SCALIBUR

LEADING A REVOLUTION
IN BIOWASTE RECYCLING

Greece

National Action Manual
for local uptake

Deliverable 2.2
**SCALIBUR insights
from Kozani**

food waste
No Plastic Bags

W W W . S C A L I B U R . E U

CONTENTS

INTRODUCTION

❯ Who is this manual for?

This manual is for anyone who wants to know more about urban biowaste sorting and collection and also play an active role in converting it into high value-added products, transforming linear resource chains into circular loops where biowaste becomes an input in generating a new product.

This manual is written for you if you are involved in the biowaste value chain of your city – for example, in the municipal administration's waste department, the waste management company, the municipal waste-water treatment plant – or if you are outside the value chain interested in engaging stakeholders and bringing people together – for example, someone from a local community group or NGO.

❯ How should you use this manual?

The purpose of this manual is to guide the user through the process of engaging stakeholders in their cities' biowaste value chain. It is a step-by-step guide of how to identify stakeholders, understand their motivations, bring them together for exchange and discussion, find opportunities for action, and mobilise for change. The goal of this process is to increase biowaste collection rates and promote the conversion of biowaste into high value-added products. You could also use this manual if you are working in a regional or national public authority and would like to replicate successful experiences of pilot cities and innovative biowaste projects in your region or country.

❯ Where did this manual come from?

This manual is based on the experiences and knowledge gained in the SCALIBUR project and the stakeholder engagement process that the Collaborating Centre for Sustainable Consumption and Production (CSCP) facilitated in the project's pilot cities and regions: Madrid (Spain), Albano Laziale (Italy), and Kozani (Greece).

SCALIBUR's core objective is to promote innovative approaches to collection, sorting and recycling of urban biowaste in Europe. To achieve this objective, it is crucial to identify and engage all relevant stakeholders along the biowaste value chain.

A main part of the project focuses on mapping all relevant stakeholders in their operational settings; understanding their challenges; identifying local influences, such as economic, social or legal factors; and collecting existing best practices and generating new ones to help the pilot cities adopt technologies developed in SCALIBUR. This long-term engagement approach is crucial to enhance the acceptance and adoption of newly developed technologies and processes.

ENGAGE
THE RIGHT PEOPLE

This is a manual for engaging the right people on the way to creating a more circular biowaste sector. These people are the "stakeholders" in your city's biowaste value chain.

But what exactly is a stakeholder?
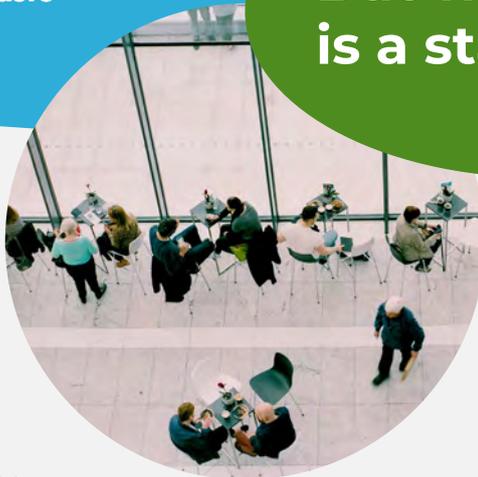
A stakeholder is a person or group who can affect your activities or whose interests are affected by your activities.

It can be someone with an active role in the urban biowaste value chain, someone who is indirectly involved or affected, or someone with latent interest.

This could be local and regional actors such as:

- **Local and regional administrations**
- **Waste management companies**
- **Wastewater treatment plants / wastewater management companies**
- **Hotel, restaurant and catering (HORECA) associations**
- **Housing associations**
- **Potential consumers of biowaste-based products**
- **Research institutions**

To effectively address challenges and opportunities areas in the urban biowaste value chain, it is important to identify these stakeholders, and to **understand their interests and needs.**
Understanding their **motivations** and gaining their trust will help you focus on issues interesting to them, attract them to join the discussions, and develop effective activities that are relevant for the them.

In addition, drawing stakeholder's attention to the opportunities and benefits for them in closing biowaste loops can encourage them to get on board.

How to map your stakeholders

Background information	
Organisation name	
Website	
Country	
City	

Contact person(s)	
Specific person(s) in mind that you would approach first	
Role in the organisation	
How would you contact this individual? E.g. phone, email, etc.	
Other communication channels you are currently using to reach this organisation (if applicable)	

Type of organisation	
Type of organisation (choose from list)	
Explanation of organisation type (if applicable)	
Geographic reach (choose from list)	
Main fields of work	

Previous contact with this organisation	
If you have already been in contact, give a few key words describing past cooperation	6
Relevant recent joint projects, events, activities etc.	

Envisioned role	
Where to involve this organisation (choose from list)	

INFLUENCE of the stakeholder on the success of a biowaste project	
INFLUENCE 1: How crucial is it to involve this stakeholder in order to ensure the success of a biowaste project in your city/region? (choose from list)	
INFLUENCE 2: Why is this stakeholder relevant for a biowaste project? What can they contribute to ensuring its success?	

