

Incentivized Municipality Recycling: Perceptions, Motives and Preferred Reward Schemes

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Over 50% of the world's population now lives in cities, and the figure is set to rise up to 75% by 2050. This expected growth in population and change in lifestyles has led to an increase in waste generation, thus making the safe and cost-effective management of municipal solid waste a significant social, environmental and health challenge for modern society. With increasing urbanization, waste problems are becoming very significant. In fact, as cities expand and grow, municipal solid waste has become an important issue all over the world, as its quantity is expected to reach 2.2 billion tons per year by 2025 (Hoorweg and Bhada-Tata, 2012). According to Environmental Data Center on Waste, each person in Europe is currently producing, on average, 475kgs of household waste in a year. Although, some Western European countries have achieved relatively high levels of household waste recycling, i.e. 43.2% in England and 62% in Germany (Dai et al., 2015), these percentages are still very low for the majority of the countries around the world. Actually, recycling rates seem to have plateaued and only a limited, albeit increasing, share of fifteen percent of the waste is recycled and more than 80% of that amount is landfilled or burned.

It is evident, that there is an urgent need for increasing overall recycling capture rates, diversion from landfill and conversion into resources. In that direction, incentivized recycling has been identified in literature as an effective mechanism for recycling encouragement and promoting environmentally desired behavior. In the first section of this paper and after a short introduction on household waste management a literature review will be presented on the drivers of recycling behavior with a special focus on incentivized recycling. As Lakhani (2016) argues, while a significant body of research exists exploring the efficacy of municipal recycling instruments in promoting household recycling (Barr et al., 2005) there is a scarcity of research on how municipalities respond to recycling incentives and disincentives.

In this paper we aim to contribute in the academic discourse related to the question of how a municipality can get more people to recycle more frequently and how to sustain these behaviors. In doing so, we present the results of a survey that took place between September 5 and October 5 2016, aiming to identify citizens' perceptions on household recycling, their underlying motives to engage in such an environmental sensitive behavior and identify their preferred reward schemes and their expectations from an incentivized recycling program. The unit of analysis of the survey is the individual household.

The survey is based on a non-probability sample of 987 Greek urban households within the area of the Municipality of Glyfada, Athens, Greece and their corresponding respondents, one per household. Data were collected through a questionnaire provided by an established commercial electronic survey platform. All necessary information and guidelines for participating in the survey were also made available online to various respondents. The design of the questionnaire was based on the extensive study of relevant literature for similar contributions. Finally, questionnaire fine-tuning and detailing took place during a long meeting of experts originating from different but relevant to the studied subject disciplines, i.e. waste supply chain, recycling, marketing, psychology, sociology and behavioral economics.

The survey showed that in average 82% of the participants believe that they would be willing to increase their recycling performance if someone could provide them with a meaningful reward scheme and the fulfilling sense of contribution and responsibility. This creates new possibilities for deeper customer engagement and increased recycling rates. The survey also attempted to determine the best stimuli (financial or other) to

positively affect consumers' recycling behavior. The survey identified two strong non-financial reward schemes that could play a critical role in making consumers feel that their recycling performance sincerely has value for them and impact for their community. At the same time our study reveals that monetary incentives, albeit important, were not the first preference of participants. Based on the findings, the survey, counter-intuitively uncovered the surprising fact that from the majority of the ideal rewards (cash and non-cash) that were tested, 91% and 89% of the total replies identified that discounts on i) the purchases from super markets and ii) on electricity bills are the strongest and most effective rewards, in prompting consumers to change their normal waste generation patterns and increase their recycling. Participants were indeed keen to protect the environment, either through individual acts or as part of a collaborative effort. Protecting the environment, either as a personal challenge (green awareness) or as a collective effort (green cooperation), also represent a strong driver for behavioral change. Finally, in this study we report methods to overcome the multiple barriers to widespread adoption of recycling in the residential sector, and we list advances in the design of behavioral incentive mechanisms that: (1) boost consumer motivation; (2) promote the desired recycle behavior effectively, and; (3) maintain long-term consumer engagement.

References

- Barr, S., Gilg, A. W., & Ford, N. (2005). The household energy gap: examining the divide between habitual-and purchase-related conservation behaviours. *Energy policy*, 33(11), 1425-1444.
- Dai, Y. C., Gordon, M. P. R., Ye, J. Y., Xu, D. Y., Lin, Z. Y., Robinson, N. K. L., Woodard, R and Harder, M. K. (2015). Why doorstepping can increase household waste recycling. *Resources, Conservation and Recycling*, 102, 9-19.
- Lakhan, C. (2016). The relationship between municipal waste diversion incentivization and recycling system performance. *Resources, Conservation and Recycling*, 106, 68-77.
- Hornweg, D., & Bhada-Tata, P. (2012). What a waste: a global review of solid waste management. *Urban development series knowledge papers*, 15, 1-98.