



SLOVENSKI STANDARD SIST-TP CWA 17866:2022

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Ključni dejavniki za uspešno izvajanje sistemov selektivnega zbiranja bioloških odpadkov v mestih

Key factors for the successful implementation of urban biowaste selective collection schemes

Schlüsselfaktoren für die erfolgreiche Einführung von Systemen zur getrennten Sammlung von Bioabfällen in Städten

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CEN**CWA 17866****WORKSHOP**

September 2022

AGREEMENT

ICS 13.030.40

English version

Key factors for the successful implementation of urban biowaste selective collection schemes

This CEN Workshop Agreement has been drafted and approved by a Workshop of representatives of interested parties, the constitution of which is indicated in the foreword of this Workshop Agreement.

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European foreword

This CEN Workshop Agreement (CWA 17866:2022) has been developed in accordance with the CEN-CENELEC Guide 29 “CEN/CENELEC Workshop Agreements – A rapid prototyping to standardization” and with the relevant provisions of CEN/CENELEC Internal Regulations – Part 2. It was approved by a Workshop of representatives of interested parties on 2022-06-17, the constitution of which was supported by CEN following the public call for participation made on 2020-09-01. However, this CEN Workshop Agreement does not necessarily include all relevant stakeholders.

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Introduction

Every year each European citizen produces on average 200 kg of municipal biowaste. This means that between 118 and 138 million tons of biowaste arise annually in the EU. The municipal biowaste management systems that currently exist in Europe, such as landfilling, do not give a second life to materials or resources contained in the biowaste. Other alternatives such as incineration and composting do not allow to take full advantage of the biowaste potential.

With the increase in biowaste production, the EU's priorities are to reduce food waste, increase separate collection and reuse or recycling. One of the main challenges for biowaste management is to integrate a valorization system in a city context, and to recover strategic products with a market value that offsets the global cost of biowaste valorization.

Thus, the recovery and valorization of biowaste is one of the main lines of several EU-funded projects, like VALUEWASTE¹, which proposes an integrated system for urban biowaste valorization into key strategic products for the EU.

In order to implement successful valorization schemes to produce high value products with attractive and sustainable business cases, it is imperative to feed the processes with high quality biowaste. High quality biowaste relies on efficient selective collection systems and pre-treatments. Unfortunately, such systems to ensure high quality biowaste are scarce in Europe, making current valorization systems uneconomical and therefore underutilizing the potential of urban biowaste.

Standardization of the influencing key factors for the improvement of the selective collection and management of urban biowaste will help city managers and waste management service providers to increase the quality of the selectively collected biowaste, enabling the development of robust biowaste valorization processes. The influencing key factors will focus on actions to promote biowaste collection and improve the perception of citizens on urban biowaste as a local source of valuable materials.

Therefore, standardization will bring citizens' sorting and recycling efforts to increase the biowaste quality and contribute to pave the way for the transition of cities to a circular economy.

Part of this CWA is based on the biowaste selective collection experience implemented in the VALUEWASTE project. This research project has received funding from the European Union's HORIZON 2020 research and innovation programme under grant agreement number 818312.

¹) <https://valuewaste.eu/>

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1 Scope

This CWA provides guidance for the implementation of biowaste selective collection schemes.

This CWA also paves the way to increase citizen engagement, as this is crucial for the successful implementation of urban biowaste selective collection schemes.

It is intended to be used by city managers and municipal waste managers with interest in implementing the selective collection of urban biowaste to produce high quality biowaste (i.e., minimal presence of non-required fractions) which can be then used in robust valorization processes with attractive business cases.

2 Normative references

There are no normative references in this document.

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <https://www.electropedia.org/>

3.1

biowaste

waste that is composed chiefly of organic matter and typically comprises biodegradable garden and park waste, food and kitchen waste from households, restaurants, caterers and retail premises, and comparable waste from food processing plants

Note 1 to entry: For further information see Annex A.

3.2

non-required fraction

waste fraction affecting negatively the valorization process.

Note 1 to entry: For further information see Annex A.

3.3

customer

biowaste producer.

Note 1 to entry: In this CWA there are two types of customers: citizen and large producer.

3.4

collection point

place where the customer deposits the biowaste on public areas for collection

3.5

mixed fraction

this is the fraction of the waste where the biowaste is actually being deposited before the selective collection of biowaste begins

3.6**D-day**

day on which the selective collection of biowaste begins. All previous and subsequent planning is done in reference to this day

3.7**biopatrols**

staff whose mission is to interact with the customer, usually in a face-to-face mode. Their aim is to change customer attitudes to increase the quantity and quality of biowaste

4 General

This document sets out a methodology for obtaining high quality biowaste and is intended to be of use to those municipalities where separate collection of biowaste has not started and already have collection systems in place.

In order to achieve high quality biowaste there are short- and long-term objectives. The short-term objectives are oriented towards planning and implementation and include the development of the plan, the definition of biowaste, the method of serving the different types of customers and the destination of this biowaste after it has been treated.

There is no single programme that works for all areas. Each target area may have its own geographic and demographic identity, way of collecting waste, market requirements, and legal and financial constraints. For a biowaste collection scheme to be successful, all of these variables must be accounted and planned for.

In this document, the factors common to all areas will be analyzed. However, the market requirements and legal and financial constraints of a biowaste collection service are not within the scope. When implementing the biowaste collection, it is important to consider the associated costs, logistics and carbon footprint, which will be specific to each particular case.