INTEREST of the stakeholder in a biowaste project	
INTEREST 1: How interesting would a biowaste project be for the stakeholder? (choose from list)	
INTEREST 2: Why do you think a biowaste project is relevant and beneficial TO THEM? (Also helpful to consider the stakeholder's wish with regard to biowaste)	

Bioeconomy/circular economy projects	
Include keywords on this stakeholder's experience with bioeconomy/circular economy projects, including its involvement	
How willing do you think the stakeholder will be to engage in future bioeconomy/circular economy initiatives?	

ANALYSE
THE CURRENT SITUATION

Now that you have identified the relevant stakeholders and listed their interests, you should be able to better understand the current biowaste situation in your city. This represents the status quo.

This information will be the basis of exchange and discussions among the stakeholders. It will help them identify the existing strengths and weaknesses of the existing political, economic, social and legal systems. In addition, this information will help them identify opportunities along the value chain for creating high-value products from urban biowaste.

Relevant information may include, but are not limited to: biowaste separation rates, waste collection routes, existing value-added streams, and citizen awareness.

❯ How to conduct a baseline analysis

You will find a long list of questions below. These are the basic facts about the biowaste system in your city and important factors that can influence it. Your answers to these questions will give you and the stakeholders a starting point (the "baseline") to kick off engagement on biowaste projects.

TO DO: Answer the following questions to the best of your knowledge. Questions in green are fundamental. Questions in grey provide more detail for your analysis.

TIP: Download an editable file (.docx) with these questions: www.scalibur.eu/resources

TIP: Have a look at the detailed baseline analyses of Kozani (EL), Albano Laziale (IT) and Madrid (ES) in the document "Deliverable 2.1" in the REPORTS section: www.scalibur.eu/resources

1. Background information			
Population		**Population density** (pop/km²)	
GDP (thousands €)		**Area** (km²)	

Demographic and geographic distribution		
urban/rural (%)	male/female (%)	age (%)

Main economic activities (%)					
Agriculture, livestock, forestry, fisheries	Industry	Construction	Services	Tourism	Other

Other relevant aspects	

	2. Circularity strategy
2.1.	Does your city/region have a strategy/action plan/assessment/stakeholder identification for circular economy at the urban level?
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2.2.	If so, does it include bioeconomy?
2.3.	Does your city/region already have circular policies and/or investment plans in place?
2.4.	Do these strategies/plans/policies already cover the valorisation of urban biowaste and wastewater to produce bio-based products?
	Specific targets
	Implementation plans and timeframe
	Process monitoring activities
	Planned investments (€ and describe the investment objective, facilities affected/improved)
	Is the municipality responsible for UBW/WW treatment facilities or are they managed by a private company or a public-private company?
2.5.	Does urban biowaste and wastewater feature as an input in any other strategies or plans?
	Does your regional agriculture plan include measures to promote and use urban biowaste as fertiliser?
	Does your energy plan include measures to promote and use biowaste as a source of energy?
	Does your transport plan include measures to promote and use biofuels?
2.6.	Are there studies on how urban biowaste is produced, collected, and/or recycled in your city/region, e.g., by universities, NGOs, national government, etc.?
2.7.	If yes, what did the studies conclude about how the process could be improved?
2.8.	Are you aware of other cities/region in your country that have already successfully established biowaste recycling or valorisation schemes or are in the process of doing so?

Continued: How to conduct a **baseline analysis**

3. Legislation
3.1. What legislation is there at the local, national, or European level that affects the creation or operation of biowaste recycling and valorisation systems in your city/region? *Please include: title of legislation, date that it came into force, and either the implications for your city/region or the outcomes of implementation.*

4. Motivation
4.1 What aspects of your city/region's circular bioeconomy performance could be improved?
4.2 How do you think your city/region's circular bioeconomy performance can improve over the next 5 years?
4.3 Which aspect of your city/region's circular bioeconomy should be targeted first?

5. Citizen engagement
5.1. How do you think engaging citizens can help increase the circular economy in your city/region?
5.2. What kind of citizen engagement and awareness-raising activities in urban biowaste recycling have been/are being done in your city/region?
5.3. Main results of these activities – e.g. on the quality and quantity of (bio)waste
5.4. How could these activities be improved?
5.5. Are you aware of good citizen engagement activities in other sectors and/or from other places that you think were successful? (Consider not only biowaste but also e.g., waste separation, recycling.)
5.6. What do you think made these activities successful?

Continued: How to conduct a **baseline analysis**

	6. Stakeholder engagement
6.1.	How do you think engaging stakeholders can help increase the circular economy in your city/region?
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6.2.	What kind of stakeholder engagement on urban biowaste recycling has been carried out in your city/region?
6.3.	How could this be improved?
6.4.	Are you aware of good stakeholder engagement activities in other sectors and/or from other places that you think were successful? (Consider not only biowaste, but also e.g., waste separation, recycling.)
6.5.	What do you think made these activities successful?

