

Understanding stakeholders' views and support for solar energy in Brazil

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Abstract:

Public understanding and acceptance are recognized as critical issues shaping the successful implementation of renewable energy technologies like solar photovoltaic energy. This paper discusses how market research helped clients developing the first solar power generation and distribution venture in Brazil by identifying public's beliefs and level of support for alternative energies, and testing reactions to their key communication tool: a solar eco-label. Results found a gap between favorable attitudes and actual intention to adopt this choice partly explained by misconceptions about energies and the fragilities of the communication tool as presented.

Keywords:

Renewable energy; solar; stakeholders; public opinion; eco-label; Brazil

1. Introduction

“Solar energy is the future of energy”. Few remarks could bring together disparate players like Greenpeace and the International Agency of Energy¹, institutions usually perceived as speaking from opposite sides. Yet consensus around the immense possibilities of solar photovoltaic (SPV) technology to address our energy problems reveals that rare capability of coalescing those rallying around social and environmental interests and those acting based on mainstream business principles. After all, if solar energy is the future of energy, then it is the future of our economy, and of how our businesses and society will be founded.

To be sure, growing economic pressures resulting from current energy shortages and price instability, along with mounting environmental pressures spurring action plans and agreements to reverse climate change and develop carbon-neutral governance, place present models and future choices of energy in a decisive position. These factors situate energy choices as a critical touch point to ensure social stability and business sustainability. Hence, the imperative for countries and companies to move forward towards greater eco-efficiency and a cleaner and fully renewable energy matrix (Alam et al., 1991; Brown, 2009; Pasternak, 2000; Stern, 2011).

If this is true for all nations, it seems all the more relevant for Brazil where numerous accounts converge in emphasizing solar energy solutions (IEA, 2010; EPIA, 2010) given the huge country solar coverage under any possible criteria be it in terms of number of sunned days, radiation intensity or geography covered by solar radiation.² Concurrently, solar equipment installation costs are rapidly decreasing³ while the costs

for externalities from using conventional sources (i.e., large-scale hydro Belo Monte or pre-salt oil exploration) are getting higher and higher.⁴

On top of this, there are promising signs for alternative energies (AEs). On one hand, surveys with Brazilian consumers reveal a concern with the environmental footprint of conventional energy choices or nuclear power.⁵ On the other hand, both consumers and opinion makers within the business community display a receptive attitude towards clean forms of energy, as well as optimism about the possibility of having a higher share of wind and sun power out of the energy matrix (CEBDS-Market Analysis, 2010). How, then, favorable conditions and public opinion sympathy for clean energy can evolve into actual development of green power solutions like SPV? Which tools can help in accelerating the transition from consumer openness and business positive rhetoric for solar energy to a scenario of materialized gains for early adopters?

As of mid 2011, Brazil had a small SPV base (20 MW, 99% off-grid) and no national programs supporting it (EPIA, 2011). Solar energy central generators added up to a mere four and this source was excluded from the energy regulation agency (ANEEL) 2030 National Energy Plan. Aiming at reverting this picture, our clients –GIZ (German Agency for International Technical Cooperation) and Instituto IDEAL (Latin American Institute for AEs Development) in partnership with the concessionary of electric power services of South Brazil (Eletrosul)- launched project Megawatt Solar consisting of the installation of the first photovoltaic plant in a public building connected to the public grid capable of generating 1,2 GWh per year, power expected to be traded in the free energy market through public bids valid for 5 years. Our clients understood that key to their success in attracting corporate sponsors for this initiative was the offering of an

eco-label likely to render the acquisition of Megawatt power into unique green qualifications enhancing corporate reputation and performance.

