

Economic incentives in household waste management: just a waste?
A relational approach to agents and structures in household waste sorting

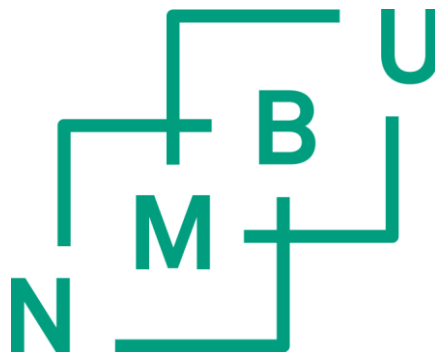
Økonomiske insentiver i forvaltningen av husstanders avfallssortering: bare bortkastet?
En relasjonell tilnærming til agenter og strukturer i husstanders avfallssortering

Philosophiae Doctor (PhD) Thesis

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Summary

In a world where natural resources are consumed at an ever-faster pace and environmental degradation escalates, it has become increasingly important to promote and facilitate for environmentally sustainable behavior. Different kinds of policies are implemented to address these challenges and the use of economic incentives has become popular to try to obtain environmental sustainability. However, research over the last decades report that to use economic incentive is not as straightforward as one might think. In some cases, to implement an economic incentive can even give the opposite result of what was intended. Hence, to promote or facilitate for environmentally sustainable behavior through the use of economic incentives calls for a thoughtful engagement with what characterizes individuals' motivation and behavior.

Social sciences offer different perspectives and approaches when theorizing about this topic resulting in different kinds of policy advice. One way to distinguish between theories in social sciences is to understand how they explain social phenomena, that is, whether they explain social phenomena through focusing at the *individual* or at *social structures*.

Economics has, for various reasons, applied a perspective that largely focuses on individuals. More specifically, it is the subjective rational choice theory (RCT) that constitutes the core of what is often referred to as *neoclassical* or *mainstream economics*. Consequently, investigating individual choices has been given a predominant role. An alternative approach is to explain social phenomena through understanding the role of social structures. This kind of perspective assumes that social wholes or societies are entities in themselves, and that these entities cannot be reduced to properties of the parts.

However, some scholars have introduced a third perspective that considers both individuals and social structures when explaining social phenomena. This approach has been referred to as *relational* and the main idea is not a unilateral focus on either individuals or social structures, but rather how they are interlinked and related. This thesis is inspired by this relational approach and has attempted to operationalize it through applying and combining two theories – i.e., Classical Institutional Economics (CIE) and Self-Determination Theory (SDT). Both theories are relational in their scope, although CIE might be said to emphasize structures more than SDT where emphasis is to a greater extent on the individual.

More specifically, CIE belongs to a theoretical tradition that has developed in parallel with neoclassical economics. It focuses mainly on *institutions*, understood as *conventions*, *norms* and *formal rules*. When explaining social phenomena, CIE emphasizes the development of institutions and how these affect and relate with individuals *in situ*. An important feature of CIE is that institutions express expectations about what is considered appropriate behavior in a certain situation. For example, institutions might express expectations that favor the individual alone – i.e., an '*I logic*' – or institutions might express expectations that favor the group or the environment that the individual is a part of – i.e., a '*we logic*.'

SDT, on the other hand, is a theory that belongs to the humanistic trend in psychology. SDT focuses mainly on the individual and advocates, among other things, *autonomy* and *eudai-*

monic well-being as important concepts for understanding human motivation and behavior. Autonomy is understood as the *desire* of an individual to self-organize experience and behavior, and to be able to act in concordance with one's integrated sense of self. Eudaimonic well-being, often contrasted to *hedonic*, is understood as well-being linked to the *fulfillment* of living in concordance with one's integrated sense of self. Further, SDT consists of several mini-theories and one of these, Organismic Integration Theory (OIT), elaborates on the concept of autonomy. OIT offers an understanding of how social constructs such as social values and regulations are integrated and internalized in varying degrees into the self of an individual, and thereby constitutes what the individual experience as the integrated sense of self.

The understanding of how these social constructs constitute the self of individuals should be stressed since it is this understanding that enables CIE and SDT to be combined. Further, it is the combination of CIE and SDT that enables an analysis of the relation between individuals and social structures. The combination also makes it possible to include the concept *reflexivity* in the analysis. Reflexivity enables an understanding of humans as evaluators rather than (only) as utility maximizers. Further, since CIE and SDT apply a relational perspective, they can potentially give other kinds of answers to the deviances observed between actual behavior and behavior as predicted by RCT. At a more general level, CIE and SDT might offer other kinds of insights about what characterizes individuals' motivation and behavior than what neoclassical economics proposes.

The empirical focus of this thesis regards an environmentally relevant practice – i.e., household waste sorting for recycling purposes. There is disagreement in the literature whether economic incentives are effective means to increase individuals' sorting degrees. In this respect, Norwegian waste management is interesting as a real-life laboratory for studying incentive systems. Waste management arrangements implemented by Norwegian municipalities are diverse in terms of both how they have practically arranged for waste sorting and what kinds of incentives they have implemented to increase sorting efforts.

Given the above, the objective of this thesis has been to investigate how motivation and behavior in household waste sorting are affected by factors both at the level of the individual and at the level of social structures. Social structures are restricted to institutional settings, as outlined by CIE, and are here represented by a curbside waste management system with three kinds of waste fee schemes – see below. The individual level is restricted to individuals' integrated sense of self and is here represented by two kinds of beliefs about human-nature relations.

