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Behavioral insights for the analysis of green tips

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Abstract: People in several countries are overwhelmed with green tips in order to encourage them protecting the environment. The effectiveness of these tips, however, highly depends on the context and the person targeted by the tips. In particular, we contend that some green tips may do more harm than good when individuals have cognitive and behavioral biases. Without purporting to be exhaustive, we explain some of these biases and mechanisms by which green tips may lead to a net environmental degradation. We also emphasize that is possible to complement green tips with debiasing strategies to guarantee their performance. We present some of these strategies, notably the foot-in-the-door technique, commitment strategies, the strategic use of small changes and individuals' pursuit of identity. Finally, several policy implications are developed.

Key-words: behavior, debiasing, environment, green tips.

JEL Codes: Q0, Q50.

Behavioral insights for the analysis of green tips

1. Introduction

In many countries, individuals are increasingly encouraged to adopt green tips in order to help protecting the environment. Among well-known examples, one can mention the stop-buying-bottled-water, switch-the-lights-off-for-an-hour, choose-locally-produced-food, drying outside and the car free days movements. The About My Planet's website suggests more than 700 green tips and tricks (<http://www.aboutmyplanet.com/all-green-tips/>). These initiatives are frequently motivated by good intents regarding the common good and share the common feature of indicating simple and easily implementable ways to individuals to preserve the environment. According to a 2010 report by the Natural Resources Defense Council and Garrison Institute, *'if Americans adopted a series of simple and inexpensive emissions-reducing measures in the areas of transportation, household energy consumption, diet, and waste over the next ten years, the U.S. could avoid 1 billion tons of emissions annually, beginning in 2020, and save money'*.¹

Without questioning the underpinning motivations of the promoters of such initiatives, the objective of this note is to identify some circumstances and mechanisms under which green tips can do more harm than good, that is, where they can lead to a net environmental degradation instead of a net environmental improvement. Examining such mechanisms, derived from behavioral sciences findings, is important for at least two reasons. First, an increasing number of scholars (e.g., Venkatachalam, 2008) argue that behavioral concerns are not marginal and may considerably influence the overall environmental outcome. Second, (environmental) policies ignoring such dimensions may lead to flawed prescriptions (e.g., Mzoughi, 2011, 2014). Moreover, while leading in some circumstances to unexpected outcome, behavioral biases can also be part of the solution. Hence, in order to avoid a 'pessimistic approach', we also use some advances in behavioral and psychological science to suggest ways to avoid counterproductive effects and even turn green tips into productive steps towards deeper behavioral changes. Our analysis does not aim at being exhaustive but rather seeks to raise important issues for further academic and policy attention.

The remainder of the contribution is organized as follows: section 2 defines and characterizes green tips or reminders and presents some arguments used to promote them. Section 3 develops several biases and mechanisms that can make green tips harming the environment rather than improving it. Section 4 is devoted to policy implications and suggestions to minimize the potential counterproductive effects of green tips. Section 5 concludes and suggests directions for future research.

¹ https://www.nrdc.org/sites/default/files/billiontons4pgr_r3_final.pdf.

