although they do not have measurable direct impacts, are inducers of more rational behavior by enabling more informed decision-making regarding a more efficient adoption of solutions in the consumption of energy ..." (P5)
Code: Concern about resources sustainability {8-4}	"We believe that this is the best opportunity that the power sector has to practice sustainable development practically, in the search of the balance of social, environmental and economic aspects and impacts." (P13)
Code: Recognition amongst stakeholders {1-7}	"Acknowledgment by communities and customers." (P10)
Code: Reduction of customers' bills {1-3}	"Provide electricity cost reductions to the customer." (P12)
Code: Environmental responsibility {3-4}	"When talking about companies that cause any environmental / social impact, in poor communities, for example, this concern needs to be further focused …" (P9)
Code: Responsibility towards stakeholders {7-4}	"….over the years EDP has developed a number of initiatives that are a clear demonstration of the company's commitment and ability to offer products and services that meet their customers and the community's wishes, as a very precise focus on behavior change." (P7)
Code: CSR {3-5}	"On the other hand, a bet on a rational consumption is part of the production and distribution power companies' environmental and corporate social responsibility, where through the population's behavior waste can be reduced, ensuring they have income for a sustainable consumption and so also ensuring a better electrical system management and greater security of supply." (P4)

Source: Interviews – teachers: P1–P3; QUERCUS: P4; ERSE: P5; EDP Portugal: P6–P7; GALP: P8; EDP Brazil: P9; competitors CPFL, LIGHT, REDE ENERGIA, AES and ELEKTRO (IBERDROLA): P10– P14.

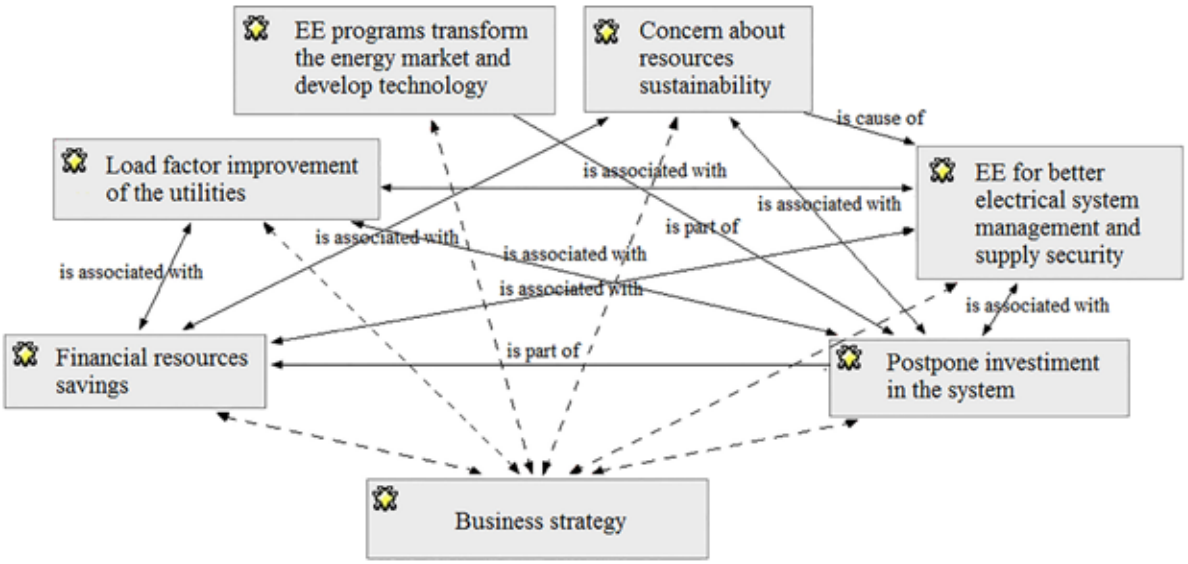
With regard to the first research question "Why are non-state-owned groups (that sell electricity to residential consumers) interested in performing EE programs focused on behavioral change, even when these programs emphasize its principal product consumption reducing?," three main categories emerged from the analysis: "positive corporate image" (Figure 1); "business strategy" (Figure 2); and "stakeholder engagement" (Figure 3), which are the main companies' motivations for implementing EE programs.

