

## Appropriated Communication Strategies on Sustainability: a case study in Curitiba

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O presente artigo relata os resultados preliminares de estudo que vem sendo realizado na parceria entre o Núcleo de Design & Sustentabilidade (NDS) da UFPR e o Centro e Tecnologia e Sociedade do Instituto Tecnológico de Berlim. O estudo procura identificar as estratégias de comunicação mais eficazes para produtos sustentáveis, com foco em estudo de caso em desenvolvimento no NDS em parceria com Soliforte, uma empresa de pequeno porte local. O método de pesquisa envolveu a aplicação de uma survey pelos próprios alunos do curso de Design (30 alunos) da UFPR, totalizando cerca de trezentas entrevistas. Entre os resultados específicos identificados a partir desta survey para o estudo de caso está a necessidade de mudança do foco de produto “eco” para uma mensagem voltada à “redução de custo” e, também, a apresentação do produto como algo desejado pela classe média e alta. O estudo também aponta para a oportunidade de lançamento de produtos do tipo Faça-Você-Mesmo, o que contemplaria tanto a falta de tempo do público investigado como suas restrições de custo..

*Communication, green marketing, low-income, low-income housing*

*The present paper reports initial results of a study carried out in the partnership between Núcleo de Design & Sustentabilidade (NDS), Paraná Federal University, and the Center for Technology and Society, Berlin Institute of Technology. The study attempted to identify the most suitable communication strategies for sustainable products, with a focus on an ongoing case study led by NDS at a local company called Soliforte. The main research method consists of a survey, applied by a group of 30 UFPR's undergraduate design students, resulting in almost three hundred responses to questionnaire. The specific results for low-income families show the need to change conventional “eco” message to “cost saving” messages on the case study. At the same time, the company should present the products in a way that the low income consumers would perceive as desired by other economical classes. Furthermore, this preliminary analysis points to a strategic opportunity on launching DIY products, touching both the low time resources as well as the cost affordability of the low income people.*

## 1 Introduction

With the achievement of price stability during the 1990s and the expansion of educational opportunities, long term trends show a marked decline in the proportion of households with incomes below 1.5 times the poverty line (SOTOMAYOR, 2008). From 2001 to 2007, the poorest 10% of the population enjoyed a 49% increase in real income. Roughly 27.8 million Brazilians - out of a population of nearly 200 million - joined the consumer economy from October 2003 to October 2008 (SIMPKINS, 2009). Whilst this scenario is positive from the economic and social perspectives its implications have been profoundly negative from the environmental point of view.

On this scenario it is clear the urgent need of devising strategies which could lead these consumers away from not only less efficient and more polluting technologies but, very importantly, from life styles that could jeopardize social cohesion and equity. Such concept is named in the literature as “leapfrogging” and its main it proposes that through leapfrogging developing countries can avoid environmentally harmful stages of development and do not need to follow the polluting development trajectory of industrialized countries (GOLDEMBERG, 1998). The Brazilian ethanol program, resulting on a fuel produced out of sugarcane that replaces non renewable energy sources (gasoline) is evidence that leapfrogging is possible even in country-wide scale.

A key question on sustainable consumption and production among low income consumers is how to influence their behavior towards sustainability. Due to the pluralization of lifestyles, consumption behavior can no longer be predicted only by socio-economic variables (sex, age, income, education, profession etc.). Indeed, it is difficult to identify groups with comprehensive and coherent environmental or sustainability orientations and behavior. Quite often people have hybrid style regarding sustainability; presenting different behavior for each of his/her everyday needs (nutrition, mobility, energy use etc). Thus, an important measure to better define strategies towards sustainable consumption and production is to patchwork environmental behavior, particularly on the issue of lifestyle.

Some particular consumption/production fields deserve higher attention when developing systems/products/services towards sustainability. Environmental scientists agree that 70 to 80% of the environmental impacts in the field of consumption relate to three fields (IPCC, 2007): housing (including domestic energy use); food and drink; transport (including commuting, leisure and holiday travel).

In this context the present paper reports a survey carried out between UFPR and TU Berlin in the city of Curitiba, Brazil. The main goal of the survey was to improve understanding about consumption habits and orientations in Brazil (Curitiba), identifying different consumer types and low income consumers could be addressed with sustainable products and services as well as with communication measures. The authors have analyzed the results of this survey on the context of an ongoing case study being developed at the UFPR’s Design & Sustainability Research Center in partnership with a local recycling company (Soliforte). That case study involved the development of products for low-income houses based on recycling materials.