2. Green tips: a continuum from token actions to real solutions?

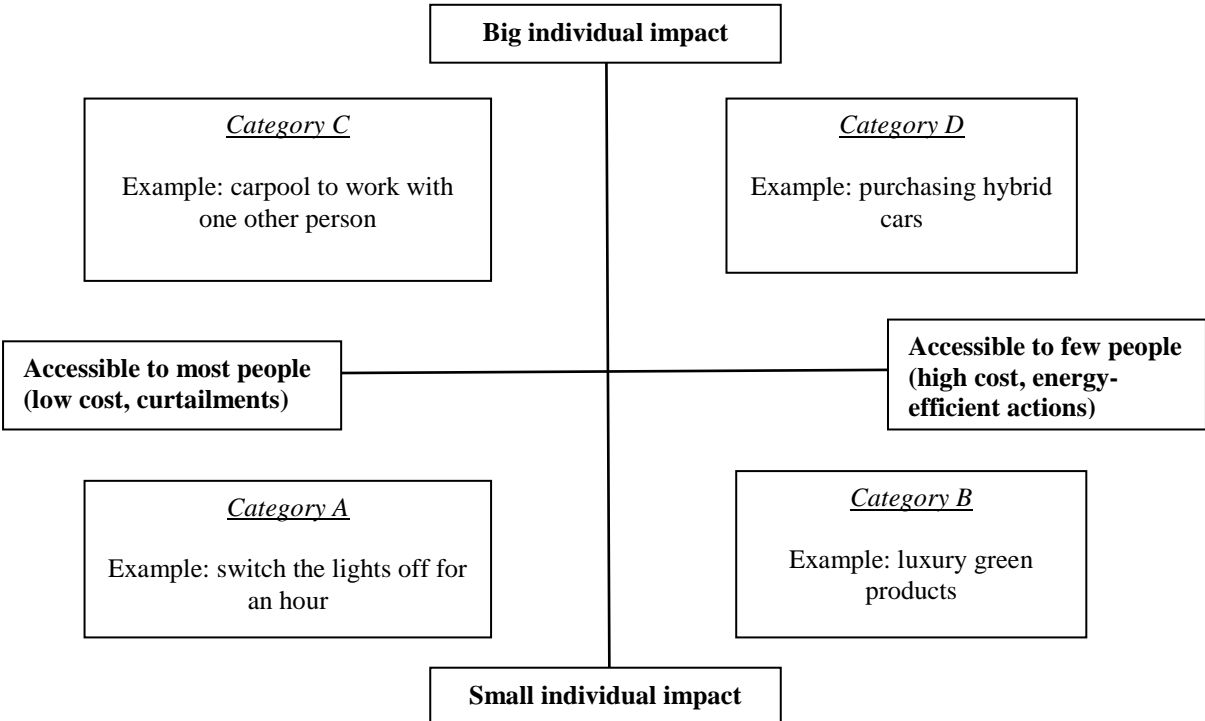
It is difficult to provide a clear-cut and universal definition of green tips given the large variety of initiatives. Nevertheless, green tips are generally small actions that are voluntary, easy to do, quasi-costless and intended to be useful for a large number of people (even for future generations). These characteristics are, however, relative and frequently culturally determined. For example, some tips (e.g., drying laundry outside) can be easy to achieve in a given community or area while requesting huge efforts in another one, because of contractual obligations or local regulations in some neighborhoods. They often correspond to reminders which provide knowledge or information on how to behave in an environmentally responsible way. A related issue is to identify the circumstances under which information provision leads to positive rather than no or even negative behavior change. From an economic viewpoint, adopting a green tip (e.g., meat-day free to reduce CO₂ emissions tied to meat production) can be interpreted as a private provision of a (global) public good.² From a conceptual viewpoint, green tips can be positioned on a continuum from infinitesimal to substantial contributions to the considered public good. To judge the contribution scope, different reference points are frequently used, such as previous behavior or what remains to be done.

In the following, we suggest to categorize green tips according to some dimensions such as the individual environmental impact and the accessibility level. This categorization can help to identify tips more (or less) subject to certain biases, but also whether some debiasing strategies are more likely to succeed. Gardner and Stern (2008) provide a ranking of green actions based on their environmental 'net effect', i.e., their effect on individual energy consumption. They analyze two types of targeted actions: curtailment actions in which a person uses energy equipment less frequently or less intensively (e.g., cutting motor vehicle highway speeds from 70 to 60 miles-per-hour) and energy efficient actions such as adopting more energy efficient equipment (e.g. buying a more fuel-efficient motor vehicle). Here, we compare green tips on the basis of the aggregate environmental performance in a 2 x 2 matrix (environmental impact per adopter x accessibility level, Figure 1). The horizontal axis represents the accessibility or cost of the action promoted by the tip. Curtailment actions, which are generally more accessible than energy-efficient actions (which often require an initial significant investment), are thus located on the left-side of the matrix, while energy-efficient ones are located on the right side. The vertical axis represents the environmental impact of the tip. Figure 1 is thus divided in 4 quadrants, A, B, C and D. Many green tips fall in the A category because they are accessible to most people and generate a small environmental impact. Even if tips from category C are intuitively

