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Helping eco-labels to fulfil their promises

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'The main reason behavioral science should be part of the policy debate is that it provides in some cases a perspective that is vastly different from economics' (Amir *et al.*, 2005).

1. Introduction

Eco-labeling's aim is to harness the power of markets to pursue environmental objectives; indeed, numerous surveys indicate that consumers in various countries want more information about, and are willing to pay for, eco-friendly products. The global directory of eco-labels,¹ Ecolabel Index (<http://www.ecolabelindex.com>), lists 455 eco-labels operating in 197 countries in June 2014. However, most environmental attributes are unverifiable by consumers and firms can use eco-labels to reveal these hidden attributes (best case) or

¹ For ease of exposition, we do not distinguish between different categories of labels (third party *versus* second or first party, voluntary *versus* mandatory, private *versus* public, etc.), but these categories are well described and their implications discussed in the literature (see, for example, Rubik and Frankl, 2005; Horne, 2009; Roe *et al.*, 2014). Ibanez and Grolleau (2008) suggested categorizing a particular eco-label according to the definition, verification and signaling stages. Taking into account various categories of eco-labels is crucial to avoid one-size-fits-all policy and formulate tailored recommendations according to eco-labels' type and running organization, nature of products and so on.

'greenwash' their product (worst case). Because dubious claims exist, providing reliable information is crucial (Benerjee and Solomon, 2003). Despite some success stories, such as the Blue Angel in Germany (see OECD, 2005 for a review), eco-labeling schemes often fall short of their promise; possibly because they are designed without considering the results of social science research (Mont *et al.*, 2013). Rather than just observing this failure, we use recent advances in behavioural economics to inform policymakers regarding (i) the gap between academic design and real implementation, (ii) the unintended and adverse effects of some eco-labeling schemes, and, (iii) the potential of behavioural interventions. We are not the first to address the potentials, success conditions, achievements, drawbacks and challenges of eco-labeling schemes (Rubik and Frankl, 2005; Bostrom and Klintman, 2008) but our propositions are mainly based on recent behavioural insights.

2. The promises of eco-labels

Eco-labeling programs have been in existence since 1977 and have grown in number and scope of products, *e.g.*, electricity, automobiles, beaches, funeral providers (Table 1).

[Insert Table 1 around here]

What caused this growth in eco-labeling programs? Apparently, it is not due to increased levels of consumer concern (Teisl, 2007). Alternative explanations could include: increased globalization (Cashore *et al.*, 2003); circumvention of World Trade Organization rules (Dröge, 2001); increasingly sophisticated NGOs (Gulbrandsen, 2006); lack of regulatory will (Horne, 2009); increased rent-seeking, or gaming by firms (Ibanez and Laye, 2008); improved supply-chain management (Delmas and Pekovic, 2013); and increased industry consolidation (Orsato, 2006). Policy makers may prefer such voluntary approaches as a way to reconcile the need to do something without harming their vote-winning strategy. Compared to costly traditional regulation, eco-labeling schemes are low-cost, involve education and persuasion and are usually managed by NGOs. For instance, it has been argued that policy makers can collude with producers on voluntary approaches to speed up the regulatory process, show to voters that they had diligently undertaken action to solve environmental problems during their legislature and save budget resources (OECD, 2003). When it is effective, eco-labeling allows consumers with preferences for (or against) specific production outputs to reward (or punish) manufacturers through their market decisions (Banerjee and Solomon, 2003; Teisl, 2007). These decisions may lead to changes in producer behaviours; *e.g.*, new marketing strategies, new (current) products (re)developed. For instance, in order to move the United States toward greater energy independence and security, the U.S. National Highway Traffic Safety Administration established requirements for automobile manufacturers to label new vehicles with information about their energy performance. These requirements include a ‘permanent and prominent display’ that indicates the vehicle operates on an alternative fuel.² Ultimately, the expectation is these changes lead to reduced environmental impacts. For instance, Sanchez *et al.* (2008) estimated energy and carbon impacts from U.S. EPA’s ENERGY STAR voluntary product labeling program and concluded that through 2006, the program was successful and saved 4.8 EJ of primary energy and avoided 82 Tg C equivalent.

² NHTSA. 2014. Alternative fuel vehicle badging, fuel compartment labels and consumer information on alternative fuel usage (<https://www.federalregister.gov/articles/2014/02/20/2014-02957/alternative-fuel-vehicle-badging-fuel-compartment-labels-and-consumer-information-on-alternative#h-10>).