## 2 The importance of identifying “consumer types”

Sustainable products/services need to be more competitive than their counterparts. A key aspect on this regard is the definition of appropriate marketing strategies. “Sustainability marketing”, as defined by Belz (2006) aims at creating customer value, social value and ecological value. Similar to the conventional marketing concept, sustainability marketing analyses customer needs and wants, develops sustainable products that provide superior value and prices and distributes and promotes them effectively to selected target groups. Unlike conventional marketing, sustainability marketing integrates social and ecological aspects throughout the whole process (BELZ, 2006).

A common mistake observed on companies offering sustainable products and services is to communicate the benefits of their portfolio on general terms, based on the idea that just a niche of the market will be affected by the “sustainability” issue. Such paradigm results on communication strategies that treat all consumers with the same strategy, without differentiating

the communication strategy for each consumer type/group. Thus, the study of consumer types is a regular topic on marketing research and, clearly, the advancement of sustainability in society requires the designer to acknowledge that not all consumers will be touched by conventional “eco” communication strategies.

Researchers in other countries have investigated this issue and their studies do illustrate the importance of the theme. Schultz, Empacher & Götz (2000) have carried out an empirical investigation into consumer behavior in private households in Germany, attempting to establish strategies which would promote sustainable patterns. The study has identified 10 “consumer types” whose key consumer and lifestyle orientation as well as their consumer behavior were then depicted as “consumer styles”.

- Type 1: fully-managed eco-families
- Type 2: childless professionals
- Type 3: self-interested youngsters
- Type 4: everyday life creatives
- Type 5: People fed up with consumption
- Type 6: Rural traditional
- Type 7: Underprivileged who can't cope
- Type 8: Run-of-the-mill families

In type 1, for instance, the consumer style of “fully-managed eco-families” is characterized by a family and professional orientation which aims at equality and participation within the family; the search for time savings and family routines is in conflict with the goal of desiring to structure consumption in a creative way; environmental conscious consumption (regional orientation plus ethical orientations); receptiveness to new things; orientation towards child health; they see car as irreplaceable for family organization (SCHULTZ; EMPACHER & GÖTZ, 2000). Hence, clearly, the identification of these consumer types can enable the evaluation of communication strategies and the appropriateness of a given target consumer in relation to the business strategy of sustainable product/service providers.

It is important to understand that at the strategic level of “sustainability marketing” there are two main issues to consider: targeting and positioning. By definition, sustainable products make a contribution to the solution of socio-ecological problems and, therefore, they have an embedded (competitive) advantage over conventional products with respect to socio-ecological criteria. Generally, there are three possibilities to use sustainability as a competitive advantage. First, the socio-ecological dimension plays quite an *important* role in the positioning of sustainable products. The socio-ecological advantage is communicated as the primary benefit; performance and price are secondary benefits. Second, the socio-ecological dimension plays a *significant role, but it is not dominant*. It is treated equally to performance and price. Third, the socioecological dimension is an *integral part of quality and performance* (BELZ, 2006).

### 3 Research Method

Survey is the main research method on the present study. It consisted of structured interviews with 296 inhabitants of Curitiba, dealing with issues on social position, consumption habits, attitudes. Factor and cluster correlations were the main analytical strategy. The application of the questionnaires was performed by design undergraduate students during a period of one month.

## 4 Results & Analysis

### 4.1 Characterization of the Case Study

The results of the survey aimed at supporting project “Eco-Agregado”, led by the recycling company Soliforte Reciclagem Ltda, a Brazilian SME that recycles waste from civil construction and demolition (C&D) into aggregates with several granulations, which are 70% cheaper than the raw material and are sold to consumers (B2C) as well as to other businesses (B2C). Since

2007, the company is located in the metropolitan area of Curitiba, being the first firm to recycle C&D waste in this area. Soliforte currently only recycles concrete and ceramic, but aims to amplify its capacities to be able to recycle other materials such as plastic and wood. To enhance value creation, the company also plans to offer specific products related to social housing instead of just recycled material.

In order to develop new products and services, the company partnered with the Research Center for Design and Sustainability (Núcleo de Design e Sustentabilidade - NDS) of the Federal University of Paraná (UFPR), having received funding for the project from the Brazilian Innovation Agency (FINEP) and Fundação Araucária. The objective of the project “Eco-Agregado” is to create new products and services in the area of social housing for low-income consumers.