² The rationales behind the private provision of public goods have been largely explored by scholars. Reciprocity effects, commitment to a social norm or pure and impure altruism (e.g., Croson, 2007 and references therein), and status seeking strategies (e.g., Milinski et al., 2006; Griskevicius et al., 2010) are such rationales.

fewer, they are very interesting because they combine accessibility to most people and big environmental impact. Tips from category B are the less interesting ones, because they impose a high cost on individuals while providing small environmental benefits. According to Gardner and Stern (2008), energy efficient actions are, in average, more effective than curtailments to curb energy consumption and carbon emissions at the individual level. However, curtailments are more likely to be adopted by a large number of people due to their high accessibility (see Diekmann and Preisendörfer, 2003). As a consequence, different tips can deliver similar environmental outcomes by enrolling few adopters making a big contribution (energy-efficient actions) while others reach the same outcome by enrolling a great number of adopters (curtailment actions).³ Thus, regarding categories A and D, this classification raises the issue of identifying the most performing way in terms of sustained overall environmental performance. Is it ‘better’ to invest in strategies to convince few people to make big efforts (category D, energy-efficient actions) or to convince the majority to make a small effort (category A, curtailments)? This issue is still open and deserves more academic attention. ‘Better’ is voluntarily a fuzzy word: better on which dimensions or outcomes and from whom viewpoint? For instance, some actors (politicians) can consider this issue from a cost (time) perspective because of budget considerations (political agenda).

Figure 1: Categorizing green tips according to the cost and environmental impact per adopter



³ Such a classification supposes to decide some key-parameters that are not neutral for the results, such as individuals or entities in charge of defining or measuring environmental performance, on their motives and interests in doing so, on used criteria, etc. Discussing these important issues is beyond the scope of our note.

Moreover, green tips can have additional benefits. These are frequently used as arguments to promote and encourage people to adopt green tips. They can be broadly classified into five categories that are non-mutually exclusive. First, green tips allow people to do something (and even their part) to the *environment*. They help people to feel a sense of responsibility and give them a simple way to do something. Rather than being constrained by laws and regulations, people enjoy self-determination (Frey and Jegen, 2001). Second, green tips are frequently described as *economically profitable* by suppressing inefficiencies and saving money. Third, beyond their immediate (or short-term) environmental and economic benefits, green tips like other pro-environmental behaviors can also increase people's *subjective well-being* (Venhoeven et al., 2013) by contributing to a better health and social recognition (Mzoughi, 2014). Fourth, green tips can also serve other purposes such as sending a message to politicians (e.g., Vote Earth –The world's first global election). Fifth, even if considered to be insufficient to reverse human impact on the environment, green tips may get involved people thinking beyond the green tip *per se* and generate positive spillover effects (Lanzini and Thøgersen, 2014).

3. How can green tips harm the environment rather than help it

Standard economics frequently assumes poor behaviors result from a lack of information and prescribes information provision as a natural and self-sufficient solution. Nevertheless, a sizeable literature documents that providing information is not enough (Grolleau et al., 2016). Increased information can lead to higher levels of knowledge, but not necessarily to behavioral change due to bounded rationality issues (Abrahamse et al., 2005; Bolderdijk et al., 2013). Information-based interventions can well perform in some circumstances and not in others. Several studies support that information provision works when individuals possessing the knowledge are motivated to behave accordingly, e.g., when they consider protecting the environment as an important personal value (Bolderdijk et al., 2013). We go a step beyond by emphasizing other mechanisms that can lead well-intended green tips or informational interventions, not only to fail to generate the desired effect, but also backfire or produce counterproductive effects.

