

Improving biowaste management practices using municipal and citizen perspectives

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Biowaste has been commonly identified as a substantial part of municipal waste generation. In some countries, significant efforts have been made to separate this waste fraction from municipal solid waste and then utilize it through aerobic or anaerobic digestion. Reducing the share of biowaste in municipal waste has the potential to decrease the costs due to the lower mass of the remaining waste, or even result in some profit if the biowaste is properly utilized. An important aspect here is how the conditions and infrastructure for dealing with biowaste are set up. Ideally, biowaste separation should be easily available, simple to understand, and introduced to the people well enough, so that the people as originators of municipal waste would properly comply.

In Czechia, municipalities are required to provide options for separate biowaste (specifically garden waste) collection to the citizens since 2015. Since then, municipalities used various strategies to comply with this requirement from providing fixed or mobile containers with various collection frequencies, home composters to creating local composting plants. Besides infrastructure itself, it is important also how this topic is communicated with the people and how well is it compatible with their preferences. While municipal characteristics such as dominant housing structure play an important role, the specific way how the system of biowaste management is set up also results in significant differences between the amount of separately collected biowaste in various municipalities.

In this study we look at the current perception of the municipal biowaste management in Czech municipalities of both citizens and municipal representatives. Inclusion of both sides of the biowaste management systems – citizens as originators and municipal representatives as administrators and decision-makers – offers a better opportunity to comprehend a complex process with aspects that cannot be easily controlled (specifically behaviour and preferences of people). The objective of the study is to identify both good and not so good practices that citizens and municipalities experienced when dealing with separate biowaste collection with the conclusion of which practices to further adopt, which to better abandon, and which to adjust for improvement and how specifically.

Data affecting municipal biowaste management for doing this need to reflect the complexity of the process, variety of stakeholders and their position in the process. First set of data is related to municipal characteristics such as population count and population structure, built-up area, housing structure or amount of collected biowaste. Next set of data includes municipal practices in individual municipalities, such as type and frequency of biowaste collection, available biowaste-related infrastructure including home composting, or way how is the overall biowaste topic communicated with the citizens. Third set of data includes practical experiences and preferences of citizens and municipal representatives with the biowaste collection.

Data for this study was collected using statistical information available from public databases, online questionnaires, and direct communication with the municipal representatives. Citizens were asked mainly closed questions for acquiring quantitative data about their practices and preferences. Analogically, municipalities were provided with questionnaire asking about the same topic, but from their perspective as the administrators and decision-makers in the process of securing and setting up biowaste management system in the municipality. Based on the affiliation of the municipal representatives providing answers, additional municipal characteristics were linked to the answers using public databases to put them into a broader picture. Final set of qualitative data was acquired by directly contacting selected municipalities and conducting interviews with the responsible representatives consisting mainly of open-ended question focusing on perspectives and experiences of municipality with separate biowaste collection, including observed input from the citizens.

The area chosen for data collection was South Moravian Region in Czechia consisting of almost 700 municipalities. Czech municipalities are on average relatively small with less than 1000 population, resulting in a diverse group with different approaches to meeting national requirements on biowaste separation. Data collection from citizens occurred in October 2022 using mainly electronic distribution, with almost 1600 gathered responses. In the next step, all municipalities in the region were contacted, with the collection period of the responses lasting from October until November 2022. Subsequently, interviews with 12 selected municipalities were conducted in order to get a broader perspective on the topic and allow for more interactive communication, leading to acquiring further details and opinions. These municipalities were selected based on their size and location in order to properly represent variability of municipalities in the region.

Preliminary results show common practices among the municipalities in biowaste management, and these are linked with the actual biowaste production. With continuation of the mandatory collection, aggregated amount of biowaste per capita collected in the municipalities is increasing every year. However, pace among them shows notable differences that seem to be related to the specific practices in individual municipalities. Identified performance of municipality in biowaste collection is then linked to the revealed practices in order to identify connections leading to both better, but also worse than typical results.

Results of biowaste management and municipal practices are then confronted with the data collected from citizens in order to assess their perception of the way how the system is set up, and where they see both positives and negatives. Input from citizens includes also their preferences towards biowaste separation and suggestions how the process could be further improved to reach a better performance. Sociodemographic information about the respondents is also used to model connections with attitudes and preferences.

Benefit of the conducted research is in the provision of a large-scale input about the practices in municipal biowaste management, the identification of good and effective practices, and the collection of data on how citizens perceive this topic. Results are valuable for regional and municipal authorities, as they provide a complex perspective on the topic of separate biowaste collection from both originators (citizens) and administrators (municipalities) of the process. Identified good practices can be further supported and extended, ineffective practices ceased, all while the preferences of citizens are addressed better.