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

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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 VALUEWASTE[1], 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/

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:

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.

There is resistance to shift to recycle biowaste so public attitudes and objections to biowaste recycling need to be identified.

There will be a proportion of customers who will participate in biowaste recycling regardless of the quality of the campaign or the recycling facilities. This type of customer is usually environmentally motivated. It is for this reason that a biowaste collection program should be linked to the municipal circular economy concept and strategy. This type of customer should be offered the possibility to participate in the communication process of the biowaste collection project.

On the other hand, there will be another proportion of customers who will not be willing to participate in this type of program, so the effort should not be focused on this group.

However, the majority of customers can be made aware through specific programs and it is to this segment that effort, knowledge and understanding should be dedicated.

To motivate these customers, the following considerations should be taken:

— The sources of information should be credible and come from relevant reference groups.

— Recommendations made should be related to beliefs and practices accepted by the individual.

— The information should raise awareness through the communication of the negative impacts associated to traditional management schemes, and, at the same time, inform about the advantages of the new proposed approach.

— The information should provide specific recommendations.

Prior to the starting of the collection service, it is important to know the degree of customer acceptance of biowaste collection. This issue will be addressed later through the surveys.

In order to know the customer of an area in advance, it is recommended to use information that is normally in the databases of the City Councils:

— How many customers are there?

— what kind of customers are there in the area?

— what is the age of the customers?

— income from customers?

— Do they have experience in recycling other waste fractions?

When to start a campaign is a critical issue, if it starts early it is forgotten; if it starts late it does not reach the customer.

The start of an awareness campaign should not be timed to coincide with events that diminish its effect, such as local holidays, Christmas, the start of school, etc.

It is recommended to always start by talking about the quality of the biowaste. Quantity will come later. A customer who starts off with a bad biowaste selection process will be difficult to change in the future.

The following subclauses establish how to manage the communication process with the customer.

5.7.2 Letter from the Mayor

The mayor is the highest representative in a municipality, so it is recommended that the project of the new biowaste collection is announced by him/her (credible source of information, personal interaction) through an official letter.

The purpose of this letter is to involve the customers in the new project.

It is advisable that this letter is delivered to each home/business in the area. This delivery also serves to get to know the area better and know the number and type of customers. If a database of customers in the area is not available, this section is mandatory.

This letter should include the following information:

a) It should be explained that there is going to be a new biowaste collection point in the area.

b) That we should avoid wasting food and that biowaste that are not usable should go to home composting (if possible) and if not to the biowaste collection point.

c) It must be explained why this new service is going to be carried out:

   — Environmental reasons: circular economy, climate change, use of resources.

   — Legal reasons: European Regulations.

d) It is necessary to explain what is going to be done with this biowaste after it has been collected and to set objectives.

e) It is advisable to explain what is going to happen in the next few days:

   — Face to face communication with customers (biopatrols).

   — Establishment of a meeting point for doubts, indicating where it will be located and its timetable.

   — It is necessary to clarify which are the channels of communication in case of doubts: free hotline, social media...

f) All the customers of the area should be congratulated for their collaboration, making them participants of what their collaboration contributes.

Details of how to separate biowaste, where the collection point is, etc. are shown in the following clauses.

5.7.3 Communication through press, radio, TV, social media. From the general to the particular

Reliance on traditional media alone does not change behaviors unless you have personalized communication. Therefore, focus all messages on personalizing them as much as possible.

It is advisable to start with the mass media (press, radio, TV) and then move on to more personal media (website, social media, etc.).

The advertising campaign must unify all the elements of the biowaste collection in order to be easily recognizable by the customer. These elements are:

— Image of the collection point.

— Printed communication.

— Verbal communication: slogans, radio, TV.

— Merchandising: collection buckets, magnets, etc.

In the messages the following information should be reported:

— That we all generate biowaste.

— It is the waste that we produce the most by weight.

— That we cannot continue to exploit nature and the collection of this waste comes to solve this issue. Link it with circular economy.

— What is biowaste and should go to the collection point and what is not biowaste.

— Advice on how to separate in the home/business.

— What is done with the collected biowaste.

5.7.4 Face to face communication, from the particular to the general

5.7.4.1 General

This is the most important part of the communication process. The goal is to reach those customers who have doubts to adhere to separating their biowaste.

The aim is that by the time citizens are informed, most of them already know about the new collection of biowaste because they have already been informed by their children or by the large producers or by the community around them.