Several decisional and behavioral biases can make green tips environmentally harmful, sometimes unconsciously. For sake of exposition, we present several biases independently, even if they are not mutually exclusive and likely to interact. These biases can notably lead to negative behavioral spillovers where a successful increase in a given pro-environmental behavior by adopting the recommended green tip is associated with a reduction in another pro-environmental behavior (Truelove et al., 2014).

First, green tips can shift consumption to other commodities or modify habits, which may end up in having a greater ecological impact. For instance, buying local fruits and vegetables to avoid carbon emissions from transport seems at first glance a good idea, as long as they are not produced in a heated greenhouse or transported in individual cars on long distances, which is likely to cancel the initial expected environmental benefits. It can also lower consumers' expenses, increase disposable income and allow them to consume more other goods. These effects are frequently described as local or global rebound effects and are well-documented (Binswanger, 2001), even if their magnitude remains debated (Gillingham et al., 2013; Frondel and Vance, 2013). In the specific case of curtailments (categories A and C in Figure 1), the rebound effects due to an increase in the disposable income are more likely compared to energy-efficient green tips (categories B and D). Moreover, marketers can have a natural inclination to emphasize the green benefits of their products in theoretical conditions of use and omit mentioning rebound effects in real life use that can be detrimental to their sales objectives.

Second, performing some green actions can license unethical behaviors in the environmental domain and other ones (Mazar and Zhong, 2010). Interestingly, Merritt et al (2010) distinguish between moral credits and moral credentials models. According to the former, performing a good deed earns moral credits that reduce the discomfort of performing bad deeds afterwards, because they ensure a balanced moral account. If green tips delivering more environmental benefits also confer more moral credits, which is intuitively appealing, the magnitude of the licensing effect can be crucial for specific categories (categories C and D). For instance, C. Woodyard reported that hybrid car owners drive more and get more traffic tickets than drivers of conventional cars.⁴ In the moral credentials model, good deeds reframe bad deeds. Past behavior serves as a lens through which one construes current behavior, and, when the motivation for current behavior is ambiguous it is disambiguated in line with past behavior. For example, having purchased fluorescent bulbs can allow the individual leaving the light on when leaving rooms rather than switching them off systematically. Researchers in Norway found, for instance, that owners of electric cars use their vehicle more often for their everyday mobility, suggesting that having purchased an electric car made them feel fine with not behaving pro-environmentally afterwards (Klößner et al., 2013; Tiefenbeck et al., 2013). Green tips encouraging people to adopt low cost pro-environmental behavior could then be counter-productive, if they make them feel off the hook for more beneficial environmental decisions, leading to a negative overall environmental outcome. To make justice to this issue, Mullen and Monin (2016) show that 'individuals are more likely to exhibit consistency when they focus abstractly on the connection between their initial behavior and their values, whereas they are more likely to exhibit licensing when

⁴ Woodyard, C. 2009. Hybrid car owners drive more and get more traffic tickets. *USA Today* (July, 17). <http://content.usatoday.com/communities/driveon/post/2009/07/68494710/1>.

they think concretely about what they have accomplished with their initial behavior –as long as the second behavior does not blatantly threaten a cherished identity’.

Third, token actions can make people forgetting the real-scale of the problem and reinforce some fallacies people believe in, such as environmental problems will mostly be solved through small consumer choices without questioning lifestyles. Individuals can relieve a state of cognitive dissonance at a low cost with a ‘tree that hides the forest’ and distracts attention from far more effective initiatives. They can also believe that by adopting a tip they have made their contribution and subsequently think others are responsible to go further. This is usually referred to as the single-action bias, where the individual is likely to rely on a single action with incremental effects and feels like he/she has already done enough (Weber, 1997). A person reducing his/her meat consumption would thus think that ‘he/she has done the job’, and does not need to make additional efforts for climate protection. This single-action bias is likely to be stronger with costly and environmentally effective tips (categories C, B and D).