Our clients' suppositions of a company choice for this type of power as likely to be capitalized into a distinctive sustainability credential involved a series of assumptions for which they lack supporting evidence, such as:

- * the publics (business customers and end consumers) understand what SPV is about,
- * their stated interests go beyond statements and also involves confidence in the performance of AEs,
- * public acceptance for AEs is connected to the notion of a company proving is behaving sustainably,
- * going green could automatically render reputational capital (especially, with end consumers), and that this way to obtain prestige will be not outpaced by other forms of achieving that end,
- * these publics are capable of identifying signs and symbols conveying a message of commitment to environmental corporate responsibility through the usage of AEs like SPV,
- * these publics will be sensitive and believe in the content of the eco-label.

All these assumptions required empirical evidence as well as market feedback lending themselves well to a research plan seeking to understanding key stakeholders' views about solar energy virtues and limitations, the perceived benefits and costs in the proposed SPV model (which involved a premium price compared to hydro-sourced electricity), the reputation gains and marketing utility associated to exhibiting the eco-label, and their assessment of the eco-label design thought to operate as the key tool for

clients' communication and sales. The resulting research agenda addressed a number of critical questions pervasive to the larger plan of building successful cases for sustainable initiatives and policies: What cognitive and marketing barriers consumers and corporate customers confront to fully embrace sustainable choices? How effective an eco-label could be for identifying companies as subscribers to renewable energy and, therefore, conveying to their stakeholders the information of a positive alignment with a sustainable business model? To what extent an eco-label is capable of surpassing awareness barriers about solar energy and generating material benefits such as better reputation? And how effectively our clients' original prototype transmitted the contents of the intended proposal to customers?

2. Materials and methods

Based on the research goals previously described, we proceeded with a two-phase methodology approach, each targeting a different public. The study was fielded between mid October and mid December 2010. Phase 1 explored consumers' views using a qualitative approach based on two 2 hrs.-long focus groups conducted in the city of São Paulo, each with 8 adults aged 24-62 years old.⁶ Participants were selected based on having a high interest for socio-environmental activities by companies, yet with opposing levels of trust about corporate communications on that matter. Each segment represented not less than 35% of the population according to previous studies (CSR Monitor 2005-2011).

Phase 2 mapped out business managers' attitudes and intentions using a semi-structured questionnaire of nearly 35 minutes length through a variation of CATI (computer assisted telephone interviewing) to web technique.⁷ In total, sixty-eight managers were

interviewed who worked for large companies free to choose their energy supply and acting on a variety of segments – from food industry to transportation, from civil construction to retail, across main cities from South, Southeast and Northeast regions of Brazil. Nearly half of respondents worked within the management and operations areas (that is, those directly involved with organizational efficiency requirements) and the other half within marketing/ communications and sustainability areas (that is, those involved with company reputation and social legitimation)⁷ - a majority of all of them working in those positions for over a decade.

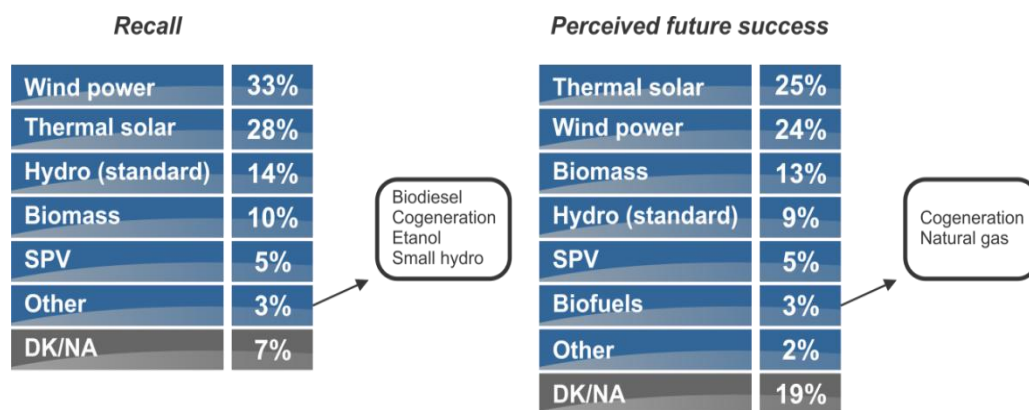
3. Results

Key references of AEs for consumers involve solar (though equating thermal and SPV) and wind power, followed by biogas. At a distant third place come a variety of biomass and biodiesel such as sugar-cane ethanol, waste and grass-generated fuel, along with references to nuclear energy and tidal power. Conversely, business elites self-declare familiar with AEs (18% a lot, 59% fairly well) and exhibit a similar ranking of top-of-mind sources, except that they distinguish thermal solar from SPV better than consumers –though many of managers are not free from confounding both.