During the briefing state the research team has identified a key requirement for the low-income families: the need for increase the perception of space. These families live in quite small houses (30 to 40 m<sup>2</sup>) and the field observations have shown a large potential for make a better use of the building space, without necessarily to increase the area. Such solutions had to consider the direct implications of space perception on the self esteem of these people. With that in mind the design team set to work on two issues on product design: multi-functionality and light. The first line of products deals with the development of pre-fabricated solutions that could help the illumination of the building space, making better usage of natural lightning (see next figure).



**Figure 1 – Three different concepts for direct natural light: directing to the wall, directing to the ceiling and a light-through wall**

A number of alternatives were under development at the time of writing up the present paper. Next figure shows one of these alternatives, focusing on directing the sun light to the wall. This product has two main environmental characteristics: it extend the life cycle of materials by using recycled concrete/mortar/glass and reduce the amount of resources used within the building environment by using sun light to illuminate the build environment.



**Figure 2 – Use of recycled concrete/glass for a lightning product**

Despite the positive environmental implications of the product line a clear challenge for its acceptance among low-income people was the widespread perception of recycled products as associated with lower quality. Many low-income families work on the recycling industry and they tend to see recycled products as below standards and, therefore, such products carry the risk of negative symbolic perceptions associated with poorness. Another challenge for the project was the identification of alternative strategies that could include services for life-cycle management or even product-service system solutions.

## 4.2 Results of the Survey

The sample was constituted mostly by women (61%), with the majority ranging from 20 to 39 years old (56%). Such profile could be linked to the profile of the students that support the data collection.

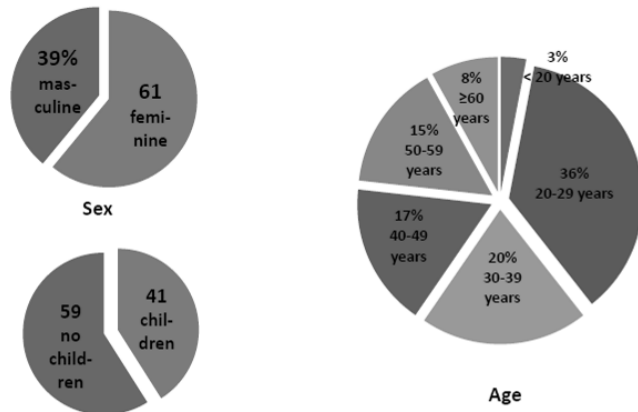


Figure 3 - General Household Profile

An interesting aspect of the profile of this sample is the amount of single people living with their parents (12%). Such characteristic is quite different from what is witnessed in many developed countries where single people tend to leave their parent's home on quite young age. That brings environmental benefits, with less demand for more building space.

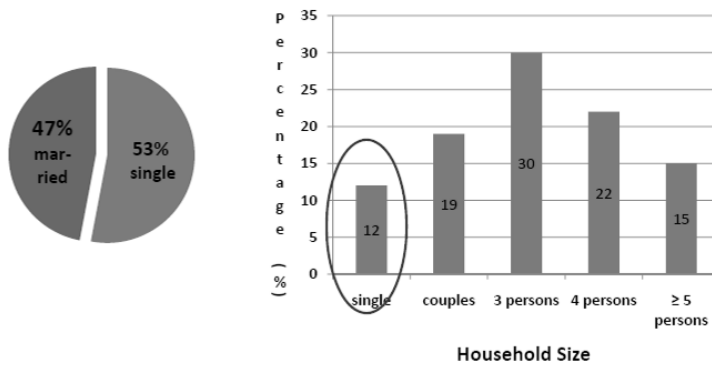
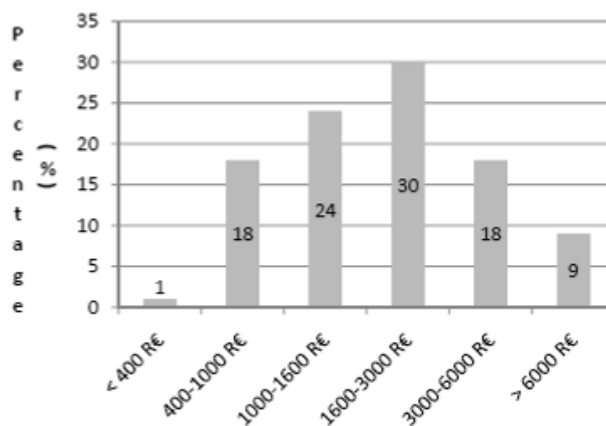