Fourth, token actions can reinforce the optimism bias of people towards future environmental outcomes (Sharot, 2011). For example, when people imagine the life on Earth a century from now, the optimism bias may induce them to have rose-colored glasses and not picture whole regions underwater or famines due to climate change. This optimism is fueled by people’s illusion of control and a tendency to see themselves as better than average. Regarding climate change, people frequently assume they personally will be relatively and personally unaffected and so are less motivated to make efforts. This bias is likely to affect all categories of tips.

To summarize, the performance of green tips is likely to be impacted by several behavioral biases. However, rather than throwing the baby out with the bathwater, we argue that it is possible to complement tips with debiasing strategies to guarantee their performance: either modifying the decision maker (e.g., through information provision or education) and/or modifying the decision context (e.g., by creating optimal conditions to support decisions aligned with desirable goals) (Soll et al., 2015). In the following, we suggest some strategies that can be used and even combined to confront these challenges.

4. Policy implications: How to transform green tips in net environmental gains?

A natural and important issue that remains to be addressed is how to transform green tips in steps conducive to substantial and sustainable environmental changes. In the following, we emphasize some

behavioral solutions likely to overcome the aforementioned behavioral issues.⁵ An underlying principle to most suggestions developed above is that policy makers should not simply assume that providing information *per se* is enough, but they should also foster motivation for individuals to act on the basis of this information. Let us stress that information provision can also include information about biases themselves (Soll et al., 2015) which can ultimately reduce their likelihood. For instance, when telling people to buy energy saving bulbs, reminding them that they still have to switch the light off is important. Among motivational strategies that can be used in combination with information provision, let us mention social and moral norms, economic incentives or goal-setting. In other words, we suggest that the policy package should include information provision, motivational strategies (especially when individuals are not initially motivated, e.g. by their values [Bolderdijk et al., 2013]) and related contextual factors (Steg et al., 2015).

Few behaviorally-grounded insights can be suggested, especially by exploiting the need of individuals for internal and external consistency and social approval (Cialdini, 2001). First, policymakers can seek to exploit the natural tendency of people to seek behavioral consistency. For instance, the foot-in-the-door technique, which consists of asking people to carry out a small request/action before asking them to complete a more requiring one, has been used in the environmental realm with positive results (Meineri and Gueguen, 2008). Introducing a particular green tip can be considered just as a step and promoters of green tips need to anticipate paths to push forward greenness among adopters. Curtailments (categories A and C) are not ends in themselves but are rather instrumental to achieving a larger goal. Second, commitment strategies to more requiring steps can be used to amplify the already done changes. Commitment strategies involve asking participants to make a commitment to perform a desired behavior, either verbally or in a written way. Afterwards, they are more likely to perform the target behaviors, especially if the commitment was voluntary and public (DeLeon and Fuqua, 1995). Third, policymakers can use green token actions already achieved as a way to redefine the individual's identity in a sense aligned with social interests (Akerlof and Kranton, 2000; Truelove et al., 2014; Whitmarsh and O'Neill, 2010). For example, the meat-day free intended to reduce CO₂ emissions may encourage individuals to become vegetarians,⁶ which can ultimately become a crucial component of their identity (Rozin et al., 1997), but this result is far from automatic (Morris et al., 2014). Interestingly, Benabou and Tirole (2011) proposed a general model of identity in which people care about 'who they are' and infer their own values from their past choices. This path from adopting a

⁵ Of course, we do not ignore the importance of more usual devices such as the use of monetary (dis)incentives to encourage environmental changes and the need to distinguish among adopters of green tips various groups making the use of a 'one-size-fits-all' approach undesirable.