AEs like solar photovoltaic find a responsive chord among Brazilian consumers and this response springs from a perception of impact minimization (*“as far as I know, they do not harm nature”*) and resource availability and accessibility (*“because it’s renewable and it has a free usage provided by nature”*). Receptivity of renewables among executives is also high being perceived as the most promising sources of energy in the near future: for example, wind power tops the awareness ranking (as per 1/3 of

managers) and ¼ of this public also considers it the smartest bet among all clean energy options. In the case of thermal solar energy the match gets even closer: 28% and 25% of opinions, respectively (see Figure A.1).

Figure A.1 - Alternative energies: unprompted recall and perceived future success
(Business sample)



*When it comes to alternative electric power, which is the first type of energy that comes to mind? (two mentions allowed)
Which type of alternative electric power, would you say would be one of your main company choices in the future? (two mentions allowed)*

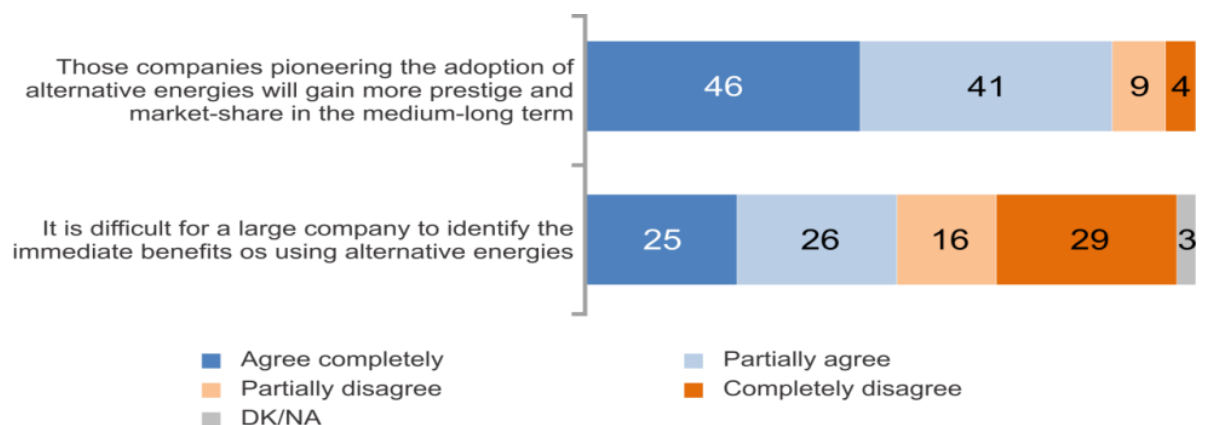
Nevertheless, awareness and favorability confront a number of myths and misconceptions, yielding a support gap between approval and actual mobilization in favor of these options. For example, consumers believe that solar plates and wind power engines will occupy too much room and interfere with birds migrations (effects in conflict with the claim of being environment-friendly), that the former will become useless in cloudy days or periods without winds, that discontinuity in winds or sunlight during same day can zero the generation of power, that these solutions are unfit to attend demands from large corporations that are assumed as requiring “bolder” types of energy, that their energy efficiency claim is ultimately weakened by limited or

inexistent storage capabilities. Interestingly, these observed limitations partially match what scholars have found in other contexts (see Devine-Wright, 2007).

Misconceptions with solar energy start at the definitional level. Both consumers and a substantial number of managers conceptually merge SPV with thermal solar energy, and attribute electricity-generating capabilities to thermal panels (*“To my knowledge, solar energy is produced by the very same ray of solar light upon the plate”*).