The first decision to be taken is to decide the day on which the selective collection of biowaste begins in an area (D-day). From this day onwards, there are a series of actions that shall be carried out before (Clause 5) and after (Clause 6) this day.

Clause 7 establishes a contingency plan to correct the deviations which may arise in terms of quantity and quality of biowaste.

Clause 8 is a summary of the key factors for the successful implementation of urban biowaste selective collection schemes.

5 Steps to follow before starting the collection (pre-planning)**5.1 General**

Pre-planning is crucial to the success of a biowaste collection scheme. Aspects not considered in this phase are very difficult to change in the next phase, which is when the biowaste collection service begins.

Planning for biowaste collection begins with knowing the waste stream in a community, determining the sources, quantities and characteristics of biowaste in the area in question.

Before D-day and in the order sets out here, the following actions shall be carried out:

5.2 Biowaste typology

There are two ways to know the amount of biowaste in the mixed fraction:

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- a) Selecting the biowaste from each type of customer and taking samples of these. This way is more expensive but more accurate. When taking samples, the seasonality of the biowaste must be taken into account, so the characterizations of the residual fraction must be carried out, at least, for each of the seasons of the year (spring, summer, autumn and winter). This characterization will normally be carried out at the treatment center where the mixed fraction is taken.
- b) Other more economical option is to use existing data on biowaste composition assuming that it reflects the reality.

Once the amount of biowaste in the residual fraction is known, it is time to set a Key Performance Indicator (KPI) for quantity:

KPI quantity = % of biowaste collected over total biowaste

The measurement of this KPI of quantity will be given by the data provided by the scales of the waste treatment center and the estimation of biowaste contemplated according to the analysis of the rest fraction.

This index indicates the percentage of participation in the selective collection of biowaste.

This KPI should be established for the different types of customers: citizens and large producers, separating if it is possible both collections if there are weighing systems in the collection vehicle.

Another KPI which must be also analyzed, the quality KPI for biowaste. This measurement will be carried out by taking a sample of biowaste when the vehicle arrives at its destination and will be:

KPI quality % = amount of biowaste in the sample (kg)/ Total sample (kg)

5.3 Customer types

There are two types of customers for biowaste: citizen customer and large producer customer.

They are differentiated by the amount of biowaste they generate daily. An average house produces a volume of less than 10 litres of biowaste per day. If a customer generates more than 10 liters of biowaste per day, it is considered as a large producer of biowaste.

A large producer customer will normally generate a higher quality biowaste than a citizen. It is a priority to incorporate this type of customer into a selective biowaste collection programme.

5.4 Proposed location of collection points

Biowaste collection points should be placed next to the customer's usual waste collection point. To improve the quality of the biowaste, the priority is to place the biowaste collection point where there are other collection fractions such as paper, glass, packaging, etc.

The proposal for the location of collection points will determine the means to be used by the biowaste collection service.

5.5 Characteristics of the collection points

The collection point is important because it is the meeting point between the customer and the collection service. It should have its own identity.

This site must be sized to accommodate all biowaste generated by customers. The frequency of biowaste collection will therefore affect the storage capacity of the biowaste at the collection point.

It is advisable to visit all the large producers in the area to find out the quantity and type of biowaste they generate and thus determine more accurately the volume of biowaste to be collected.

The size of the lid of the element to deposit biowaste is a critical factor to obtain better biowaste quality. The larger the size of the lid, the poorer the quality of the biowaste.

It is therefore advisable to differentiate, if the collection point is on a public street, two types of lids of the biowaste into the collection element:

- Citizen, lid of no more than 25 × 25 cm.
- Large producer, closed lid of at least 40 × 40 cm. This lid is opened with a key previously delivered to the waste-generating establishment.

As biowaste is quite heavy, it is advisable to keep the height of the discharge lid as low as possible, especially for large producers. Underground biowaste containers make it easier for large producers to deposit biowaste. A reflection on the type of container is necessary, taking into account all technical, economical and ergonomic aspects.

In the case of having several waste fractions at the collection point, it is advisable not to place the biowaste collection point at the end of the collection point. This increases the quality of the biowaste because it prevents the customer from depositing their waste at the first bin to which they have access.

The following order is recommended: mixed fraction, organic, packaging, paper and glass. That which generates odor on one side and that which does not generate odor on the other. This order should be respected as far as possible. In this way the customer gets used to always having the biowaste collection point in the same place, avoiding errors when depositing the biowaste.

In addition, digital tools are needed to encourage and guide citizens. Examples of best practices related to customer service are provided in Subclause 6.5.

5.6 Communication to stakeholders of the initial planning

Once the customers, the location of the collection point and its characteristics have been studied, it is essential to involve the interested parties in the decision to be taken.

The main stakeholders in this project are:

- Customers.
- Technicians.
- City managers.

Non-participation at this stage may mean that after starting the biowaste collection service, there is no participation from customers or no budget to address the separate collection of biowaste.

All stakeholder suggestions should be listened to. Some may be accepted, some may not.

At this stage, if needed, it is probably necessary to consider adapting the municipal legislation on waste collection, establishing the obligation to separate waste. The date of the change of the legislation has to be set before starting the collection of biowaste.

5.7 Customer communication process

5.7.1 General

Customer's participation is crucial to the success of a biowaste collection scheme. The communication process must have the following characteristics:

- There must be a personal and direct interaction with the citizen.
- Actions must be creative and well designed.
- They must have the right technology for intelligent information management.