# Who cares? The role of communication strategy and individual characteristics in the public acceptability of a waste management reform

**Lesman Ghazaryan**
Grenoble Ecole de Management
**Corinne Faure**
Grenoble Ecole de Management
**Joachim Schleich**
Grenoble Ecole de Management
**Mia Birau**
EM Lyon business school

Cite as:
Ghazaryan Lesman, Faure Corinne, Schleich Joachim, Birau Mia (2023), Who cares? The role of communication strategy and individual characteristics in the public acceptability of a waste management reform. *Proceedings of the European Marketing Academy*, 52nd, (112355)

Paper from the 52nd Annual EMAC Conference, Odense/Denmark, May 23-26, 2023

# Who cares? The role of communication strategy and individual characteristics in the public acceptability of a waste management reform

**Abstract**

This research investigates the acceptability of a new waste management policy aimed at reducing waste creation. Specifically, the new waste management policy implies a transition from a fixed tariff system – where the tariff is fixed and depends on the dwelling's rental value- to an incentivized system – where the tariff will be variable and will depend on the number of waste collections. Based on the data collected from 620 local residents in France, this study examines an actual case of a policy-change attempt where we investigate the acceptability of this transition conditional on residents' initial level of waste creation and the communication strategy. We examine the altering effect of environmental and justice messages on the acceptability of the new tariff. The paper also investigates the moderating role of environmental identity and loss aversion. We find that the new tariff preference is significantly affected by the environmental message and the initial levels of waste creation, environmental identity, and loss aversion.

Keywords: Waste management, Prospect theory, Communication strategy

Track: Advertising & Marketing Communications

## 1. Introduction

Municipal solid waste (MSW) management is one of the central aspects of municipal governance. Inappropriate MSW disposal and management can cause environmental hazards such as air, soil, and water pollution. Municipal solid waste, one of the most significant by-products of the urban environment, is increasing even more quickly than urbanization (Kaza et al., 2018). Politicians often demur implementing environmental policies that can cause public disapproval (Loukopoulos et al., 2005; Banister, 2008). As a result, it becomes necessary to explore the factors related to attitudinal and behavioral aspects of environmental policy acceptability. The theory of change behind higher levels of public acceptability is to build public support towards a policy, followed by its implementation and, finally, positive ecological outcomes.

There is little doubt based on past research that the processes behind self-and-other decision making are distinct. (Kuiper & Rogers, 1979). Decision-making for others is largely driven by the perceived value that is placed on risk, which results in a norm for how to make decisions for others in circumstances where such a societal value exists (Stone & Allgaier, 2008). Consequently, for exploratory purposes, it is necessary to disentangle the policy reactions to understand the preferences better when self-interests are considered, and the common welfare is taken into account.

The "pay-as-you-throw" (PAYT) policy is one of the economic tools to put the polluter-pays principle into practice at the municipal level, where charges are applied based on the amount of waste being sent to external management services (Reichenbach et al., 2004). Within the framework of this study, we examine the case where the variable part depends on the number of grey can (the can for unsorted waste) collections.

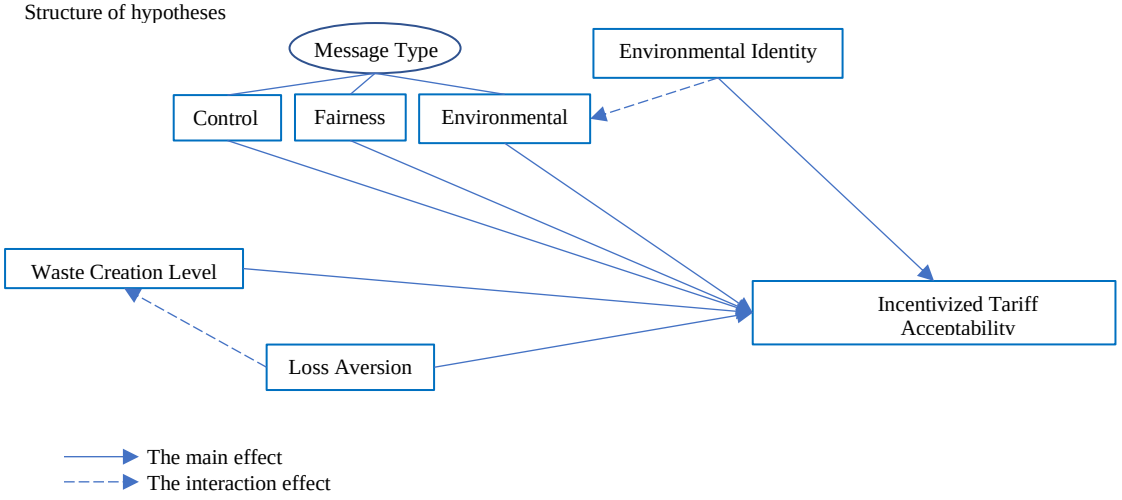
This study aims to understand how the new tariff's acceptance level varies depending on the communication strategy and individual characteristics. This study provides two specific contributions. First, it stresses the importance of the reference point in the public acceptability of a specific pro-environmental policy change. Second, this study contributes to the existing literature by bringing more understanding about the relative effectiveness of an environmental message compared to a justice message.