Business views are more balanced between positive and negative motives behind their sympathy for renewables. They admit a choice for AEs renders positive returns at the reputational level in the medium-long term (46% totally and 41% partially agreeing with that idea). A benefit that consumers are willing to grant but that believe as resonating more strongly among companies employees and current clients than to society at large. On the other hand, executives are divided as to the short-term payback tangibility of walking the greener energy path: 51% agree that it is difficult for a large company to identify the immediate benefits of using an alternative source of energy whereas 45% disagree and 3% have no opinion (see Figure A.2).

Figure A.2 - Views about pay-offs for adopting alternative energies (Business sample)



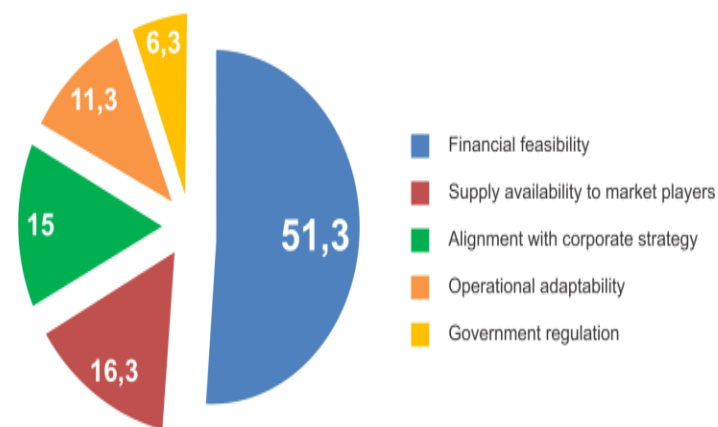
In any case, the likelihood these motivations will encourage SPV adoption is low as this option remains off the radar of corporate executives. Only 5% of them spontaneously recall SPV as part of a renewable energy menu and the same percentage of managers admit this option would be of interest for the companies they work for.

Business leaders are less prone to echo many of consumers' misconceptions, but this only partially softens a degree of ambiguity behind their stated interest/favorability for AEs. This ambiguity takes the form of:

- a) a major gap between attributed importance and actual adoption of AEs within the corporate environment they work (such gap reaches 30 points compared to other sustainability-oriented decisions within the company like progressing towards product certification -16 points gap- or water/energy consumption reduction –a 6 points gap);
- b) a conceptual divorce around the notion of AEs as core to the decision of developing a sustainability corporate policy platform as indicated by poorly correlated responses between those asserting that their companies have been implementing sustainable solutions and their companies' actual adherence to renewables; and
- c) the aforementioned split in opinions about short-term payback identification of adopting renewables (only 46% perceiving immediate benefits) versus the dominant rhetoric of AEs as a must-have target for companies regardless higher costs (69% endorsing this standing), which portrays the conviction that for many executives other companies should chase that road first since they seem not too willing to risk their careers for what they ultimately see as uncertain options, or options that look certain only in the distant future.

Perceived higher costs of AEs coupled with the mark-up price for SPV generated electricity included in the Megawatt proposal are additional barriers for support among consumers and businessmen – a result that replicates findings from other societies (Scarpa and Willis, 2010). After probing for main challenges for wider usage of alternative sources of electric power slightly over half of managers (51.3%) pointed out shortcomings of financial feasibility. A belief that going green in energy terms represents heavy costs with no economic paybacks seems the perfect recipe for freezing decisions. As business managers need to accommodate actions to short-term satisfaction of shareholders and profitability goals, the odds they will make a long-term, financially questionable decision are low or likely to affect a minority. (see Figure A.3).

Figure A.3 - Main challenges to using alternative energies (Business sample)



Lastly, business publics recognize other challenges varying in nature and dependable upon decisions external to market agents. That is the case of issues of greener energy supply availability and favorable government regulation, which respond for one fourth of other reasons blocking the future of renewables. Since large-scale availability is

ultimately conditioned to government policy and enticements this means that the Brazilian state has a substantial role to play.