	7. Biowaste value chain
7.1.	Waste Production
	7.1.1. Amount of urban biowaste (UBW) generated in your city/region (tonnes/year)
	7.1.2. UBW composition
	7.1.3. How does this compare to the national average?
7.2.	Waste collection and transport
	7.2.1. What is the waste collection system (surface containers, door to door, buried containers)?
	7.2.2. What fractions are collected separately?
	7.2.3. Since when (year) has biowaste been collected separately (if applicable)?
	7.2.4. If biowaste is collected separately, what is the collection system like, and how frequently is it collected?

Continued: How to conduct a **baseline analysis**

	7.2.5. What are the costs of biowaste collection for households, HoReCa, and other waste producers?
	7.2.6. What are, in your view, shortcomings in the current collection system and what are the main reasons for them?
	7.2.7. What are the separation rates in your city?
	7.2.8. What is the quality of the separation (level of improper materials)?
	7.2.9. How do the separation rates and quality compare to national averages?
7.3.	**Sorting and pre-treatment**
	7.3.1. Does the biowaste undergo any sorting processes when it arrives at the processing plant?
	7.3.2. Describe the treatment facilities for the UBW 　　7.3.2.1. Facility type/name _____ 　　7.3.2.2. Type of UBW treated _____ 　　7.3.2.3. Type of process _____ 　　7.3.2.4. Effectiveness of the process (quality, % landfilling etc) _____
	7.3.3. How does the effectiveness of the process compare to the national average?
	7.3.4. What pre-treatment processes are used?
	7.3.5. What are, in your view, shortcomings in the current sort and pre-treatment system and what are the main reasons for it?
7.4.	**Valorisation processes and development of bio-based products**
	7.4.1. Does your city/region valorise UBW?
	7.4.2. If so, what are the main valorisation processes, who is carrying them out, and where
	7.4.3. Types of bioproducts produced
	7.4.4. Performance indicators: 　　7.4.4.1. Treated amount of UBW/year _____ 　　7.4.4.2. €/ton of UBW _____

	7.4.5. Are high added value bio-based products from UBW produced?
	7.4.6. At which scale are bio-based products produced?
	7.4.7. Is there planned investment to expand production of bio-based products?
	7.4.8. Is there room for improvement of this facility/process?
	7.4.9. How economically feasible is the valorisation process in your city/region?
	7.4.10. Are you aware of private companies in the city working on biowaste valorisation?
	7.4.11. Which companies or other local, national, or international actors might be interested in the UBW valorised products?
	7.4.12. What are, in your view, the shortcomings in the current UBW valorisation processes and what are the main reasons for them?

8. Wastewater value chain

8.1.	Wastewater and sludge generation
	8.1.1. Amount of wastewater (WW) treated in your city/region (million m³/year)
	8.1.2. WW composition (amount and type of organic matter)
	8.1.3. Amount of sludge produced (m³/year)
	8.1.4. How do these rates compare to national averages?

8.2.	Treatment
	8.2.1. Capacity of WW treatment plant (m³/hour)
	8.2.2. Describe the treatment facilities for the WW: 8.2.2.1. Name _____ 8.2.2.2. Facility type _____ 8.2.2.3. Type of process/technology applied _____

| 8.3.	Valorisation
	8.3.1. Does your city/region valorise urban WW sludge?
	8.3.2. If so, what are the main valorisation processes, who is carrying them out, and where?
	8.3.3. Types of bioproducts produced
	8.3.4. Performance indicators: 　8.3.4.1. Treated amount of sludge/year _____ 　8.3.4.2. €/m³ of sludge _____
	8.3.5. Are any high added value bio-based products from WW produced?
	8.3.6. At which scale are bio-based products from WW valorisation produced?
	8.3.7. Is there planned investment for expansion of the production of bio-based products?
	8.3.8. Is there room for improvement of this facility/process?
	8.3.9. How economically feasible is the WW valorisation process in your city/region?
	8.3.10. Are you aware of private companies in the city working on biowaste valorisation?
	8.3.11. Which companies or other local, national, or international actors might be interested in the WW valorised products?
	8.3.12. What are, in your view, the shortcomings in the current WW valorisation processes and what are the main reasons for it?

› Want to level up?

This baseline template was designed to be a simple and easy starting point for understanding the status quo. You can take it to the next level by, for instance, conducting an urban metabolism analysis. Find tools online or see whom to contact in the section Where to get help.