Although eco-labeling sounds like a simple process which automatically leads to environmental improvements, the success of these programs depends on multiple factors (Rubik and Frankl, 2005; Bostrom and Klintman, 2008). Eco-labeling programs have shown some market success in various markets, such as clothing (Nimon and Beghin, 1999), tuna (Teisl *et al.*, 2002), energy (Sanchez *et al.*, 2008), detergents (Bjorner *et al.*, 2004), and paper (Brouhle and Khanna, 2012). In addition, eco-labeling schemes can generate business-to-business competition for being the greenest company, a virtuous race that fosters innovation and plays an important restructuring role without ever being used by consumers. However, positive environmental effects are controversial; eco-labeling can lead to increased environmental degradation (Bougherara *et al.*, 2005), or investment in brown goods (Dosi and Moretto, 2001), and eco-labels are most likely placed on products which are the easiest to certify (*i.e.*, the low-hanging fruit) leading to small-to-no change in production practices or in environmental improvements (Karlsen *et al.*, 2012). Finally, the credibility and relevance of green claims are frequently challenged (Horne, 2009). For instance, a 2010 report found that over 95% of ‘greener’ products in North America (over a sample of 5,296 home and family products) commit one or more of the so-called sins of greenwashing: lack of proof, vagueness, irrelevance, or emphasizing an environmental advantage that distracts consumer attention from greater environmental issues (<http://sinsofgreenwashing.org/>). We take a more detailed look at what factors influence the success or failure of eco-labeling programs.

3. Providing credible information is not enough!

Standard economics (indeed, much science communication) frequently assumes poor choices result from a lack of information and prescribes information provision. Nevertheless, this information deficit model (Sturgis and Allum, 2004) is flawed; in real world settings consumers rarely read and process all of the information, frequently suffer from information overload (Benerjee and Solomon, 2003), and are influenced by information framing and presentation. Increased information can lead to higher levels of knowledge, but not necessarily to behavior change (Abrahamse *et al.*, 2005). Moreover, this model overemphasizes the role of information and does not pay enough attention to other factors such as the connection between green attributes and desired consumer value or social influences (Griskevicius *et al.*, 2008). Information-based policies can well perform in some circumstances and not in others. Information provision can work better with individuals who are already sensitive and involved (*e.g.*, because of education or environmental activism)

(Thøgersen, 2000), when the organization supporting the eco-label is considered as trustworthy or when coupled with other measures such as green procurement and regulatory threat. From the firm side, eco-labeling schemes can be manipulated to create competitive distortions; *e.g.*, used to raise rivals' costs on the pretext of environmental preservation (Grolleau *et al.*, 2007). Manufacturers can also strategically use eco-labels to increase total demand for their suite of products, and thereby pollution, because the eco-labelled portion of their product line projects a positive 'halo effect' on the non-labelled portion (Dosi and Moretto, 2001) or because eco-labels can increase demand by alleviating consumers' guilt about their purchases (Bougherara *et al.*, 2005; Kotchen and Moore, 2007) or license consumers to behave badly in other domains (Mazar and Zhong, 2010). Finally, price changes driven by eco-labeling programs can increase environmental externalities (Mattoo and Singh, 1994; Gudmundsson and Roheim 2000; Holm and Englund 2009; Small and Van Dender 2007; Greening *et al.*, 2000).

In order to increase the credibility of green claims that are frequently unverifiable by the consumer, expert third parties are involved to provide endorsements or eco-certifications (Truffer *et al.*, 2001). Nevertheless, the science behind these operations is not without controversy, leading to many criticisms (Mason, 2011) such as: a mismatch between eco-labels' promises and reality, competition between eco-labeling schemes, or associating eco-labels with negative product attributes (Harbaugh *et al.*, 2011). In sum, providing credible information is not enough if the policy objective is environmental improvement. There is a clear need to: calibrate information to consumers' situations, deliver value (*e.g.*, private benefits) beyond environmental benefits, and account for strategic manipulation. For instance, delivering consumer value beyond environmental benefits helps alleviate public-good related problems (*e.g.*, free riding). Nevertheless, the nature and number of additional goals have to be considered taking into account potential dilution problems (Zhang *et al.*, 2007). Indeed, consumers have the tendency to instinctively believe that a product performing a single function (*e.g.*, cleaning) is better at than another product performing the same and additional one functions (*e.g.*, preserving climate). A natural and testable implication of this issue could be to investigate whether adding an eco-label on a given product reduces the perceived cleaning effectiveness of the product.