Consumers echo this attribution of responsibility to government as key decision-maker, for some *“the first step depends upon defining a government policy for renewables – I’m not talking about government putting money on these but determining the development of renewables as part of government policies”*. Other consumers further stretch this expectation by analogy with environmental legislation: *“Pretty much like you got environmental legislation forcing companies to deal with its waste in a responsible manner you ought to get legislation that somehow put the pressure on companies to use solar energy and to do it at accessible prices”*. The acknowledgment of society support for a regulatory upper-hand by government may –at some point– instigate some industries to pro-actively adhere to AEs following a choice for self-regulated greener energy consumption before the state ends up intervening and forcing them to do so.

Difficulties in figuring out a corporate strategy aligned to a greener energy source mix anchored on renewables and the underdevelopment of operational adaptation mechanisms to use sources like SPV complete the set of identified obstacles by managers. These issues account for over ¼ of the barriers and fully fall within market agents’ responsibility. More importantly, their share of the total obstacles perceived suggests that political decisions within company weight slightly heavier than technical matters.

To what extent the proposal of a solar eco-label helps to bridge misconceptions and provide a valuable tool to reconcile stakeholders' enthusiasm with the concept and half-hearted response in terms of adoption and support? How efficient it is in building a solid basis upon which furnish legitimacy to a proposal for which there is no local antecedents and that holds claims that present themselves invisible to stakeholders?

Consumers' reactions to the SPV eco-label concept and draft rapidly echoed the issue of credibility. As one participant stated: *"What is critical for me is being able to believe in what a company says is doing. A seal is important, it provides something visual to distinguish and identify but I also want to understand if that's actually true and how having the seal ensures that"*. Ultimately, similar comments voiced an expectation for a broader role of a seal not contained in their image or conceptual statement: to perform as a self-explanatory guidance for consumers. Among executives, suspicions were more related to the long-term prospects of the idea given the absence of government back-up and a degree of skepticism about label potential for propelling major changes in energy supply. In this sense, there were hesitations about how the proposed eco-label would be able to catalyze an engaging platform for SPV adoption.

Overall, consumers ratified their receptivity to AEs by welcoming the proposal of a SPV eco-label more strongly than the actual design. The concept behind the eco-label also triggered a reflective process which motivated participants to think of sustainable investments in comparative terms across companies from same segments. Accordingly, the eco-label seemed instrumental to both a preliminary educational process among consumers and a favorable benchmarking of early corporate adopters likely to get

beneficiated from individual choice and positive word-of-mouth, as declared by some respondents.

Managers sympathized with the scheme concept slightly more than they felt persuaded. 74% reacted favorably, 69% exhibited a perception of ROI from its adoption and 67% voiced interest in the proposal. As opinions shifted to more material or consequential decisions, the level of endorsement weakened: 62% of executives thought likely to recommending the adoption of the seal before the directors' board. Still, the breach between the 74% who agrees with the concept and the 62% who are willing to advocate for it before the corporate hierarchy seems, in perspective, rather low.

What elements seem to deepen or avoid that gap from getting bigger? A core factor that reduces the gap relates to the belief in the likelihood of market gains. For 82% of managers companies using the seal elicit public prestige. Concurrently, 78% of them are persuaded that consumers pay attention to this type of signalization of a company engagement with sustainability. Reputation is, thus, a clear motivating force. On the other hand, factors contributing to this gap are the eco-label drawbacks in idea clarity, interpretability and credibility – plus a certain degree of resistance to paying a premium cost. These are issues more strongly related to the practical, functional aspects of the seal than of symbolic nature (like prestige and image gains). For 51% of executives the eco-label as proposed is difficult to decode (alarmingly, 54% of those in the communications/sustainability departments think that way) – a disadvantage that echoes among consumers (on a scale of 1 to 5 for interpretability, the eco-label gets only 2.75 points, its lowest score among several other features probed).