The communication process should be carried out by the biopatrols, staff who will inform to the different types of customers.

The communication process in a given area starts from the particular to the general:

1) Schools and institutes.

2) Large producers.

3) Associations in the neighborhood.

4) Municipal services operating in the neighborhood.

5) Citizens.

5.7.4.2 Communication process in schools in the area

The pupils should be informed about the separation of biowaste in the schools in the area.

What these children learn will have a double effect as they will remember what they learn at home and help educate their parents and other family members.

Students should be taught the words and definitions used in biowaste, so that over time all customers will speak the same language.

The following actions are recommended:

— Provide the schools with bins of the color that identifies the collection point for biowaste in the different classrooms of the school.

— If there is the possibility of composting at school, then activities should be carried out in this respect.

— Messages to be launched for students:

— Include biowaste in the health programs that schools usually have.

— Encourage local consumption of biowaste and bring it to the collection point.

— The process of communication to schoolchildren should be repeated annually, always choosing the same school year to ensure that all pupils have received the training over time.

5.7.4.3 Communication process to large producers

According to the general to specific communication approach, large producers such as food markets, restaurants, bars, shops, etc., should be visited before the general campaign to the citizen. These are the customers who are going to produce the best quality of biowaste, so special personalized attention shall be devoted to this customer.

It is advisable to design a survey model for this type of customer. It should be similar to that of the citizen, which is explained in Subclause 5.7.4.6.

It is important to take into account that there is no specific model of bin for the large producer to deposit the biowaste within their facilities. Each type of large producer has to check for the container that best suits their business.

Due to the amount of biowaste they generate and that this waste is heavy:

— No bags with biowaste weighing more than 20 kilograms should be lifted. If they generate more than that amount, they must be distributed in several bags with the maximum weight indicated.

— It should be made as easy as possible to ensure that the height of the biowaste dump at the collection point is as low as possible. With these criteria, the use of underground containers is appreciated by this type of customers as they have a low height to deposit the waste while preventing access to this type of waste once it has been deposited.

— If the collection point is on the public street, it is advisable to provide it with a lock so that the citizen does not contaminate the biowaste. Therefore, each large producer must be given a key to open the item at the collection point.

Recommended messages for large producers:

— Public markets as the heart of biowaste.

— Circular economy, the biowaste you recycle returns as a new product to the market.

— If they participate in the separation of biowaste it can be made a line of advertising through social networks, stickers in shops, etc. It is important to take this step if there is commitment and reality of recycling, so it is necessary to negotiate with these customers when to give them publicity. For example, when the collection point is at 50 % capacity. Giving large producers publicity before they have achieved their targets can be a disincentive for this type of project.

5.7.4.4 Associations in the neighborhood

These customers are, for example, cultural associations, senior citizens' clubs, women's associations and neighborhood meeting centers.

Associations are the gateway to citizens and in general it is easier to reach an association than a citizen, requiring fewer resources for the same task.

It is often the case that an association expects something in return for their participation. Therefore, if they get involved, they should be rewarded. The reward should be linked to biowaste (a compost bin, containers for the household, visits to the waste plant, etc.).

5.7.4.5 Training for municipal services in the area

These services comprise cleaning, collection, gardening, police services and others.

Once the collection service has started in the area, they can inform the customer of incorrect behavior, so they have to be trained in:

— What is a biowaste?

— When this biowaste is collected.

— How this waste is deposited.

— What is done with this biowaste after it is collected.

These are very basic questions, but if they do not know how to answer them, it gives an image of disorganization at the municipality.

These operators must be informed of the communication channels established with customers (free hotline, social media, etc.) in case they do not know how to respond to customer concerns.

5.7.4.6 Citizens

The citizen is the most numerous customers in a given urban area, so they can provide a large amount of biowaste. The quality of the biowaste is more difficult to control, especially if the collection point is at the sidewalk, so the biopatrols should emphasize the message about how to obtain quality biowaste.

It is important to check the citizen's opinion before starting the biowaste collection service. The best tool for this is to carry out surveys in the street and online (participatory process of the City Council). These surveys should also be carried out with large producers.

Surveys should include the following information:

a) Customer data: Type of customer, age, occupation, address, email. It is important to get the customer's email address. It is the basis to continue to be informed when the biopatrols disappear from the area.

b) What do I do to minimize climate change? For example:

   — Reduce, reuse, recycle.

   — Reduce water consumption.

   — Reduce plastic consumption.