The following three research questions (RQs) has been developed to investigate different aspects of the objective. RQ 1 concerns the role that institutional settings, as these are defined by CIE, play for motivation and behavior in household waste sorting. Institutional settings are represented by a curbside waste system with three kinds of waste fee schemes. RQ 2 concerns the role that the integrated sense of self, as this is defined by SDT, plays for motivation and behavior in household waste sorting. The integrated sense of self is represented by two kinds of beliefs about human–nature relations. Finally, RQ 3 regards how, based on insights from

CIE and SDT, the effect of institutional and individual factors can be interpreted. Does the effect of each type of factor depend on the characteristics of the other?

The thesis comprises four papers, which differs in their focus and how they cover the research questions. Paper 1 applies CIE and focuses mainly on the role of institutional settings for motivation and behavior in household waste sorting. Paper 2 investigates SDT's assumptions about how the integrated sense of self are related with autonomous motivation and eudaimonic well-being. CIE and SDT are attempted combined in papers 3 and 4. In paper 3 this combined theoretical framework is applied when studying how a change in institutional settings and different kinds of integrated sense of self, might influence motivational reasons, perceptions of a weight-based waste fee and sorting degrees. Elements from both theories are also applied in the analysis that investigates the formation of perceptions of a differentiated waste fee scheme as compared to a fixed waste fee scheme (paper 4).

The thesis focuses at two study settings that involve seven Norwegian municipalities. All municipalities had at the time of investigation implemented a curbside waste management system. In the first setting two kinds of waste fee schemes – i.e., a fixed waste fee scheme and a differentiated frequency-based waste fee scheme – were contrasted. Using cross-sectional data, I investigated how these waste fee schemes as well as two kinds of beliefs about human–nature relations influenced people's motivation and behavior regarding household waste sorting. The data used were collected through a survey that was sent to individuals in 1800 households distributed evenly between the six municipalities.

The other setting regards the municipality of Ulstein where there was a change from a weight-based waste fee scheme (kilograms of unsorted waste) to a waste system with a fixed waste fee. Using panel data, I investigated how a change in the institutional setting, and two kinds of beliefs about human–nature relations, affected people's motivation and behavior in relations to sorting household waste. The material for this study setting also includes data from focus-group conversations.

The surveys in both study settings were developed to cover different aspects of motivation and behavior related to waste sorting. Regarding motivation, the surveys included several sets of questions covering aspects related to institutions, well-being and emotions, perceptions of waste fee schemes, beliefs about human–nature relations (New Ecological Paradigm scale/'pro-' and 'anti-ecological' belief) and socioeconomic variables. The level of waste sorting was measured through a stated variable ranging from 1 that equals that nothing is sorted, to 6 that equals that everything is sorted. In addition, actual waste sorting degree at the household level was included in the cross-sectional study by using data reported by the municipalities to Statistics Norway. Statistical methods that were used to analyze the data collected through the surveys were mainly factor analysis and regression analysis such as logit.

The four papers reveal several findings that contribute to our understanding about the effects of institutional and individual factors regarding waste sorting. First, regarding the influence of *institutional settings* on the *motivation* for sorting household waste, a main finding is the strong role that a 'we logic' plays in all contexts that are studied. Second, the results indicate

that a fixed waste fee, as compared to a frequency-based waste fee, fosters higher levels of motivation related to a 'we logic'. Third, the data support that the presence of an economic incentive creates an additional logic, that is, an 'I logic' emphasizing cost saving. Finally, in terms of perceptions about the waste fee schemes, there are indications that individuals give preference to the institutional logic they currently experience.

Regarding institutions and *behavior*, the results report significantly higher sorting degree in municipalities with a fixed waste fee than in those with a frequency-based or weight-based waste fee. In the case of the weight-based waste fee, increased levels of displaced or illegal waste disposal were observed.

The results reveal that integrated beliefs about human-nature relations are important determinants of experiencing eudaimonic well-being linked to sorting household waste. This is in accordance with the *autonomy* perspective of SDT. These kinds of beliefs apparently also play a role in determining what motivates the individual to sort waste – i.e., about doing the right thing for the environment or saving costs.

Finally, there is a difference regarding how the two economic incentives are perceived by those who are identified with an integrated pro-ecological belief. While the frequency-based waste fee scheme was perceived as supportive of a good habit, the weight-based system in Ulstein was perceived as a bad idea. Why the two waste fee schemes were perceived so differently can only be speculated about, however, the different levels of intrusiveness and reciprocity that the schemes involve are suggested as explanations.

Further, in light of the empirical findings outlined above, the thesis offers some theoretical reflections to explore what a relational approach can contribute with as opposed to a perspective of neoclassical economics and RCT. One point regards the understanding of the individual – the 'I' – as being part of a group – a 'we' – that makes it possible to hypothesize how the individual relate to the social world, and the possible implications this has for motivation and action. Another reflection concerns the theoretical connections between *relative autonomy*, *well-being* and the linkage to a 'we' – e.g., if sorting waste is perceived as a social dilemma or not depends on your *integrated sense of self* and is hence linked to both *autonomy* and *well-being*. Finally, by linking the concepts *locus of causality* and *reflexivity* it is argued that reflexivity can be observed at two levels – i.e., with regard to the kind of integrated belief about human-nature relations and with regard to the institutional setting.

The main policy implication is that implementation of a differentiated waste fee should be considered with great caution. Economic incentives seem not to result in more sorting of household waste. Most probably, this is so as an economic incentive tends to foster less autonomous motivations with a focus at the individual interest. Combining theoretical perspectives has been helpful in understanding better how such 'counter-intuitive' findings can be explained. In that respect, the thesis is a plea for opening up the discipline of economics towards insights from a wider set of disciplines – not least to make it more progressive in its engagement to develop viable solutions for the environmental challenges we experience.