These reactions could not amount to an effective conversion of favorable attitudes towards renewables and eco-labeling into more committed responses among businessmen and were likely to ignite further disbelief about the seal since those deficiencies were perceived as subtracting credibility to the initiative.

4. Discussion

This study revealed that stakeholders hold positive views about AEs and attribute to companies that pursue a cleaner energy source a net reputation value. However, uneven levels of awareness about renewable energies along with a number of misconceptions and the fragilities of the chosen eco-label scheme may act as a hindrance to bridge the current gap between favorable attitudes and unwillingness to adopt solar power.

The variety of notions of AEs yield five implications. Among those sensitive to issues of sustainability, we can highlight:

- a) a plurality of sources of energy in mind, not just a sense of one dominant energy source;
- b) a recognition of forms of energy related and unrelated to one's daily life, thus showing a capability for connecting the notion of energy supply and needs both to residential, individual consumption needs (such as heating/cooling, lighting and fueling cars) and to business and collective or large-scale needs for manufacturing and transportation;
- c) an awareness of types of energies even if not currently under operation in the country;
- d) a relative dissociation of hydro power from AEs (one major contrast to findings in other societies, cf. Curry et al, 2005)

e) the indifferentiation between thermal and photovoltaic solar energy .

This scenario of relatively sophisticated opinions may result in fertile soil for AE initiatives like SPV. Yet, the conceptual merge of different solar energies (thermal) reveals a critical obstacle to showcase the uniqueness and value of SPV. Obviously, there are adverse implications springing from this belief:

- 1) it turns SPV's role banal and subtracts value to SPV initiatives, reducing its persuasiveness in the eyes of companies;
- 2) it increases the risk of alienating consumers when addressed by a pioneering SPV adopting company since they may feel manipulated or deceived because of the supposed redundancy of the proposal.

Consumers establish their favorable attitudes for solar and wind power more strongly upon their minimal interference on the environment, a fact with troubling implications since a basis for support upon negative rationales (i.e., the minimization of negative outcomes) is a far less effective motivation for driving action than positive arguments (i.e., benefits or expected returns). Such an opinion balance usually imply in reactive behaviors. And, yet, consumers perceive themselves as agents of change. In line with previous surveys findings (CSR Monitor, 2005-2011), consumers are keen to state they can influence corporations' decisions quickly dressing themselves as the mythological sovereign subject of the market proclaimed by mainstream economics and marketing. Nevertheless, this influence is unlikely to drive corporate decisions related to energy sources; according to managers, consumers' voice ultimately works as a retrospective referendum on corporate choices once these have been already taken on that matter. In other words, favorable orientations towards sustainable choices like AEs have a hard

time to translate into public pressure upon government or corporations for mass adoption of these greener sources of power. We call this the support gap.

Taking all things considered, the message is clear: SPV needs not only to gain visibility and better comprehension before stakeholders but also needs to showcase its uniqueness and corporate functionality more clearly. Overcoming the barriers and misconceptions reviewed requires better communication and education of both publics, to improve chances of capitalizing generic favorable views into actual business choices for SPV. At the same time, consumers and business validate the logic of reputation returns for companies investing in AEs, which encourages plans for tackling the unexplored SPV opportunities by focusing its marketing upon an eco-label capable of identifying and, therefore, differentiating those pioneering corporations sponsoring the SPV development program. Promoting a customer-oriented approach upon displaying the eco-label emerges, in theory, as a sound instrumental decision.

Eco-labels are consented cognitive facilitation tools playing the role of information shortcuts, if endowed with the credibility of an authoritative endorser. They are paramount in the case of Brazil where surveys reveal certificates and labels are considered the best indicators of corporate sustainable behavior (CSR Monitor, 2005-2011).⁸ Such a practical role does not only impact upon consumers since creating a logo or brand in the form of an eco-label constitutes a means through which increasing the visibility of the AE purchasing decision by a corporate patron, thus providing adequate guidance to business as well (Wustengahen et al., 2000).