   — Sustainable purchasing.

   — Use of renewable energies.

c) Do I currently separate waste? which ones? why?

d) Are you willing to separate and deposit biowaste at the collection point? If not, please specify why not.

e) What environmental benefits can be obtained from biowaste?

f) Questions or suggestions.

The customer must previously accept the privacy conditions of the survey and it is advisable that the information is hosted on the portal of the City Council.

With this type of survey, previous information is obtained about what the customer thinks, an expected percentage of participation and there will be a database with the customer´s emails for future communications. This is the information that will be used mainly to communicate with the customer after starting the biowaste collection service. If this information is not available, part of the follow-up of the next phase will not be possible.

There are two main motivations for citizens to recycle:

— Internal: they are usually environmental in nature and are stable over time. Thus, biopatrols must interact with customers through this type of motivations.

— External: they are usually economic. These motivations usually decrease when the economic incentive stops working.

Biowaste separation starts at home. According to VALUEWASTE surveys, the main reason for not separating biowaste at home is not finding the right space for biowaste separation.

One way to help in this regard is to deliver a bin to each household to deposit biowaste. Its characteristics are:

— No more than 10 liters if the biowaste is collected daily.

— It should be accompanied by a pack of biodegradable plastic bags. A quality biowaste is advisable to go inside this type of plastic.

Biopatrols should advise on how to place this container at home and what goes into it.

The delivery of this bin involves a great logistical effort, so it is advisable that the bin is delivered at the meeting point established in the area. This point will be attended by the biopatrols and its timetable will depend on the activity in the area.

At the time of delivery of the bin, the survey mentioned above will be made. If the customers do not want to do it at that moment, they will be told that they can do it whenever they want through the City Council's portal, indicating the web address.

Once the process has been completed, the bin collection areas should be analyzed. If the number of bins delivered in an area is low, it is advisable to carry out a visit by the biopatrols in that area and, if necessary, create a temporary bin drop-off point for that area.

Communication with the customer at this level is established by building or business.

The messages that should be launched for this type of customer are:

— Avoid food waste.

— Message: "everything that comes out of the earth returns to the earth".

— What is biowaste and what is not biowaste.

— Importance of the biodegradable bag.

6 Steps to follow after starting the collection

6.1 General

The day on which the biowaste collection service starts is an important day. If all of the above has not been taken into account, the quantity and quality of the biowaste may be low. And making changes is much more complicated at this stage of the project than at the previous one.

From this day on, the project must be monitored using the quantity and quality KPIs explained above.

The evolution of these two parameters will determine the actions to be taken in the future.

The actions to be carried out at this point must have the appropriate technology for an intelligent management of the information, based on the information obtained in the surveys prior to the collection. These actions come as follows:

6.2 Face-to-face actions

During the first week from the start of collection it is necessary for the biopatrols to establish face-to-face communication interaction with the customer to find out if they are participating in the separation of biowaste and, if they are not, to find out the reasons why.

At those collection points where there is a low quality and/or quantity of biowaste, the biopatrols should follow up in order to check the causes of the deviation. Information on the quality and quantity at the different collection points should be transmitted from the collection service to the biopatrols. There needs to be fluid communication between the collection and the awareness service.

6.3 Establish a meeting point

Inform the customer of the existence of a meeting point in their neighborhood and its opening hours. Normally it will coincide with the one in the previous phase.

6.4 Conducting surveys

In this phase, surveys should be carried out to analyze the degree of acceptance of the new service. These surveys should be carried out when the amount of biowaste collected has stabilized and will serve to gather new ideas with which to relaunch the selective collection of biowaste.

Surveys may be physical if biopatrols are in the area or using information contained in the database from previous surveys.

The contents of the surveys should focus on:

— Degree of acceptance of the new service. It is necessary to know if the customer continues to recycle biowaste.

— In the event that it does not continue, know why.

— What improvements would be necessary to incorporate more customers to this service?

6.5 Customer service hotlines

Due to economic reasons, the presence of biopatrols in the targeted area should be reduced as collection progresses. Their presence will only be necessary in those areas where the expected quantities/qualities are not achieved.

The use of personalized communication technologies is essential at this stage of the project.

Based on the information collected in the street by the biopatrols and the previous surveys, it is necessary to create a database of customers so that they are informed of the evolution of the project. An informed customer is a more participative customer.

Examples of best practices related to customer service are:

— To have its own website for biowaste, a website of active listening where you learn from customers. This website must be simple, resolve doubts and be linked to social networks.