How to visualise your biowaste streams

Your stakeholder mapping and baseline analysis of the city's urban biowaste sector might contain a lot of data. It can therefore be helpful to map the biowaste value chain in a diagram in order to have a visual aid showing which organisations are involved, what their roles and functions are, the flow of the biowaste streams, and where the streams currently end.
It might look something like this:
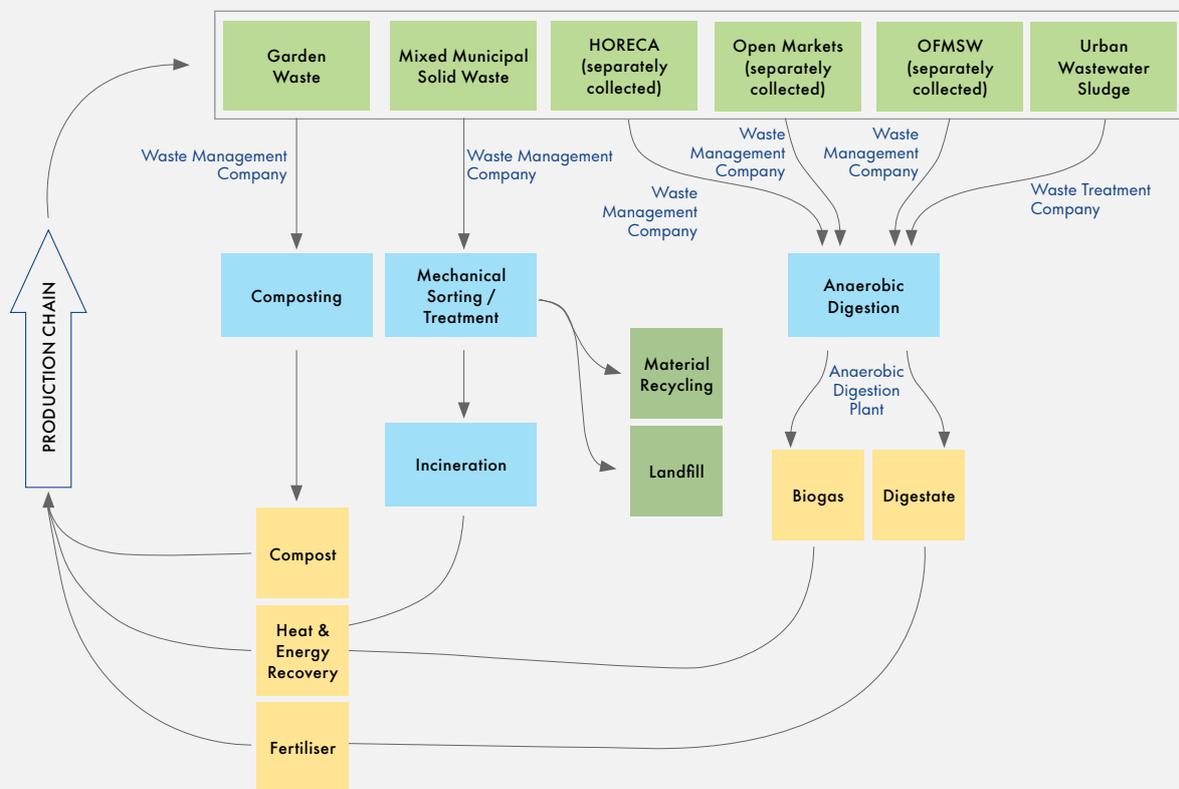
⚙ **TO DO:** Map your city's biowaste streams in a diagram.

Start with the different sources of urban biowaste and how the waste is handled. Add the stakeholders from your stakeholder mapping and data from your baseline analysis. Strengths, weaknesses, challenges and opportunities may already start to appear.

💡 **TIP:** Cut out the shapes below to create your visualisation!

Shapes to visualise biowaste streams:

Garden Waste	Mixed Municipal Solid Waste	HORECA (separately collected)
Open Markets (separately collected)	OFMSW (separately collected)	Urban Wastewater Sludge
Composting	Mechanical Sorting / Treatment	Anaerobic Digestion
Incineration		

Compost	Heat & Energy Recovery	Fertiliser	Biogas	Digestate
Material Recycling	Landfill			

Shapes to visualise biowaste streams:

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PRODUCTION CHAIN
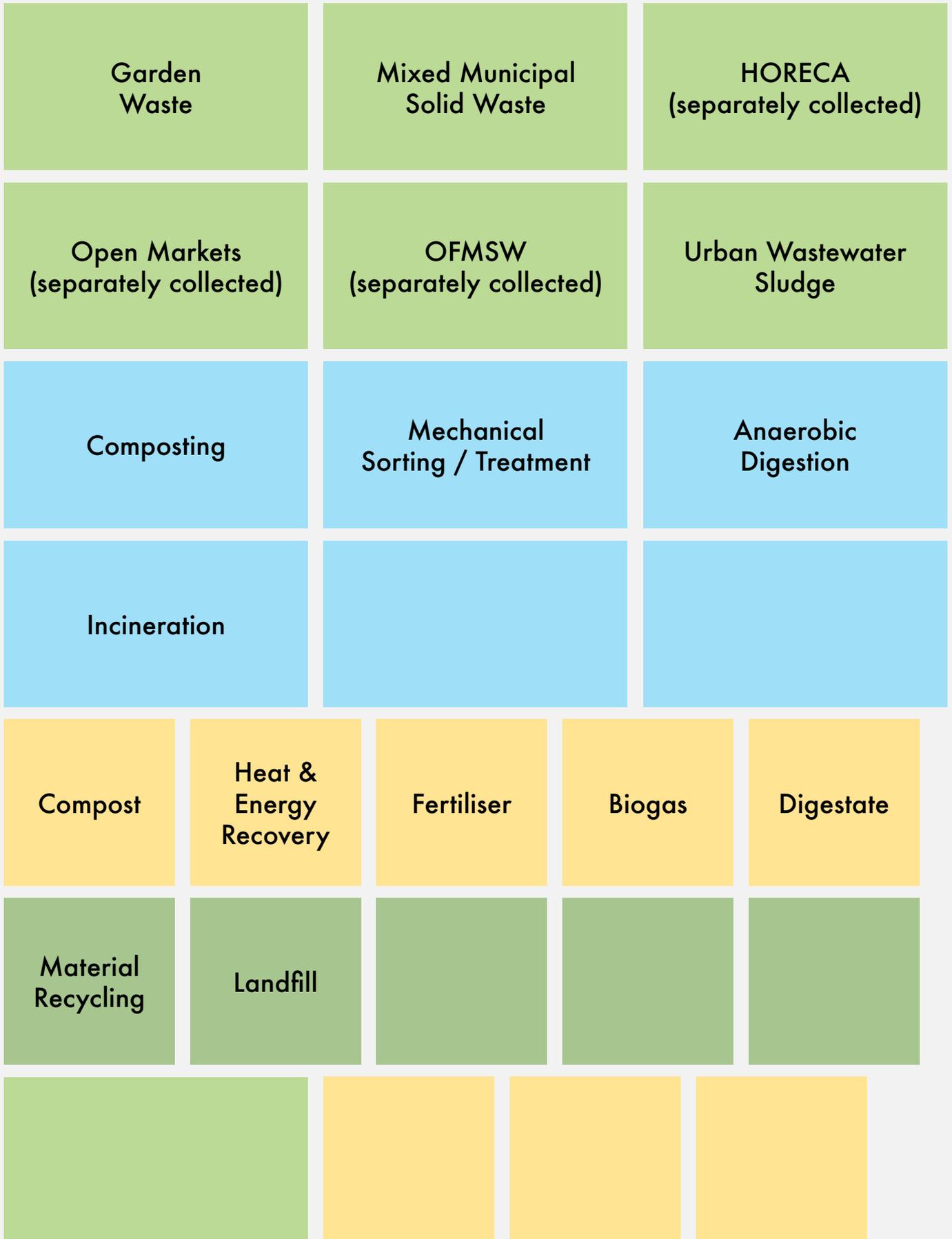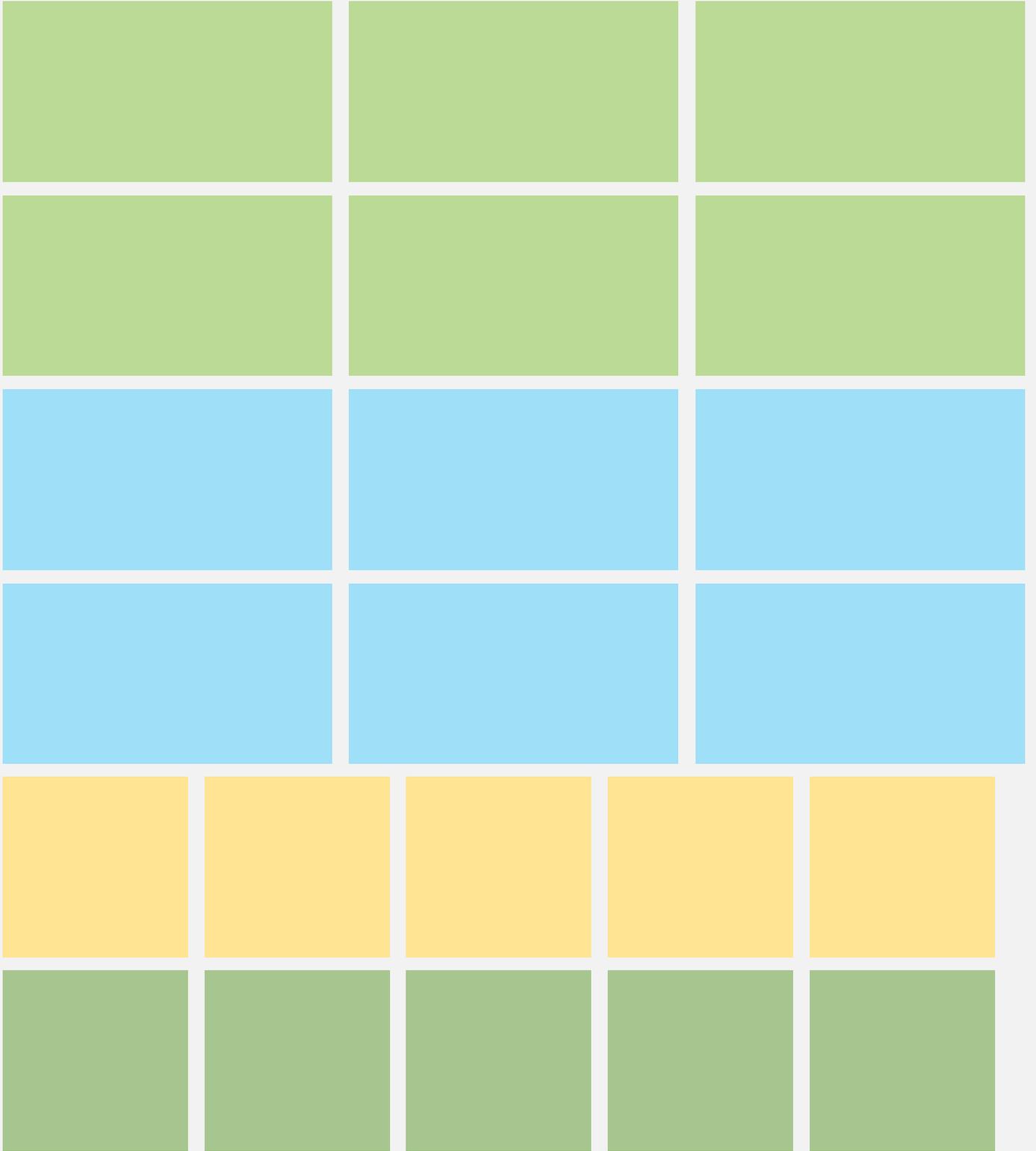
HOW TO
BIOWASTE CLUB