## 2. Theoretical Background

Figure 1 presents the structure of the hypotheses.

Figure 1

Structure of hypotheses




### *2.1 Loss aversion and initial levels of waste creation*

The prospect theory (Tversky & Kahneman, 1992) institutes further parameters to the utility theory (Von Neumann & Morgenstern, 1944) to rationalize choices under uncertainty. Previous studies have shown that people are generally inclined toward loss aversion (Tom et al., 2007). Loss aversion is often the underlying factor explaining the deviations in rational choice theories and is often used to illustrate the status quo bias (Kahneman et al., 1991). Since the new system evokes uncertainties in the residents' future behavior, it partakes in the loss-averse tendencies. Hereby, we expect that people with high loss aversion scores have significantly lower acceptance levels of the new tariff (H6).

People often evaluate the results in terms of losses and gains rather than final wealth or the welfare states (Kahneman & Tversky, 1979). In the process of assessing the acceptance level, residents are more likely to evaluate the possible changes in their waste management fees rather than the final amount of money that they will end up paying in case of the incentivized tariff. We posit two hypotheses related to the average amount of waste being created and loss aversion. Particularly, we suggest that those who produce more than average waste will have a lower acceptance level of

the new tariff (H7); high loss aversion negatively moderates the relationship between the amount of waste being created and the acceptance level of the new tariff (H8).

*2.2 Environmental and Justice information provisions*

Abrahamse et al., (2007) find that even though environmental information may bring more understanding about the issue, it does not necessarily alter people's behavior (Abrahamse et al., 2007). Furthermore, additional information provision elicits uncertainties by complicating the decision-making process that, at first glance, might seem straightforward (Kangas, 1997). Meanwhile, Steg & Vlek, 2009) find that additional information provision and thus increased pro-environmental awareness together with providing means of alternatives are one of the impactful methods to affect behavior. We hypothesize that environmental information provision has a significant positive impact on the acceptance level of the new tariff (H1). Justice is a critical element in allocating the costs caused by environmental damage (Wagle, 1993). It is believed that increasing people's perceived justice in connection to environmental issues can increase the trust in public policies (Bolderdijk et al., 2017), and higher trust toward public policy is associated with a higher acceptance level of the proposed policies (Liu et al., 2019). Previous research in environmental policy has found that perceived justice in policy change has a positive effect on public acceptability (Maestre-Andrés et al., 2019). As such, we hypothesize that justice information provision has a significant positive impact on the acceptance level of the new tariff (H2). It is suggested that people often find conflicting interests between responsible behavior appeals and their private goals (Wiener & Doescher, 1991; Meneses & Palacio, 2007). Based on this, we expect that justice message provision is significantly higher than environmental information provision (H3).

*2.3 Environmental identity*

Environmental identity is a self-concept formed by people to express the sense of environmental connection, its importance, and the constitutive nature of our identity (Clayton & Opotow, 2003). Evaluating one's self-identity measures is the connection between identity and behavior in understanding consumption behaviors and pro-sustainable intentions. Within this study, we also developed a contextualized environmental identity measure in connection with people's recycling habits. Specifically, we hypothesize that high environmental identity positively affects the new

tariff preference (H4), and high environmental identity positively moderates the relationship between environmental message and the acceptance level of the new tariff (H5).