Figure 1. Positive Corporate Image



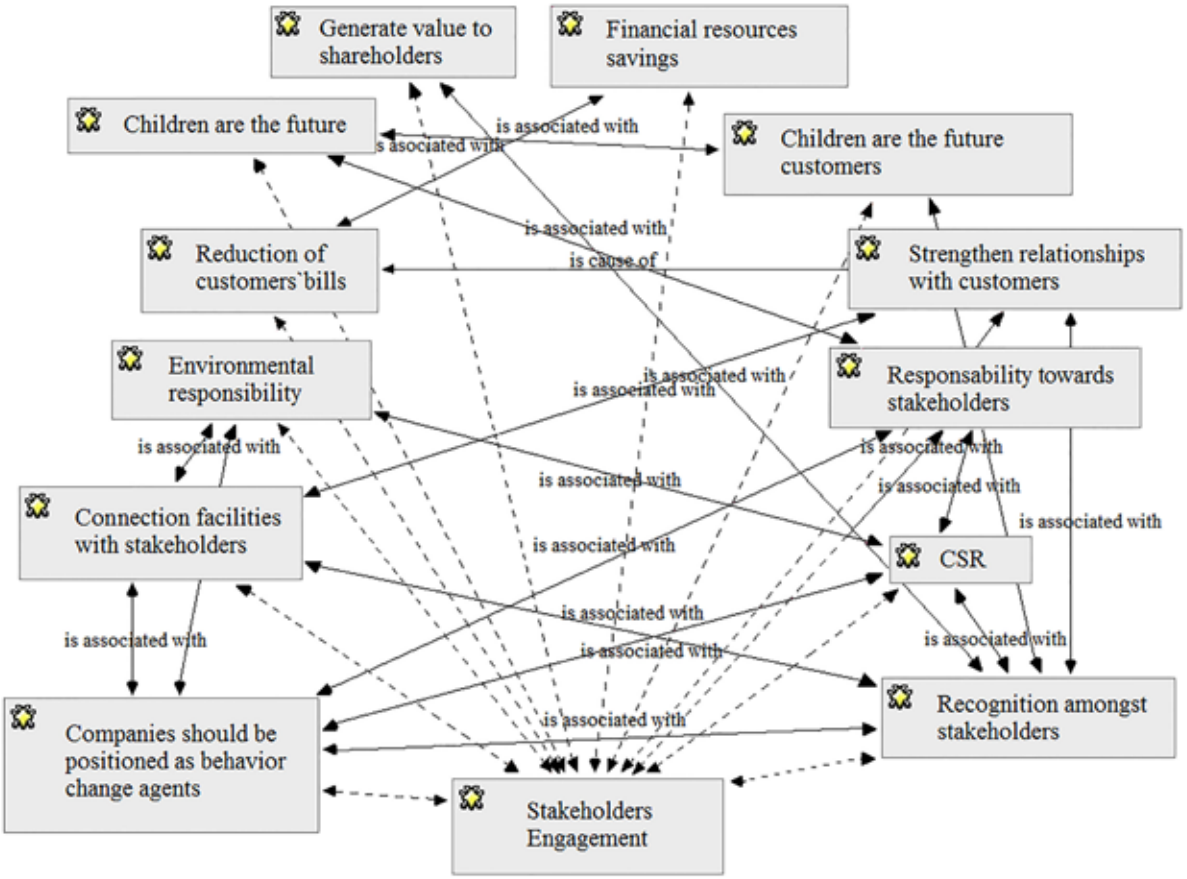
Source: Author/Adapted from Atlas ti output