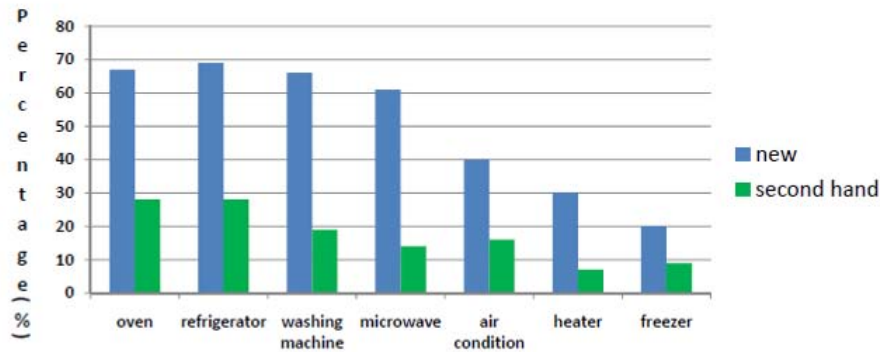
Figure 4 - Household Size

Income was a key aspect on this survey. Although the size of the sample limits the statistical generalization, most of the sample sets within the amount of income that typifies the majority of the Brazilian population (see next Figure).

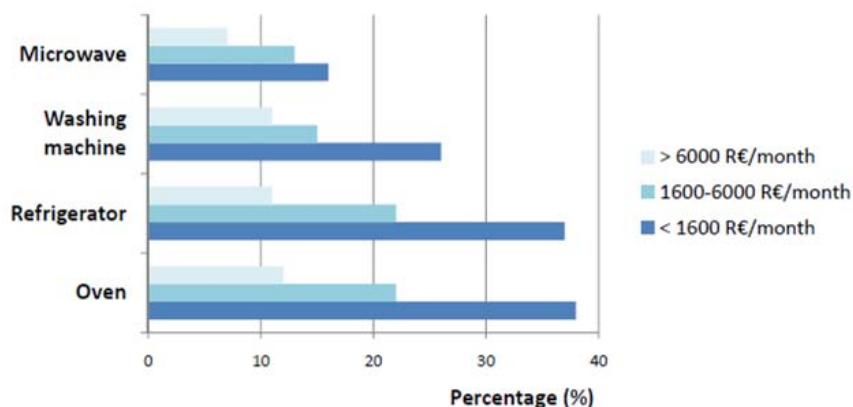


**Figure 5 – Income Profile of the Sample**

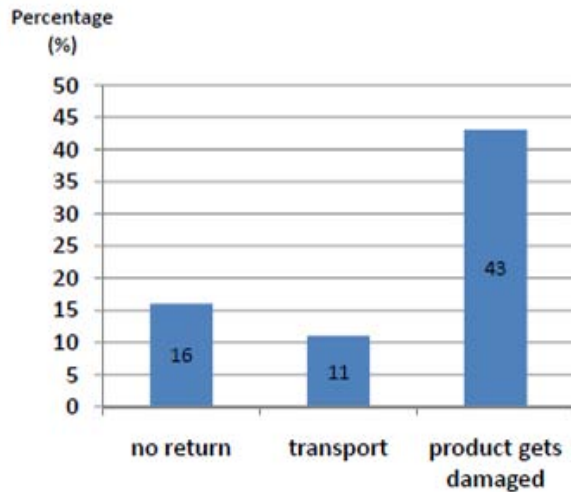
Next figure shows the amount of appliances within their houses. Note that there is a high presence of second-hand appliances. The same pattern was observed on the electronic devices (tv, radio, dvd, pc, etc). Bearing in mind that most appliance manufacturers in Brazil do not provide life cycle management for their products and, also, most of them do not offer product-service systems, this results enable the conclusion that there is a clear opportunity on developing new system solutions for second-hand products.



Further analysis (see next figure) confirms an expected result: there is more presence of second hand household devices among low-income families. It is a paradox on sustainability terms since these people are keeping longer these products, which in certain terms is quite environmentally beneficial. On the other hand, these second-hand products tend to be less energy-efficient. That in itself presents another opportunity for sustainable design: solutions for upgrading second-hand products. Poverty is clearly the driver behind this profile. However, as the introduction session pointed out, these people are increasing their income and it is likely that there will be early discharges of appliances if not leapfrog solutions is provided to them.