## 3. Methods

### *3.1 Design, participants, and the Procedure*

We collected data from 620 participants from ages 18 and older. Participants (32.4% male; $M_{AGE}$ = 41.38; SD = 12.34) were introduced to the new incentivized tariff along with a randomly chosen environmental message, justice message, or no message. Participants were randomly assigned to treatments with a between-subject design. In the control group, participants were given general information about the current tariff system and about incentivized tariff. In the environmental group, participants were also exposed to a message indicating that "The main advantage of this new incentive tariff is environmental: such a tariff encourages residents to sort better and reduce their production of household waste." Lastly, in the justice group, respondents received a justice message signaling that "The main advantage of the new incentivized tariff is its greater justice: those who produce more waste pay more than those who produce less."

### *3.2 Dependent measures*

After reading the messages, respondents answered a questionnaire regarding their preferences for the tariffs to reduce waste production throughout the metropole. The measures were assessed on a bipolar 5-point scale, with fixed tariff on one side and incentivized tariff on the other side. Along with manipulation checks, they were also asked to answer the question in the contextualized scale for their environmental identity and loss aversion. These measures were assessed on 5-point semantic differential scales. All scales except for measuring the acceptance levels were standardized into a z-score.

### *3.3 Acceptance level and Reaction DVs*

Acceptance level is measured by two questions: If you had a choice for yourself, which pricing system would you prefer?; To reduce waste production throughout the metropole, which pricing system would you prefer?. 9 reaction-dependent variables are reduced to 3 group variables using principal component analysis with varimax rotation (Table 2).

Table 2. Reduced version of the reaction variables

| Value | Item |
|---|---|
| Positive reaction (AVE = 52.4, α=0.713) | My waste bill would go down with an incentivized system |
| | The incentivized system would be fairer |
| | I would make more effort to sort my waste with the incentivized system |
| Concern (AVE = 56.3, α=0.647) | The incentivized system would be more effective in reducing waste |
| | The incentivized system would be difficult to set up for collective collections |
| | The incentivized system would be unfair to people living in apartment buildings |
| | The incentivized system would cost more for large families |
| Waste tourism (AVE=0.806, α=0.779) | People in my immediate circle would probably empty their garbage in neighbors' garbage cans if they had to pay for each collection of their gray can |
| | People in my close circle would probably empty their garbage cans into the woods if they had to pay for each collection of their gray can |

### *3.4 Measures of participants' characteristics*

The survey included several variables to capture participants' demographic and attitudinal characteristics. Those measures included environmental identity, loss aversion, income, employment, age, gender, and education. We adapted the four-item scale Whitmarsh & O'Neill (2010) developed to determine participants' environmental identity. The scale yielded a satisfactory result of Cronbach's alpha value of 0.796. Loss aversion was measured using a 5-item scale adapted from Li et al., (2021). The scale yielded a satisfactory result of Cronbach's alpha value of 0.763.

### *3.5 Model*

We used statistical software Stata to analyze the data by running an OLS linear regression. We analyzed the results based on two models. The first equation estimates the main effects:

$$(1) \qquad Y = \alpha + \beta_1 \bullet M_i + \beta_2 \bullet E + \beta_3 \times L + \beta_4 \bullet W + \delta X + u.$$

The second equation then considers the interaction effects:

$$(2) \qquad Y = \alpha + \beta_1 \bullet M_i + \beta_2 \bullet E + \beta_3 \times L + \beta_4 \bullet W + \beta_5 \bullet M_E \times E + \beta_6 \bullet W \times L + \delta X + u.$$

Y is the self-choice preference, general preference, positive reaction, concern, or waste tourism possibilities; $M_i$ is the communicated message, where i refers to the type of the message – either environmental or justice; $M_E \times E$ is the interaction between environmental message and

environmental identity; $W \times L$ is the interaction between produced waste amount and loss-aversion tendencies, and $X$ are participant characteristics.

## 4. Results

Table 3 presents the tested hypotheses and their results.

Table 3 Tested hypotheses and results.

| | Model 1<br>Main Effects | Model 2<br>Interaction Effects |
|---|---|---|
| *Hypotheses* | | |
| H1: Environmental information provision has a significant positive impact on the acceptance level of the new tariff | ↟ | |
| H2. Justice information provision has a significant positive impact on the acceptance level of the new tariff | n.s. | |
| H3: The impact of justice message provision is significantly higher than environmental information provision | n.s. | |
| H4: High environmental identity has a positive effect on the new tariff preference | ✓ | |
| H5: High environmental identity positively moderates the relationship between environmental message and the acceptance level of the new tariff | | n.s. |
| H6: People with high loss aversion scores have significantly lower acceptance levels of the new tariff | ✓ | |
| H7: People producing more than average waste will have a lower acceptance level of the new tariff | ✓ | |
| H8: High loss aversion negatively moderates the relationship between the amount of waste being created and the acceptance level of the new tariff | | n.s. |

| | |
|---|---|
| ✓ | The result is statistically significant at <.05 confidence level and in support of the hypotheses |
| ↟ | The result is significant at <.1 confidence level |
| n.s. | The result is not statistically significant and does not support the hypothesis |