Figure 2. Business Strategy



Source: Author/Adapted from Atlas ti output

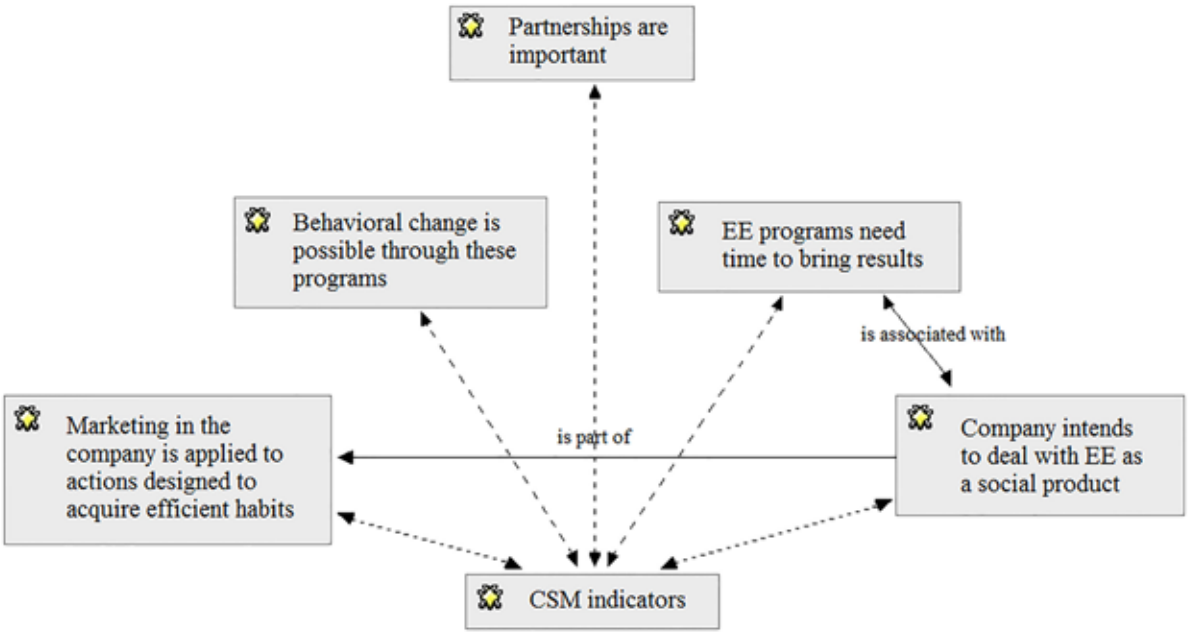
Figure 3. Stakeholder Engagement



Source: Author/Adapted from Atlas ti output

In order to answer the second research question "Are EE programs focusing on behavioral change promoted by non-state-owned groups designed and implemented following a CSM approach?," explanatory categories are depicted in figure 4. Category 'CSM indicators' include codes resulting from the global analysis that point out the features of the CSM approach underlying the design and implementation of these programs.

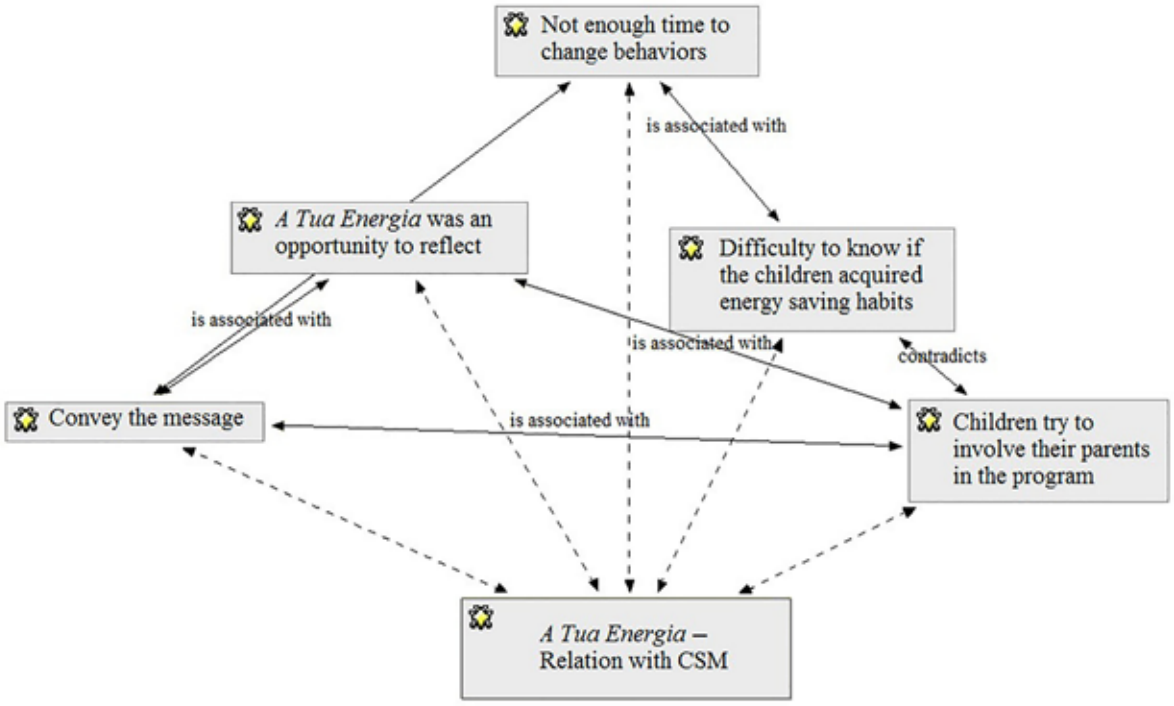
Figure 4. Category 'CSM indicators'