For all the favorable prospects, eco-labels find many barriers yet to overcome in Brazil. To begin with, despite several eco-schemes existing in the country (38 as per Ecolabeling.com in late 2011), spontaneous awareness of eco-schemes is low and restricted to a handful of iconic labels (Akatu-FaberCastell-Market Analysis, 2006).

This was confirmed by the current research even with publics supposed to have higher levels of information: only one every two managers were aware of any scheme or certification (and even ¼ of these were unable to cite examples). Among consumers, the government-backed, heavily disseminated, product-attached energy-efficiency Procel label for home electronics has become synonymous of eco-labeling with scarcely any other example in mind. For businessmen, Procel ranks in 2nd place yet it achieves the highest rates in credibility and market influence. So it came as no surprise that a tiny fraction of consumers in the groups and just about 8% of managers instinctively referred to a well-recognized label as a good indication that a company makes use of renewables. An eco-label may still be hard to link to usage of EAs, thus proving efficacious for specific categories only.⁹

The literature on eco-schemes have long pondered another key factor towards a successful eco labeling project capable of squaring the challenge of turning invisible features to consumers and customers somehow visible and believable: the presence of an authoritative, recognizable third party ensuring the greener performance or processes by companies, thus granting credibility to the flagship certification (Nimon and Begin, 1998; Watanada and Mak, 2011). Regrettably, neither client behind the project could fulfill these requirements as both lack visibility and market projection to play that role; on top of that, they are not formally entitled to serve as trustees or guarantors of the proposal. This seems all the more relevant in the absence of local antecedents for similar seals and considering that what has been called the “sin of worshipping false labels” is present in 14% of products across different categories, contributing to schemes’ credibility erosion.¹⁰

5. Conclusions

As the year 2012 begins, a renewed surge of news promising a more prosperous destiny for solar photovoltaic energy reached newspapers and blogs in Brazil. The government finished a study suggesting legislation that will allow the generation of solar energy at the household level and announced a USD 118 million credit line for solar energy.¹¹ At the same time, the largest energy distributor in the Northeast region, Chesf, announced investments of over USD 41 million in SPV testing units,¹² whereas in the Southeast region, one major stadium for the World Football Cup of 2014 is promising to feed all its energy needs out of solar by end of 2012.¹³ As for the Megawatt project, a public bid was held in late 2011 and 14 proposals were submitted, suggesting a substantial interest in solar energy.

Things appear to start moving swiftly in favor of AEs in Brazil. And for so many well-deserved criticisms about the role of market research in paving the road towards unsustainable behaviors by consumers and firms, our discussion may serve as a proof that it can also play a positive function in influencing the development of a sustainable future. For this specific business case, market research contributed to develop a sharper basis for a unique renewable energy proposal through:

- a) untapping myths and beliefs that hampered the conversion of positive attitudes into mobilization in favor of renewables (what we called the "support gap"),
- b) assessing and dimensioning the pay-offs of AEs adoption across stakeholders, thus furnishing favorable arguments for the sales proposal around the concept and eco-label,
- b) testing concepts and visual cues in order to obtain critical intelligence for better alignment of these with stakeholders' expectations and rationales about clean energy,
- c) identifying how to potentialize the impact of powerful heuristics such as eco-labeling.

Likewise, insights from research inspired a larger review of clients' strategy. After the visual improvement of the eco-label, clients agreed that the next critical step will imply advancing a public education campaign seeking not just to divulge the eco-label but to raise awareness levels about the singularity of SPV and increase its perceived value among consumers and business customers. Such campaign plan has led to a finalized logo usage guidebook, an educational primer and a video still under development, and a “best business practices” manual for eco-label responsible marketing use. Furthermore, this educational campaign was understood as being more effective if set in motion before any broader disclosure of the seal, focusing on printed media, specialized magazines, internet, and energy and sustainability events.