— Use of social media:

  - Try to keep the project alive. Create a lot of small news informing about the day to day of the project. It is better a lot of small news than a few big ones.
  - If there are influencers in the area, it is interesting to contact them to add them to the project.
- Place a QR code at each biowaste collection point. This point leads to a web address where the customer is informed of the following:
  - Evolution of the quantity collected in the area and, if possible, at the collection point.
  - Quality evolution.
  - What is being done with the biowaste after it is collected.
  - Survey on participation in the project.
  - Other comments.

This information should be updated monthly and has to be transparent.

7 How to correct deviations

In any biowaste collection scheme, a contingency plan is necessary, especially if the results are not as expected for the two parameters considered: quantity and quality of the biowaste.

The communication process between the biopatrols and the biowaste collection service is essential. This collection service must inform at which service points there are quality and quantity deviations to the biopatrols.

The following aspects should be considered in this plan:

a) Monthly monitor during 6 months after D-Day the Quantity and Quality KPI's. If the expected results are achieved, follow up every three months.

b) If there is a new need for more collection points in the area, consider eliminating those with little biowaste.

c) If at a collection point non-required waste appears constantly and in appreciable quantity, this collection point must be eliminated if the causes of this deviation cannot be solved.

d) Face to face communication (biopatrols) where there is deviation in quantity and/or quality. If not, inform the customer through social networks and website.

e) It is necessary to consider whether the collection point is adapted to the customer's needs.

f) Inform to the customers of their actions where there are quantity and quality deviations using information as personalized as possible.

g) As new areas are added to the collection, it is advisable to maintain comparative indicators between them.

h) It is advisable to organize visits to the plant where the biowaste is treated so that customers can see what is done with it. In areas where there is less quantity/quality of biowaste, these visits are necessary.

8 Summary

In this Clause the key factors for the successful implementation of urban biowaste selective collection schemes are summarised.

One of the most important steps is to establish a day (D-day) for the beginning of the selective collection of biowaste in an area. Actions can be then divided in two: before and after this day.

Before D-day:

— Establish quality and quantity KPIs of collected biowaste.

— Identify large customers in the area, they are the key to obtain a high quality and quantity biowaste.

— Make a proposal for the physical location of the new biowaste collection points. The priority is to place them beside the other selective collection bins (light packaging, paper, glass, etc.).

— The collection point must be adapted to the type of customer:

  — citizen, lid no more than 25 × 25 cm;

  — large producer: lid of at least 40 × 40 cm with key opening and the lowest possible discharge height.

— Communicate the proposals of this initial plan to those interested and listen to them. Make changes to the proposal if applicable.

Once the proposal is known, the communication process starts. Its characteristics are:

— There must be a personal a direct interaction with the customers (biopatrols).

— It has an order, going from the particular to the general: schools, large producers, associations, municipal services and citizens.

— In this phase, try to collect as much information as possible about customers: name, e-mail, address, dates, etc. Create your own database of customers. Online surveys are a good tool to obtain this information.

After D-day:

— Start monitoring and using KPIs designed before.

— During the first week, biopatrols must establish a face-to-face communication with the customer to know if they are participating and if not, find out why not.

— Establish surveys and customer service hotlines to analyze the degree of acceptance of the new service.

— If there are KPI´s deviations use biopatrols to know why. In this case the communication between the biowaste collection service and the biopatrols is essential.

— Inform to the customer of the result of the biowaste collection, using the information from the database created at the stage before.

Annex A
(informative)

Optimal biowaste typology

The following waste fractions can be considered as biowaste:

— Fruit and vegetables scrap.

— Cooked food leftovers.

— Eggshells, shellfish and nuts.

— Coffee grounds and infusions.

The main characteristic of this waste is that it occupies little volume, has a high amount of water and if the temperature is high, it decomposes quickly generating leachates and odors.

The density of the biowaste that is deposited in the biowaste bin depends on its quality. According to VALUEWASTE experience, the average density of the biowaste in the biowaste bin is about 350 kg/m^3.

An effective communication campaign should explain what a biowaste is and which biowaste should not be managed in a biowaste collection (non-required waste) like:

— Dirty paper towels and napkins.

— Wipes.

— Diapers

— Pet excrement.

— Pruning and vegetable waste. Although classified as a biowaste, they should not be introduced into the collection point as their volume and different composition affect the subsequent treatments to be carried out. This waste should be collected using another collection system.