Source: Author/Adapted from Atlas ti output

Although corporate motivations to implement these programs are common, as represented above in the figures 1, 2 and 3, the disciplinary approach followed in conducting their EE programs differ fundamentally when comparing the Portuguese and the Brazilian markets. The CSM instrument was identified in the analyzed programs from the two different markets. However, the EDP Portugal's program *"A Tua Energia"* was the one revealing fewer CSM indicators (Figure 5). Although the program "*A Tua Energia*" aimed at behavioral change, the company approach is more focused on a communication campaign, not including a phase of evaluation that effectively measures behavior change. Additionally, data from the interviews, documental research and observation also confirmed that the "*A Tua Energia*" framework did not allow the effective quantifying of electricity savings.

Figure 5. "A Tua Energia" – Relation with CSM



Source: Author/Adapted from Atlas ti output

5. DISCUSSION AND CONCLUSION

This research aimed to understand how the CSM framework is being used in EE behavioral change programs in Portugal and Brazil, which are considered by the Kyoto Protocol as developed and developing countries, respectively. In order to understand the motivations of non-state-owned groups that trade electricity to the residential consumer in developing EE programs, and to compare the approaches used in these different countries, this study explores the EE programs implemented by the multinational company EDP in the Portuguese and the Brazilian markets. The perspectives of competing companies with similar programs and of other stakeholders were included in the analysis.

Data collected from in-depth interviews were submitted to comparisons, using the grounded theory. According to the more representative emerged data, i.e. the codes with more grounding and density, the companies' motivational phenomenon to implement EE programs focusing on behavioral change were depicted. "Positive corporate image," "business strategy," and "stakeholder engagement" are suggested as strategic corporate aspects, which are the basis of the non-state-owned groups' motivation to implement behavioral change programs. Thus, the interconnection of these three categories allowed the identification of a core category named "corporate gains" – a key concept from which the substantive theory emerged. By defragmenting the core category corporate gains it is worth noting that, hierarchically, electric companies primarily develop their business strategy and then plan their corporate image management in order to achieve the images that the company desires to produce in the stakeholders' mind. Consequently, the category "positive corporate image" has a dynamic connection with the category "stakeholder engagement."

In Portugal, EDP did not apply entirely the CSM framework to its program, since it was conducted as a short campaign, mostly focused on communication aspects. Conversely, in Brazil, EDP applied all the CSM tools and the entire program was based on the approach of the discipline. The Brazilian EE program used the techniques and knowledge of marketing

to focus on the social product – EE – and effectively measured behavior change. Two reasons to explain this finding are as follows: the PEE (Energy Efficiency Brazilian Plan) has specific policies that meet the CSM approach that companies should follow, and it is mandatorily required that electric companies assign a minimum percentage of their operating revenue to EE programs in order to fulfil the PEE's goals. This requisite is not verified in the Portuguese regulator entity's EE policies, in which EE programs are not mandatory and can be funded at 100%, and therefore the level of participation is less strongly demanded by the regulatory entities than in Brazil.

