



# INDSAMLING AF ORGANISK AFFALD

## KANDIDATSPECIALE

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# SUMMARY

In Denmark, waste management has been neglected for many years, but a new strategy formed by the former government in 2013 points to a range of initiatives, that will help fulfil the goal of 50% reutilisation set forth by the European Union and now implemented in the national Danish law.

In the strategy, organic waste from household waste is said to have a great impact on the goal. Sorting of this fraction is a relatively unknown phenomenon in Denmark and only a few municipalities have experience in this field. Based on this fact, a range of unanswered questions remains, regarding the sorting and potential of the organic household waste.

In relation to the new waste management strategy, Esbjerg municipality started a full-scale project on organic household waste collection in an Esbjerg suburb with 1080 households: Projekt Tjæreborg. This project (combined with a questionnaire survey) produced a high volume of data on a pioneer subject that contributes to answering the questions.

The main goal of this report is to determine the effect of organic household waste collection on the reutilisation and if the fraction alone can fulfil the goal of 50%. Furthermore, the uniqueness of Projekt Tjæreborg enables answers to questions divided into three categories of impact: environmental, service and economic.

A literature study and data from Projekt Tjæreborg is used as a basis for answering the questions. The literature study includes laws and regulation, behavioural aspects, technological limitations, pros and cons of each sorting method, valuation of nuisances and economical aspects. Along with the data processing, using principal component analysis, correlations analyses and ANOVA/Tukey, the reutilisation percent and the energy, climate and fertilisation potential is calculated based on real amounts of bio and remaining waste.

## Results

The environmental impacts (benefits) for sorting organic waste were found to be at least the same as without. The results did not include the benefits of the fertiliser potential, which contribute with positive environmental impacts. A full holistic analysis should be conducted to reveal the facts.

Based on the Projekt Tjæreborg data, there was not found a significant difference in the amounts of bio waste collected by the separate bin, compared to the two-piece bin. On the other hand, the results stated a difference regarding the backs used, where the paper back accounted for the highest amount of bio waste.

The energy potential showed that the organic waste could contribute with electricity and heat corresponding to 1.17% and 0.36% of the household's own consumption, respectively. The fertiliser potential was relatively small compared

to the high volume of waste and corresponded to 0.75% of the total fertilised farming area, if all household were to sort organic waste.

Based on a questionnaire survey, the service parameter was examined on a household basis in the analyses. The results were based on the fact that less nuisance means good service. The analysis showed that there were no difference between the separate and the two-piece bin, regarding the service. On the other hand, the plastic back contributed to a great extent compared to the paper back. Furthermore, it was found that odour and time consumption linked to the organic waste sorting both contributed negatively to both the service and economic factors. As service is important for correct sorting, it is recommended to implement a sorting method that reduces the nuisance, e.g. the plastic back. This also correspond with the optimal solution when implementing in apartment housing.

The economic impacts was mostly dependent on the discharge of the bins. In this context, it is recommended to use a separate bind with a discharge frequency of 14 days. Also on the economic factor, the plastic back is the better choice. Based on the social economics, it was found that collection of organic waste at least as good an economy as no collection.

The overall assessment of the collection of organic waste shows that it has a high impact on the reutilisation and that no matter which method is implemented (out of the examined ones) the goal of 50% is reachable with organic waste alone.

The one sorting method that contributes the most on all three parameters is the separate bind combined with the plastic back for collection. The plastic back will also constitute the right choice, when implementing organic waste collection in apartment housing.