We caution the reader that our literature overview is selective and focused towards the drawbacks of eco-labeling. Without ignoring the positive effects of eco-labeling schemes and

several success stories, our goal is not to present a balanced and in-depth analysis of eco-labeling schemes (Rubik and Frankl, 2005; Bostrom and Klintman, 2008) but to emphasize the caveats of the conventional view and to suggest that behavioural insights can usefully complement it. To be transparent, some criticisms formulated against eco-labeling schemes, derived from theoretical models, identify conditions where adverse effects can occur, but they do not necessarily correspond to real-world situations. Moreover, some criticisms are speculative or apply to specific situations and cannot be transferred to all eco-labeling schemes.

4. Using behavioural insights to design ‘better’ eco-labeling schemes

Rationalist thought discounts the role of heuristics and mental shortcuts in decision making that often lead to ‘predictable errors’ or ‘biases’. Behavioural economics emphasizes the fact that our intuitions about what drives behaviour are limited because behaviour is not shaped by actual states of the world but by (i) mental representations of those states or construal³ and (ii) by the power of the situation, implying construal is heavily impacted by decision context. Rather than considering people’s preferences are given and just *revealed* during decision-making, behavioural economics assumes preferences are constructed by nature and context of the decision (Shafir, 2008). Many well-intentioned interventions fail because of how they are construed by the targeted group. For example, subsidizing people who are intrinsically motivated to purchase eco-labelled products may lead them to misattribute their interest to the payment and consequently reduce their involvement (Bowles, 2008). Similarly, despite several well-intentioned information- and price-based policy interventions, consumers fail to adopt existing technologies, such as better insulation, fuel efficient vehicles, and efficient appliances, which can ultimately make them save money by using less energy, due to a lack of motivation (intention to buy) and/or ability (issue-relevant knowledge) (Thøgersen *et al.*, 2010). Ignoring behavioural factors leads to flawed prescriptions. The construal level theory predicts the further (closer) the psychological distance between an individual and a situation or a product, the higher (lower) the level of abstraction (Trope and Liberman, 2010); varying the psychological distance can activate different construal levels and behaviours. Behavioural sciences stress the need to design eco-labels in ways that not only convey the information accurately but *generate the intended construal*. Without being exhaustive, we select some

³ Construal refers to the process by which individuals perceive, comprehend, and interpret the world around them.

crucial behavioural biases to inform policymakers: loss aversion, status quo, social norms, status seeking, hyperbolic discounting, and spatial optimism. We selected these biases to provide an overview of the richness conveyed by behavioural insights regarding various dimensions of eco-labeling schemes. For ease of exposition, the considered biases are briefly presented in Table 2 along with the way we think they might be included in policies. We classified these biases in three groups: motivations related to the self (personal influence), those in relation with others' behavior (social influence) and those in relation with the spatial and temporal dimension of environmental issues (distance influence).

[Insert Table 2 around here]

Rather than ignoring them, we contend *working with* biases can generate low-cost behavioural innovations to improve eco-label performance, as suggested in the right-side column of Table 2. For example, loss aversion implies that all environmental benefits are not equal in consumers' mind. If the environmental benefits delivered by an eco-labelled good are perceived by consumers as a way not to lose something they already own, they will exhibit a higher willingness to pay. Consequently, eco-labels' designers can use or create a 'relationship' between consumers and the environmental benefits delivered by the eco-labelled goods. Interestingly, the success of the dolphin safe eco-label on canned tuna in the USA was partly due to the emotional relationship between Americans and dolphins (Körber, 1998; Beretti *et al.*, 2009). Moreover, many environmentally sound products are characterized not simply by a higher total cost but rather a different investment profile, namely higher initial cost versus lower operating cost. The cumulative life cycle costs (LCC) for green products (*e.g.*, washing machines, cars, heating equipment, refrigerators) may be even lower than for conventional alternatives, but this point is not automatically salient at the decision time. Comparative LCC information can provide an alternative reference point rather than just letting the consumer comparing initial purchase prices for conventional versus green products, putting green products in the gain domain. Using a comprehensive review of empirical studies devoted to the effect of LCC information, Kaenzig and Wüstenhagen (2010) found that the purchase likelihood of products with higher initial and lower operating costs (*e.g.*, eco-labelled products) increases when LCC comparisons are provided and when the temporal framing of LCC information influences the implied discount rates. They also conclude that lowering (perceived) initial costs (by disclosing comparative LCC) and shifting initial costs to operating costs are promising strategies to increase the consumption of green products.