With regard to the apparent contradiction related to the idea of for-profit companies encouraging the reduction of consumption of their main selling product, the environmentalist non-government organization and partner of the EDP in EE programs, QUERCUS (P4), emphasized that:

> *"contrary to what might be thought, electric companies do not generate necessarily more profits at the expense of selling more electricity, but through a balanced demand management where national scale regulation is very relevant. If at peak times there is a greater efficiency in consumption, the electric system load factor is improved and this avoids system expansion only to meet demand generated by waste," and that could be attested through the category labeled as "business strategy." (Figure 2)*

Additionally, in the same category the market transformation concept emerged, namely electricity market transformation, which means that the market is more open to more efficient electronics equipment production, new EE services through audits made by electric utilities, etc.

As represented in the "stakeholders engagement" category, the most visible benefit that behavioral change brought to consumers was the reduction in electricity bills. Programs covered in this study focused on children and youth, considering also peer educators, which encourage changes in energy saving with respect to companies' future customers. From the society and environmental perspective there were also benefits from these programs' implementation, which are particularly clear in Brazil where energy savings were quantified and for this reason corporate image was positively affected.

With respect to external factors linked to these programs, apart from the economic, social aspects, environmental and political-legal issues are highlighted. Climate change and energy shortages are international issues for which desired social changes are requested. Companies that implement these projects meet their social responsibility (responsibility for the environment) working their image and communicating with stakeholders (stakeholders engagement), such as environmentalists non-government organizations (e.g. QUERCUS), communities, and customers. For each country, these projects are adapted, meeting specific political and legal guidelines.

While these findings are in line with the CSM literature, they should only be generalized to assimilated contexts. However, these finding contribute to the CSM literature on environment issues by depicting the motivations of for-profit companies selling electricity to residential consumers in implementing EE programs. The identified corporate gains are related to the stakeholders' engagement focused on social responsible management leading to a positive corporate image. The construction of brand goodwill through associations conveying environmental responsibility is therefore consolidated in stakeholders' minds. Regarding financial aspects, research has revealed that CSM is applied as a business strategy. While contributing to transforming markets, it enables the postponement of investments in the electrical distribution system since the electricity stock can be better managed through this strategy.

With regard to the disciplinary approach applied to design the analyzed programs, it can be concluded that the program "*A Tua Energia*" does not follow entirely the CSM instrument,

being a short-lifespan campaign encouraging behavior change regarding EE. Indeed, the literature addresses these efforts in clarifying that social marketing goes beyond marketing communication campaigns (Andreasen, 1994; Kotler and Lee, 2012; Kotler and Roberto, 1989), whether considering nonprofit or for-profit organizations (Kotler *et al.* 2012). Although the Portuguese program focuses on a campaign that seems to achieve cognitive change (Saraiva, 2012), a behavioral change marketing communication campaign per se does not classify as a CSM project. In fact, this program lacks other CSM components such as behavioral change monitoring and evaluation. Although promotion can both enable more informed decision-making with regard to more efficient solutions in energy consumption and bring some corporate gains to companies, it seems that it does not accomplish the same benefits when compared with a full CSM framework integration in an EE program.

Conversely, in Brazil the EDP and their competitors seem to implement EE programs in accordance with the CSM framework, in synergy with the educational strategy, throughout the school year, to increase the potential of the programs. In this regard, the government in Brazil is seen as a key partner of non-state-owned companies in the development of EE behavioral change programs. In fact, regulatory entities contribute to an integrated methodology, which encourages companies to analyze data throughout the program and quantify energy savings. The partnership between government, companies and schools, is thus consolidating the use of CSM in Brazil. The importance of such partnerships in CSM programs has been recognized by authors like Bloom *et al.* (1995), Kotler *et al.* (2012) and Kotler and Lee (2005). Brazilian programs focus on effective behavioral change, providing enabling tangible and intangible benefits for companies' businesses, while reducing consumers' electricity bills, protecting the environment and contributing to global warming mitigation goals. These findings support the idea that business can invest in positive behavior change and approach CSM not as a contradiction but as a win–win strategy.

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