**Figure 6 – Distribution of Second-hand Appliances According to Income**

The results have showed a severe difficulty on introducing solutions to this market that consider the share of products, though 37% already share some household equipment. Indeed, 53% of the respondent's can't imagine to share a product in the future. Nevertheless, 15% can imagine to share a washing machine which is in itself an opportunity. The barrier for sharing included the fear of damages on the product (43%), the burden of transporting the product (11%) and, also, the expectation of not getting back his/her product (16%). Again, sustainable solutions, both at the product as well as at the system level, can address these issue and result on innovative solutions.



**Figure 7 – Barriers for product-sharing**

When addressing the issue of future consumption the survey resulted on alarming figures. Around 60% of the interviewees said that if they had money in the future they would buy a car or motorcycle; 46% would buy a new house/apartment; 18% would refurbish the house; 36% would make a trip somewhere; 32% would buy electronic household devices. Thus, providing sustainable mobility and housing options are key point on helping this population to leapfrog. Similarly, sustainable travelling offers are required on this market. Also, as the supply with electronic household devices and electronics will rise, energy and material efficient options are necessary.

In general terms the answers related to environmental orientation showed a high agreement to behavior that is linked to saving money and the “easy to do things”. Next table shows an extract of questions that did show some correlation on the survey.

**Table 1 – Extract of some of the answers related to environmental orientation that have shown correlation**

Item	Agreement (%)
I wash my dishes with the water running.	29%
I always turn the lights off when I am leaving a room.	93%
When I buy machines like the refrigerator, I take care that they need little energy.	81%
When I go to the supermarket I take some textile bags with me.	35%
I prefer refill products or packages which can be recycled.	78%

Next table shows a set of questions on the environmental dimension that have shown no clear correlations. That means, for instance, that not necessarily those people that do prefer to use a bike are the same ones that would spend time to find out if a product is ecological or not.

**Table 2 – Extract of questions on environmental orientation that did not showed correlation**

Item	Agreement (%)
When I can I prefer to use the bike instead of the car.	33%
Of course I would purchase a car if I could afford it.	84%
I don't find it important to have a big car, I'd prefer a small or medium one.	73%
I buy ecological products like cotton clothes, natural cosmetics etc. (at least sometimes per year)	49%
I like to buy products which can be repaired or upgraded.	68%
I don't have time to inform myself whether a product is ecological or not.	31%

An analysis of the survey results from the point of view of gender shows that social orientation on their consumption patterns was dominated by women. That is quite relevant when designing a new system/product/service with a focus on this dimension since gender issues are often ignored on the design process. Understanding the reasons why men have a reduced attention on the social orientation deserves further studies by the design community.

Another important aspect when analyzing the results from the point of view of social orientation is the fact that one third of the interviewed were engaged in an organized group (mostly church, some in social groups). That in itself is a great opportunity when implementing sustainable solutions as issues such as social cohesion, valuing local resources and co-design are more likely to occur when there is social structure in place to foster communication.

**Table 3 – Results of agreement on the questions related to the social orientation**

Item	Agreement (%)
I like to buy products from cooperatives or social projects.	41 %
If I had more time I'd like to participate in an ecological or social group.	55 %
I already got involved in helping people to renovate their houses	46 %
If it is possible I buy products which were produced in Parana.	43%
Even if I had more money I would share some products with other members of the family and my friends.	75%

The preliminary analysis of the study enabled the authors to conclude that there are four main consumer types on the sample, as described below:

#### Traditional Values:

- home centered (don't like to go out to eat; prefer to have his/her own garden);
- do-it-yourself and energy saving-orientated (improving their own house and helping others, efficient machines, he/she turns light off);
- quality oriented (clothes, furniture, pay more for healthy food);
- saving- and educational oriented (invest in education, saving for unforeseen, wish to support others);
- social and sharing-products-oriented (products from cooperatives, regional products, willing to share products, accept 2nd hand products);
- Saving, social and sharing orientation is dominated by women;
- DIY-orientation by persons with low educational level.