## 5. Discussion & conclusions

As postulated in hypothesis H1, participants receiving an environmental message tend to show higher levels of the new tariff preference. This is consistent with the existing research suggesting that the more individuals believe a cause is worthy or significant, the more they are prone to follow a message advocating it (Xu et al., 2018). However, the introduction of the incentivized tariff per

se without an environmental message might evoke perceptions of pro-environmental causes. Therefore, the impact of an environmental message can abate across comparison groups. As opposed to expectations stated in hypotheses H2 and H3, the justice message did not alter the acceptance level of the new tariff even though perceptions of justice have been shown to be important when considering acceptance of environmental policies (Bolderdijk et al., 2017). Future research can investigate these findings further. As proposed, a high environmental identity is a reliable predictor of the incentivized tariff, and it has a positive impact on the preference for the new tariff (H4). Environment identity is a reliable predictor of the positive reaction toward the proposed system. Despite expectations, we could not find sufficient evidence to conclude that the impact of the environmental message is affected by the magnitude of someone's environmental identity. We, therefore, could not find support for hypothesis H5.

People with high loss aversion tend to disapprove the new tariff system, as hypothesized in H6. This is particularly interesting since 70.18% of participants think that their level of waste creation is below the average in the city. This particular circumstance reveals an interesting finding that even if people are not explicitly supposed to be affected by the potential losses, they tend to dislike policies that include uncertainties. The finding can be attributed to status quo bias (Kahneman et al., 1991).

As conjectured in hypothesis H7, people with high levels of waste creation have a lower acceptance level of the new tariff. In line with the prospect theory (Kahneman & Tversky, 1979), the results suggest that initial levels of waste creation serve as a reference point, and people tend to assess the tariff preference based on those changes relative to the amount of waste they create. Interestingly, even though people with high waste creation levels tend to dislike the incentivized tariff system, they agree that the new system will help to reduce waste creation throughout the metropole. However, there was no significant interaction between loss aversion and the amount of created waste (H8). Waste creation levels are also associated with greater concerns about the new system and waste tourism possibilities. Notably, participants with high levels of waste creation or those being employed think that the people in their close and immediate circles would empty their garbage in neighbors' cans or in the woods with the new tariff system. These results imply that people with high levels of waste creation or active employment status might be inclined to illegal waste dumping, that is waste tourism.

*Policy implications.* These results can be utilized in the design of communication strategies and can be generalizable for similar policy changes by putting emphasis on the environmental benefits. This research can help policymakers on local and central government levels design functional strategies to better comprehend the residents' decision-making system and effectively communicate the policy change. Relatedly, environmental education can help increase environmental identity and thus, enable to reach a higher level of policy acceptance. Loss aversion might be mitigated by decreasing the possible uncertainties about the new system and ensuring the transparency of the process. A proper control mechanism among those with high levels of waste creation can prevent waste tourism.

**References**


Abrahamse, W., Steg, L., Vlek, C., & Rothengatter, T. (2007). The effect of tailored information, goal setting, and tailored feedback on household energy use, energy-related behaviors, and behavioral antecedents. *Journal of Environmental Psychology*, *27*, 265–276. https://doi.org/10.1016/j.jenvp.2007.08.002

Banister, D. (2008). The sustainable mobility paradigm. *Transport Policy*, *15*(2), 73–80. https://doi.org/10.1016/j.tranpol.2007.10.005

Bolderdijk, J. W., Steg, L., Woerdman, E., Frieswijk, R., & De Groot, J. I. M. (2017). Understanding Effectiveness Skepticism. *Journal of Public Policy & Marketing*, *36*(2), 348–361.

Clayton, S., & Opotow, S. (2003). *Identity and the Natural Environment: The Psychological Significance of Nature*. MIT Press.