Yet some attempts to use behavioural interventions already exist in some countries, notably with regards to energy efficiency. For instance, in the UK, a report by the Cabinet Office Behavioural Insights Team (2011) shows how public authorities are working with businesses to implement a set of behavioural changes in order to encourage individuals to be more ecologically-friendly. This policy analysis article calls for a more systematic use of such devices, in particular regarding eco-labeling schemes. Although we preferred to not distinguish between different categories of eco-labels (see footnote 1), green products with higher initial costs and lower operating costs benefit from comparative LCC information (Kaenzig and Wüstenhagen, 2010). Moreover, status-seeking is more likely to be effective when the product is consumed in public and the environmental attributes visible. For instance, the Toyota Prius' success, compared to other cars with similar eco-performances, has been attributed to its specific design that conspicuously signals the green status of owners (Sexton and Sexton, 2014). In a similar vein, Carlsson et al. (2010) found that information on the choices made by other consumers significantly affects the choice of eco-labelled coffee by women. By making the green choice the default option, people are nudged to behave in an environmentally friendly way because they do not have to decide to be green (see Pichert and Katsikopoulos, 2008 for an example related to the choice of electricity provider).

However, several issues remain unresolved and deserve further research: how to encourage people to put more weight on the future, how do biases interact, how can policymakers use interactions in a strategic fashion, does loss-aversion framing alleviate present-biased preferences, and are social norms attributed to future generations likely to influence today's behaviours? For instance, we contend that loss aversion will be lower if the loss is scheduled in the future. Consequently, in order to encourage people to adopt greener behavior *now* and avoid procrastination it can be more effective to emphasize immediate losses, even if they seem small rather than huge losses positioned in the future. We contend that the previous questions offer a promising area for laboratory and field experiments. Indeed, laboratory experiments and, to a lesser extent, field experiments allow a controlled variation of conditions, which facilitates tests of causal and treatment effects. For instance, using a simple dictator game⁴ where the amount given is directed to an environmental union addressing an

⁴ In this two-player game, the dictator receives an initial endowment x that he/she can share with his/her partner (the receiver, who can be an environmental union). The transferred

environmental bad (e.g., CO2 offsets), we can compare the giving behaviour of participants in a between-group design by considering three groups (i) a control group (ii) a group informed about the present generation injunctive social norm and (iii) an additional group of participants informed about the injunctive social norm attributed to the next generation.

5. Conclusion

Eco-labeling schemes have a mixed record and behavioural insights offer a way to strengthen their performance. Rather than over-emphasizing information alone or neglecting the potential of information-based policies, we suggest behavioural insights can reinforce existing instruments and help achieve policy objectives by paying due attention to how consumers *really* behave and not to how they *should* behave. Even if behavioural economics insights are somewhat ‘messy’ they are ‘more likely to be accurate’, compared to ‘more elegant’ economic predictions that are ‘more likely to be wrong’ (AU. Productivity Commission, 2008). Accounting for non-traditional drivers of human behavior offers an under-tapped potential to improve eco-labeling performance. Behavioural interventions are not a universal solution but they can help eco-labels fulfil their promises, potentially at a lower cost than more traditional interventions. Even if evidence is scarce (OECD, 2012), especially for eco-labeling schemes, a famous experiment over 100,000 households in the US who were randomly selected to receive regular social comparison of their energy use, shows that the social comparison letters ‘decreased household energy use by an average of 2.7% at a cost of 7.50 USD per household per year, implying a cost-effectiveness ratio of \$ 0.025 per kWh saved – lower than many other energy efficiency investments’ (OECD, 2012). The net value of the intervention was estimated around \$ 2,220 million per year (Allcott and Mullainathan, 2010; see also Ferraro *et al.*, 2011 for a similar result regarding water conservation).