Along with these decisions, research help our clients to conclude that -unlike standard usage of eco-labels in Brazil and abroad- the seal will have stronger resonance if used in institutional campaigns instead of in product packaging by corporate patrons. This approach seems more coherent in building trust and mobilizing choice among potential business customers. Finally, for those partnering with our clients in sponsoring this pioneering SPV initiative, a joint communication campaign is planned to be set forth around the social value of adopting clean energy at customers' locations (i.e., employees offices, retailers' stores and point of sales, etc.) or in companies' sponsored events (i.e., shows and fairs, industry conferences, etc.).

6. Footnotes:

- ¹ Greenpeace (2010), “Sol: o futuro da energia”, available at http://www.greenpeace.org.br/clima/pdf/sol_ofuturo.pdf, on Dec.15, 2011; Joel Kirkland (2010)“IEA: Solar Power Could Produce Nearly One-Quarter of Global Electricity by 2050,”. *Scientific American*. May 12, 2010.
- ² Incidence of solar radiation is estimated at 4,500 to 6,300 Wh/m², according to the America do Sol network, 2011.
- ³ According to late 2011 calculations by Bloomberg New Energy Finance, costs are expected to half by 2013, pushed by a larger economy of scale achieved with regards to producing components. Consequently, world annual manufacturing of equipment has quadrupled since 2008 and is expected to double till 2013 pushing costs down a bit further. Also, see: Scheidt, Paula (2011), “Bons ventos para a energia fotovoltaica no Brasil”, *Revista Brasil Energia*, December 2011, n.373.
- ⁴ Costs for building the Belo Monte dam went from R\$ 16 billion in early 2010 to R\$ 26 billion in late 2011, whereas in the span of 2 months since November 2011, there has been 4 oil spills related to the exploration of prior to pre-salt basin. Maden, Laura (2012) “Petrobrás logs third oil spill in 2012”, *The Rio Times*, February 21, 2012. (<http://riotimesonline.com/brazil-news/rio-business/petrobras-logs-third-oil-spill-in-2012/#> on February 23, 2012)
- ⁵ *Revista Brasil Energia* (2012), "Meio ambiente mais preocupante", February 2011, n.375; *Portal Energia Hoje* (2011), "Brasileiro rejeita energia nuclear", December 16, 2011.
- ⁶ This methodological decision followed previous examples in studying AEs among stakeholders (Legget and Finlay, 2003; Wustengahen, 2009) and the need to explore

issues too new or distant from subjects realities, and capturing the dynamics of reasoning behind responses (McNeil, 2005; Morgan, 1997).

⁷ Such segmentation not only relates to the specific second-level goals of the study (namely, identifying the tensions and potential between eco-efficiency arguments vs. reputational appeals in providing a discursive background to lever the solar energy proposal) but also to established literature findings about the need to consider the company as an heterogeneous agent and –thereby- map out the opinions of the different decision-makers with different (when not antagonistic) goals. See: Fonseca and Da Silva (2010).

⁸ Critical from a business perspective, lower education/SECs publics hold eco-labels more strongly as preferred indication of greener brands (CSR Monitor, 2005-2011), which may discourage companies since they usually expect to charge a premium for their greener products or manufacturing processes, something only upper SECs could afford.

⁹ As of late 2011, according to Ecolabeling.org, there were only 4 solar energy eco-labels and other 74 related to energy issues around the world (though mostly connected to energy efficiency and not to AE adoption), so it is not surprising such low association among Brazilian stakeholders.

¹⁰ Results from the study “Greenwashing no Brasil”, conducted by Market Analysis in 2010 across 501 products from different categories and analyzing nearly 890 green claims (<http://www.ideiasustentavel.com.br/2010/10/greenwashing-no-brasil/> on February 22, 2012.).

¹¹ Valor Econômico, January 27, 2012; Estado de São Paulo, February 14, 2012

¹² Valor Econômico, January 30, 2012

¹³ Brasil Econômico, October 27, 2011

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