A Biowaste Club is a tool or methodology for multi-stakeholder engagement, applied via a series of events, workshops, trainings, focus groups, and others collaborative approaches.

A Biowaste Club provides the necessary neutral stage for a variety of actors to meet, discuss, and collaborate and to, for example:

> ## What is a Biowaste Club (BC) and why should I set one up?

- Develop a shared local biowaste vision: Key biowaste actors unite and work on a shared vision and roadmap on how to support their city/region in the transition towards a more circular bioeconomy;
- Share knowledge and experiences: BCs facilitate the sharing of knowledge among the participants not only at city level but also across other cities and regions;
- Institutionalise regular exchange: As part of the long-term engagement process, BCMs can enhance communication between key actors along the value chain by providing opportunities for regular exchange; and
- Foster local leadership: Through the BC, ownership of the processes is given to local actors, further motivating them to drive the topic of biowaste recycling on the local and regional level and ultimately contributing to the development and implementation of pilot actions.

> ## Who should be part of a Biowaste Club?

The members of a Biowaste Club can be local and regional actors along the biowaste value chain, such as waste management companies, research institutions, public authorities, HoReCa actors etc., including citizens. Furthermore, the composition of each Biowaste Club meeting can change according to the topic(s) at stake and key objectives to be reached.

Key steps to set up & conduct a Biowaste Club

Now that we have defined what a Biowaste Club is and what its key objectives are, let's take a look at the key steps to set it up!

Define the scope & objectives of your BCM!

The format and focus of each Biowaste Club meeting (BCM) can vary, depending on the local context. Thus, the first questions you need to ask when you start planning the setting up of your BCM is: What is my strategy and objectives of my Biowaste Club meetings and what should be the outcomes?

> Is it to introduce a local bio-plastics start-up to the waste treatment facility?
> Is it for the regional waste collection company to hear from HoReCa representatives what the main barrier is to sorting?
> Is it for households to co-design improved biowaste bins?

Fewer objectives that are clear are more useful than a long list. These objectives form the scope of your BCM.

Decide whom to invite

The second question to ask is: Whom should I invite in order to have fruitful discussions and exchanges? Remember, not every topic is relevant to all your key stakeholders. Select participants based on the objectives of this particular BCM. In addition, try to anticipate potential challenges and consider inviting certain stakeholder groups to separate meetings or shaping the agenda in a way that would avoid certain topics. Now, go back to your stakeholder mapping and start your selection!

💡 Tips

> **Spark your participants' interest:** When inviting participants to a BCM, highlight the central role that they will play, the importance of their contributions and most importantly, **how they will directly benefit by joining.** You need to build trust and long-term engagement!

> **Update your stakeholder mapping:** Consider it **a living document** that should be continuously updated and revised throughout your Biowaste Club meetings!

Run your Biowaste Club meeting & keep your stakeholders engaged!

Let´s now get into the actions for running your Biowaste Club meeting and establishing long-term stakeholder engagement.

The first thing to remember: **it´s all about interactions**. At the heart of any BCM are the interactions between the stakeholders. The meetings are an opportunity to get together and to exchange knowledge, experiences and expertise. Thus, plan your meeting agenda in a way that facilitates discussions and exchanges and make the format as interactive as possible, perhaps by using visual aids, multimedia and props, breakout sessions, or incorporating site visits. We suggest to always keep in mind three crucial aspects:

1. The objective(s) of each BCM
2. The final number of your participants & their availability
3. Plan enough breaks: some might serve technical purposes or are good for making coffee and refreshing the participants' minds. Breaks are also usually the time when the participants start to network and discuss topics in depth in pairs or small groups (especially those who are maybe too shy to speak out during the official programme)

Have a look at the next section of this manual on the SCALIBUR experience in setting up and running BCMs.

💡 Tips

> **During a BCM, innovative ideas might come up:** Following up on these ideas will naturally lead to the planning of the next meeting and keep the stakeholders engaged and up to date. For example: the creation of an ad-hoc label for HoReCa actors participating into specific biowaste sorting activities; the development of online service to further optimize collection process; the setting-up on new local collaborations to generate added-value products from biowaste residues …

> **Plan the next activities together with your stakeholders:** The outcomes from BCMs should be the basis of concrete local activities. Use the momentum and involve the BCM participants in these activities right away.