We do not believe that eco-labeling schemes are a miraculous cure to address all environmental issues and encourage environmentally friendly consumerism. Nevertheless, we believe that under some circumstances they can help achieve socially desirable goals such as improving greenness of products, fostering innovation, increasing awareness of consumers and so on if they are well-crafted. Nevertheless, behavioural findings can lead to develop

amount y constitutes the payoff of the receiver who has no power on the money and $(x-y)$ is the dictator payoff.

innovative interventions beyond eco-labeling schemes such as the use of social norms (Allcott, 2011) or being green by default (Reisch and Sunstein, 2013). Of course, more research is necessary to consider scalability issues and establish whether the suggested insights remain robust over time, and in various real world settings. To avoid a behavioural social-scientist bias, we believe behavioural interventions can help promote sustainable consumption, but are not solely able to generate sustainable lifestyles. Government rules and regulations can have a strong role in changing behaviours but are often not politically supported. Synergistically mixing behavioural with more traditional approaches can increase public acceptance of these latter approaches, helping lead the shift to a culture of sustainability (Mont *et al.*, 2013).

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Table 1: Growth in the number of products awarded an eco-label, by various programs^a

Name of program	Year initiated	Number of awards		
		1997	2006	2012
European Union Eco-label	1992	182	1,776	17,754 ^b
Germany's Blue Angel	1977	4,135	3,652	11,700 ^c
Energy Star	1992	3,400	40,000+	40,000+ ^d
Marine Stewardship Council	2000	200	300	14,764 ^e
New Zealand's Environmental Choice	1990	55	223	2,300 ^f
Sweden - Nordic Swan	1989	350	877	6,500+ ^g
Thailand - Green Label	1993	0	137	507 ^h

^a: Except for Energy Star, 1997 and 2006 data is adapted from Teisl (2007). ^b: <http://ec.europa.eu/environment/ecolabel/facts-and-figures.html>. ^c: http://www.blauer-engel.de/en/blauer_engel/. ^d: https://www.energystar.gov/index.cfm?fuseaction=publications.showPublications&view=all&st=Type&pub_ty [pe_code=REP](https://www.energystar.gov/index.cfm?fuseaction=publications.showPublications&view=all&st=Type&pub_ty). ^e: <http://www.msc.org/documents/email/msc> [annual-report/](http://www.msc.org/documents/email/msc). ^f: http://issuu.com/michaelhooper/docs/ecnz_annual_report_2012_final_web. ^g: <http://www.svanen.se/en/Nordic-Ecolabel/>. ^h: Data from 2011, <http://www.tei.or.th/greenlabel/eng%20pdf/2011-07-Name-GL-eng.pdf>.

Table 2: Working with biases to reach policy objectives: Some policy implications

Biases		Definition	Policy implications
Personal influence	Loss aversion (Beretti <i>et al.</i> , 2009)	Tendency to prefer avoiding losses to acquiring equivalent gains.	Emphasizing the incurred loss of not choosing the eco-labelled product.
	Status quo bias (Pichert and Katsikopoulos, 2007)	Tendency to stick with the default option, even if opting out is costless.	Proposing the eco-labelled item as the default with an opt-out option.
Social influence	Social norms (Griskevicius <i>et al.</i> , 2008) ⁵	Tendency to care about how most similar people <i>do behave</i> (descriptive norm), or think how one <i>should behave</i> (injunctive norm).	(Do not) use social norms if they are (mis)aligned with policy objectives. If true, describe green options as commonly used and valued by the group.
	Status seeking (Griskevicius <i>et al.</i> , 2010)	Tendency to care about one's own situation relative to others.	Position green products as status conveyers and not as status detrimental.
Distance influence	Hyperbolic discounting (Frederick <i>et al.</i> , 2002)	Tendency to prefer immediate smaller payoffs over larger payoffs later, which generates disregarding the future if it requires immediate sacrifices. Small delay periods can correspond to just few days whereas longer delay periods can correspond to several months or years.	Delay green costs and make benefits more immediate. Create opportunities for people to make choices in advance.
	Spatial optimism (Gifford <i>et al.</i> , 2009)	Belief that environmental problems are less important the farther away they are from the perceiver.	Emphasizing individual choices matter at the local <i>and</i> global level.

⁵ For instance, data from an energy company showed that providing residential utility customers with home energy report letters comparing their electricity use to that of their neighbors generated a significant reduction of energy consumption by 2.0%. The effect was equivalent to that of a short-run electricity price increase of 11 to 20%, with a very attractive cost effectiveness compared to that of traditional energy conservation programs (Allcott, 2011).