⁶ This dimension can also have an inter-generational impact, since what actually constitutes a green token action may further become a habit for future generations (e.g., one's children).

green tip to a green identity can be easier for categories B and D where the individual have already incurred a high cost (energy-efficient tips). Fourth, the small progress can also be used to give the impression that the more difficult next step is easier to reach. People frequently lack a momentum to motivate them to learn new environmentally habits and frequently over-estimate the initial switching costs while under-estimating how ‘small victories’ (e.g., adopting a green tip from categories A and C) can open the way to begin building momentum. In another domain, a research by Nunes and Drèze (2006) show that if someone is endowed with progress (even if it is artificial) towards his/her goal, he/she will be more persistent to attain the goal. Policy makers can also build on the need for social comparison, by providing information on both the environmental benefits of a behavior and its large adoption in the general population (which is more likely for curtailments from categories A and C). For instance, Goldstein et al. (2008) studied the impact of signs requesting hotel guests’ participation in a pro-environmental action: reusing towels. Signs describing both the environmental benefits and the general attitude (the majority of guests reuse their towel) proved superior to those focusing only on environmental benefits.

To give some flesh to our suggestions, let us apply these various strategies to a very accessible example from the preceding section that is, turning off lights when leaving a room. In a real field experiment conducted in 11 French schools (Joule et al., 2007), children and parents were solicited to carry out preparatory actions such as making kids determining what were the environmentally friendly and energy saving ‘good practices’ and the ‘not-so-good practices’ in their school and at home. Parents were then involved by asking them to help their child fill a questionnaire about energy savings at home and the kids put a sticker about environmental preservation of the environment on the family fridge. At each stage the children discussed together about their findings and family reactions. At the end of the school year, each student was encouraged by the teacher to make a public and written commitment to change at least one of his/her habits and to inform his/her parents of this commitment. He/she also encouraged them to make a specific commitment of their own such as replacing ordinary bulbs by environmentally friendly bulbs. These commitments were made official through the signing of two forms: the child signed one in the classroom (100% of kids in some classes), and the family signed one at home. Interestingly, the authors argue that the parents were very likely to follow their written commitment because they generally want to be models for their kids and do not want to be perceived by them as untrustworthy (Joule et al., 2007). They also stress that these commitment strategies affected behavior beyond the family sphere by making some schools switching from ordinary bulbs to environmentally friendly bulbs and even kids writing to local authorities to suggest other environmentally friendly measures such as installing timers for the lights in school corridors. This example also underlines the relevance of using ‘opportunity windows’ to foster environmental concern and behavioral change such as kids at schools. In the same vein, Rogers and Frey (2015) suggest that putting a note “turn off lights!” on a very used specific door can attract family attention to

turning off the lights, especially the first few times the family members see the note. After repeating this behavior many times when passing through that door may come to be associated with turning off the lights, the members can even forget the note and automatically turn off the lights, making it a habit.

In short, all these strategies aim at making a step backward (or the next step) costly (more accessible) and less (more) likely, generating positive spillovers between the considered green tips and further changes (Truelove et al., 2014). We believe that environmentalists can learn a lot from marketers to reach their goals, by using strategically decision biases as influence weapons, without losing their souls.

5. Conclusion

Green tips do not occur in a vacuum. They arise in a specific context that can either transform them in useful steps conducive to more awareness and environmental friendliness or detrimental levers for environmental change. We analyzed green tips from a critical viewpoint, to emphasize their huge potential but also the mechanisms by which they may fail to deliver expected results and even generate counter-productive effects in terms of environmental change. We argued that green tips can constitute entry points for further environmental changes, but this outcome is far from automatic. Reaching this virtuous spiral requires behavioral coaching to limit the negative impact of biases. It is also important to remember that green tips are more likely to induce a behavioral change with people already motivated to protect the environment. Instruments fostering motivation and environmental concern, in particular through children's education and identity construction, should thus be implemented jointly.

In future research, it could be useful to identify groups and circumstances or domains where these counter-productive outcomes are more likely to occur rather than just indicating the likelihood of adverse effects. The net effects of green tips also deserve more attention, maybe by distinguishing direct/immediate effects and soft/delayed ones. Moreover, the context-dependency can be manipulated to reinforce the likelihood of socially desirable effects. Our contribution also calls for more studies such as well-crafted field experiment including randomized controlled trials to explore the causality, scalability, effectiveness and durability of different types of green tips (low and high costs of adoption) in different contexts and by considering extended timeframes.

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