Kahneman, D., Knetsch, J. L., & Thaler, R. H. (1991). Anomalies: The Endowment Effect, Loss Aversion, and Status Quo Bias. *Journal of Economic Perspectives*, *5*(1), 193–206. https://doi.org/10.1257/jep.5.1.193

Kahneman, D., & Tversky, A. (1979). Prospect Theory: An Analysis of Decision under Risk. *Econometrica*, *47*(2), 263. https://doi.org/10.2307/1914185

Kangas, O. E. (1997). Self-interest and the common good: The impact of norms... *Journal of Socio-Economics*, *26*(5), 475. https://doi.org/10.1016/S1053-5357(97)90010-X

Kaza, S., Yao, L. C., Bhada-Tata, P., & Van Woerden, F. (2018). *What a Waste 2.0: A Global Snapshot of Solid Waste Management to 2050*. World Bank. https://doi.org/10.1596/978-1-4648-1329-0

Kuiper, N. A., & Rogers, T. B. (1979). Encoding of personal information: Self–other differences. *Journal of Personality and Social Psychology*, *37*(4), 499–514. https://doi.org/10.1037/0022-3514.37.4.499

Li, J., Chai, L., Nordstrom, O., Tangpong, C., & Hung, K.-T. (2021). Development of a Loss Aversion Scale. *Journal of Managerial Issues*, *XXXIII*, 69–89.

Liu, L., Bouman, T., Perlaviciute, G., & Steg, L. (2019). Effects of trust and public participation on acceptability of renewable energy projects in the Netherlands and China. *Energy Research & Social Science*, *53*, 137–144. https://doi.org/10.1016/j.erss.2019.03.006

Loukopoulos, P., Jakobsson, C., Gärling, T., Schneider, C. M., & Fujii, S. (2005). Public attitudes towards policy measures for reducing private car use: Evidence from a study in Sweden. *Environmental Science & Policy*, *8*(1), 57–66. https://doi.org/10.1016/j.envsci.2004.07.008

Maestre-Andrés, S., Drews, S., & van den Bergh, J. (2019). Perceived fairness and public acceptability of carbon pricing: A review of the literature. *Climate Policy*, *19*, 1–19. https://doi.org/10.1080/14693062.2019.1639490

Meneses, G. D., & Palacio, A. B. (2007). The Response to the Commitment with Block-Leader Recycling Promotion Technique: A Longitudinal Approach. *Journal of Nonprofit & Public Sector Marketing*, *17*(1–2), 83–102. https://doi.org/10.1300/J054v17n01_04

Reichenbach, J., Bilitewski, B., Karagiannidis, A., Sauer, P., Schiller, G., Deilman, C., Leone, F., Abert, J., Xirogiannopoulou, A., & al, at. (2004). *Handbook on the implementation of Pay-As-You-Throw as a tool for urban waste management*.

Steg, L., & Vlek, C. (2009). Encouraging pro-environmental behaviour: An integrative review and research agenda. *Journal of Environmental Psychology*, *29*(3), 309–317. https://doi.org/10.1016/j.jenvp.2008.10.004

Stone, E. R., & Allgaier, L. (2008). A Social Values Analysis of Self–Other Differences in Decision Making Involving Risk. *Basic and Applied Social Psychology*, *30*(2), 114–129. https://doi.org/10.1080/01973530802208832

Tom, S. M., Fox, C. R., Trepel, C., & Poldrack, R. A. (2007). The Neural Basis of Loss Aversion in Decision-Making Under Risk. *Science*, *315*(5811), 515–518. https://doi.org/10.1126/science.1134239

TVERSKY, A., & KAHNEMAN, D. (1992). Advances in Prospect Theory: Cumulative Representation of Uncertainty. *Journal of Risk and Uncertainty*, *5*(4), 297–323.

Von Neumann, J., & Morgenstern, O. (1944). *Theory of games and economic behavior* (pp. xviii, 625). Princeton University Press.

Wagle, S. (1993). Sustainable Development: Some Interpretations, Implications, and Uses. *Bulletin of Science, Technology & Society*, *13*(6), 314–323. https://doi.org/10.1177/027046769301300602

Wiener, J. L., & Doescher, T. A. (1991). A Framework for Promoting Cooperation. *Journal of Marketing*, *55*(2), 38–47. https://doi.org/10.1177/002224299105500205

Xu, L., Zhang, X., & Ling, M. (2018). Pro-environmental spillover under environmental appeals and monetary incentives: Evidence from an intervention study on household waste separation. *Journal of Environmental Psychology*, *60*, 27–33. https://doi.org/10.1016/j.jenvp.2018.10.003