> **Sharing is caring:** If no confidential aspects have been discussed, encourage participants to share the meeting material, outcomes and next steps with other colleagues. This will help disseminate the generated knowledge to more key stakeholders.

THE BIOWASTE CLUB EXPERIENCE IN THE SCALIBUR PROJECT

The Kozani waste management system

Kozani is a city in Western Macedonia, Greece. It has 71,288 inhabitants, living in approximately 25,000 households. Since 2016, Kozani implemented a pilot system of selective biowaste management, which involves an increasing number of households. It started with 100 participating households, increasing to 285 in 2017, and finally to more than 500 in 2018. A further increase is now planned for the last months of 2021 when 100 brown bins will be added to enable the selective collection of biowaste.

Household waste in Kozani is collected twice per week. There are two main categories for waste collection: short and large. Short collection refers to the collecting of small amounts of waste from the city to the Local Waste Management Units (LWMU), while large collection is the transference from LWMUs to the Mechanical and Biological Treatment plant (MBT). The short collection is managed by the municipal council; large collections are managed by the waste management company, DIADYMA S.A. The biowaste is put in plastic bags and separate brown bins per house or block are provided.

After the biowaste is collected, it is transferred to the sorting plant, where it is checked in order to identify possible impurities and other wastes not related to biowaste. Only the biowaste collected from the brown bins is used for valorisation.

The valorisation plant consists of a composting plant with four mechanical composting units. The valorisation plant uses sawdust from the local wood and forestry sector, in order to improve the ratio of carbon to nitrogen (C:N), and also to reduce the moisture levels. The compost produced as a result of the pilot project is returned to the participating households with plants as a reward for their collaboration. The addition of sawdust from the local wood sector to the composting process supports both a reduction of process costs as well as a decrease in wood waste generation.

Checking the quality of the biowaste collected is an integral part of the biowaste collection process. This check allows for an early identification of possible impurities in the biowaste. The quality of biowaste collected determines the value of the product that can be created. A low impurity level will allow the obtaining of a high-value product. This has a direct repercussion on the cost of the biowaste collection system. In most checks the quality of the biowaste appears to be high (88% purity), suggesting that the households are so far motivated and well-informed as to how to separate their waste properly.

> The Kozani Biowaste Club

At the beginning of the SCALIBUR project, the baseline analysis that was conducted for the city of Kozani highlighted the strengths and weaknesses present in the current biowaste value chain. These areas of interest laid the basis for the discussions in the BCMs in Kozani.

Starting from these points and through their active participation and engagement, the local stakeholders brought in their perspectives and were able to jointly identify actions that would target the problems at hand. More specifically, each BCM in Kozani had a different format and roster of participants, covering a wide range of topics leading to specific pilot actions to be tested in the city.

The first four BCMs are summarised below:

1st BCM

Focus: Project introduction in relation to the needs and benefits for the city

Engaged stakeholders: Waste management company, research organizations, wood-related companies, local public authorities

Key outcomes
- Kicking off the engagement process on the local level
- Creating common ground among stakeholders, bringing everyone on the same page
- Setting up the core of the BCs
- First mapping of points of interest within SCALIBUR for the city of Kozani

2nd BCM

Focus: Challenges on the current biowaste value chain (collection, sorting, treatment, engagement, policy)

Engaged stakeholders: Waste management company, research organization, wood- related companies, local public authorities

Key outcomes
- Clear prioritisation of key SCALIBUR activities according to first identification of areas in need of improvement
  - 1st step: optimizing collection through the development of sensors and developing detailed plan with the waste management company for the activity
  - 2nd step: expanding separate collection to the main open market with view of expanding to the other two

3rd BCM

Focus: Separate collection of biowaste from open markets

Engaged stakeholders: Waste management company, local public authorities producer associations, producers & vendors

Key outcomes
- Active engagement of new target group (Producers and vendors) and wider dissemination of Biowaste Clubs and SCALIBUR activities
- improving the quantity of collected waste
- understanding perceptions, challenges and limitations of producers
- Piloting the activity: collecting learnings and identifying what can be improved

4th BCM

Focus: Separate collection and valorization of spent coffee grounds

Engaged stakeholders: HoReCa representatives

Key outcomes
- Active engagement of new target group (HoReCa sector) and wider dissemination of Biowaste Clubs and SCALIBUR activities
- Identifying potential for the valorization of spent coffee grounds
- Development of an action plan for rolling out the pilot activity

› Key Challenges & Learnings

By running the different Biowaste Club meetings in Kozani, a set of "watch-outs" (issues to pay attention to) and key learnings emerged.

Kozani Watch-outs

Stakeholder conflicting interests & motivations

Depending on the topics of the meeting, consult your stakeholder mapping and choose your participants carefully.

Policy limitations on the national, regional and local level

Know the legal context within which your activities are organized. This will allow for better planning of clear, targeted and feasible activities. If possible through the stakeholders' networks, engage policy makers and keep them in the discussion. The BCMs are a platform where all perspectives are voiced and heard, providing a more holistic understanding of the challenges.