#### Up-to-date:

- technology oriented (he/she is informed about newest technology, preference for technical products like mobiles, computers etc.);
- eating-outside oriented (he/she likes to go out to eat and order food);
- leisure oriented (he/she likes to go out and travel);
- quality oriented (preference for unique products; he/she pays more for healthy food);
- sharing-products-orientation (willingness to share products; accept 2nd hand products);
- Technology-orientation is dominated by young men;
- Quality- and eating-outside-orientation is dominated by younger persons.

#### Struggling to survive:

- low financial resources (no possibility to save money; not sufficient money to buy food at the end of the month; no money for unforeseen circumstances);
- low time resources (difficulty on combining work and family; no time for cooking; no time to inform oneself about ecological products);

- Correlations with low income, low education and professions with basic formation as well as with number of persons in the household;
- Perception of reduced time resources is especially found in the low income group.

#### Consumption Hedonism:

- Affinity to ecological products (buys organic food and ecological products);
- Shopping oriented (he/she likes to buy clothes, CD, DVD, books, video games);
- Eating-outside oriented (he/she likes to go out, orders food);
- Going out-oriented (he/she likes to go to the cinema, shows/theater);
- Going out to eat as well as to cinema and shows is correlated with income;
- Buying organic and ecological products is dominated by women.

#### **4.3 Setting up appropriate Communication strategies for the case study**

As section 4.1 presented the company on the case study (Soliforte) is developing a full line of products for low-income houses using recycled materials with added environmental benefits regarding the use of natural lightning. Although the company has as a main target the low income families many people within this population might not fall on the category “struggling to survive”. Thus, the propositions of the authors attempt to cover all four consumer types identified on the survey, resulting on the content presented on the next table.

Table 4 – Opportunities for Product/Service Design within the Household and correspondent Communication strategies

Consumer Type	General Opportunities for Product/Service Design	Communication Strategies
<b>Traditional Values</b>	Fulfill the gaps on sustainable housing offers; Offering DIY and product sharing offers; Offering Service for 2 <sup>nd</sup> hand products; Increase the range of possibilities to garden; Branding of regional and social product; Branding the energy efficiency; Offer repairable, upgradable products;	Stress quality and possibilities for saving; Don't talk too much about "eco"; Point out social qualities;
<b>Up to date</b>	Enhance technological sustainability innovations (e.g.: hybrid car, zero emission car, solar panels, etc.) Offer durable good quality products (upgradable, repairable, able of being recycled, etc);	Stress technological innovation and high quality; Stress status of sustainable goods; Stress fun factor
<b>Struggling to survive</b>	Kits for sustainable low budget housing; Offer possibilities for sharing products; Offer DIY – products (e.g. furniture); Service for 2 <sup>nd</sup> hand products; Offer possibilities to garden by the community;	Stress possibilities for saving; Don't talk about "eco"; Point out possibilities of using the same products as middle and upper class;
<b>Consumption Hedonism</b>	Eco-products with status; Sustainable leisure-activities;	Stress status of sustainable goods; Stress fun-factor;

Base on this analysis, the main recommendations for communicating to the low-income families the specific case of the product illustrated on this article are:

- Stress the cost reduction against alternative products (e.g.: small windows, blocks of glass);
- Stress the savings on lightning;

- Stress the time reduction by adopting a DIY solution;
- Don't focus the marketing strategy on the "eco" factor;
- Present the product on richer settings (middle/upper class built environments).

The importance of these conclusions is that they are quite different from conventional wisdom used at the outset of the design project. Indeed, even the brand that has been designed for the product did adopt a cliché solution, emphasizing the environmental benefits of the product. With reduced possibilities to save money or even to afford regular expenses, communication has to send a clear message on cost, include the reduction of cost on lightning throughout the life cycle. DIY solutions can be a viable strategy to tackle the issue of low time resources, but in order to be effective it needs to consider the lack of tools and the low education of the consumers.

## 5 Conclusions

The study showed groups of people with different consumption orientations in Curitiba regarding sustainability: these consumers cannot be addressed with the same "sustainable" product/service or communication strategy. However, the results also show that there was no clear group with an ecological/sustainability orientation in all relevant fields (nutrition, housing, mobility). Indeed, there were groups which could be addressed with one or several of these fields.

The authors also concluded that sustainability orientations (ecological, social) should be linked to further motivations like health (nutrition), quality, interest in technology, interest in doing-it-yourself, status etc. Sustainability orientations alone do not appear to be sufficient to change the consumer pattern of people.

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