Limited financial resources

Seek further funding opportunities from local authorities and/ or inititiatives.

Long bureaucratic procedures

Ensure local authorities buy-in at the beginning of the project to secure their active engagement and participation in the project activities.

Limited interests and/ or capacity from local actors

Keep stakeholder mapping updated to understand what and how much involvement we can expect from different actors. Connect your project -if possible- to already existing projects and initiatives undertaken by the stakeholders to keep their interest high.

Kozani 5 key learnings

Build trust

Transparency and honesty help build trust with local stakeholders. Solidifying their inputs into actions makes them feel heard and commit more actively to the project activities.

Know your audience

Different approaches and communication methods work for different stakeholders. Not all stakeholders are value chain, technology or policy experts. In the 3rd BCM, during the interviews with local producers in Kozani, even though the technical terminology was difficult to follow, when explaining the purpose of the activity during a short survey, people were more eager to participate. Circulating a formal questionnaire would have yielded less satisfactory results.

Set clear targets

Being specific about topics of discussion & the goals of the activities from the very beginning leads to resilient structures and solutions. However, a flexible mindset helps adapting according to dynamic developments.

Catalyze committment

It is important to encourage stakeholders to make commitment. Once people make that commitment they are more likely to follow through. In the case of Kozani, the municipality's collaboration was necessary for SCALIBUR activities such as the instalment of the sensors. Local partners made sure to properly and timely inform the municipality and ensure their support, by showcasing the benefits for the city. Investing time and effort is crucial.

Showing it's possible

Showcasing to the stakeholders positive successful examples already implemented increases the possibilities of them investing their time and resources into something. For example, in the 4th BCM in Kozani stakeholders were informed about successful coffee valorization schemes running successfully in a broader European context.

WHAT WE LEARNED FROM BIOWASTE CLUBS

> Summary of common challenges and how to overcome them!

As you start to bring stakeholders together to discuss, plan and carry out activities to cut urban biowaste and generate new value-added products from it, you may encounter challenges.

The most common challenge is probably stakeholders with limited time or budget to spend on extra activities like participating in a biowaste club.

★ Align biowaste club meetings and activities with the stakeholder's daily work and motivations as closely as possible (consult your stakeholder mapping!). Design – and frame – biowaste club activities to have them support stakeholders' work, not create extra work. For example, a treatment facility may wish for a higher degree of sorting from HoReCa or households, or municipalities may have to comply with national or EU waste reduction legislation. Your biowaste club activities should offer help in these efforts.

There may be limited local leadership.

★ You might already see this challenge during your stakeholder mapping and baseline analysis exercises. In addition to the points mentioned in the two challenges above, find the stakeholders that are potentially motivated and start creating interest with them. Together with these stakeholders, identify areas where action would be possible.

Another challenge may be a lack of motivation from stakeholders.

★ Approach individuals directly to explain why their involvement is key to the success of the biowaste club and how they can benefit from joining. Invite them personally.
★ Identifying problems is easier than identifying solutions. Start by asking stakeholders what the challenges are to lead into a discussion of what the opportunities are.
★ To spark interest in existing technical solutions, bring local stakeholders in contact with technical organisations developing valorisation or sorting/collecting technologies.
★ Smaller groups and informal settings can encourage participants to speak more freely.
★ HoReCa and households may be incentivised to participate in activities such as increased sorting by fee reductions

Urban biowaste valorisation may face legislative and regulatory barriers.

★ Production processes of fertiliser, animal feed, and other biowaste-based products might be restricted by regional and national legislation. Bring local stakeholders together with policymakers on relevant governance levels in policy dialogue to discuss these barriers.
★ Look into valorisation streams apart from compost and bio-based products that are not restricted.

What if it's election period?

★ Local elections can create uncertainty about mid and long-term political commitment. Act fast before the election period begins to build networks, momentum and a strong foundation for future activities. After an administration change, consider new opportunities that may have arisen – for example, political interest in a new low-risk biowaste pilot scheme.

Learning from Lund

The Swedish city of Lund is a shining example of effective waste management and is a frontrunner city and project partner in SCALIBUR. In recent years, the city transitioned to a new recycling system – households are given two large bins, each with four compartments. This resulted in only 2 % of waste going to landfill and a 91 % purity rate across recycling categories! Lund developed many good practices that contributed to its waste management success:

› Building on existing trust

The recycling bin upgrade required more sorting from households and at times a tax increase. Both elements could be potential barriers, but Lund was able to lean on its good reputation. For many years, the municipality had provided a reliable waste management service and citizens trusted that the new system would be managed just as professionally. They were willing to accept minor disruption with the new system as well as the increased costs and complexity given to the increasing recycling rates and positive environmental impacts.

› Supporting the change-makers

The municipality recognised that citizens would have questions about the new system. A customer service hotline was provided for citizens to call, serviced by the municipality staff responsible for the roll-out of the new recycling system. They received special training to answer the calls and were enthusiastic to help citizens understand the new system.

› Informing and engaging all citizens

Bringing citizens on board in a new system requires constant engagement to make sure they understand why change is necessary and the implications of their actions. Lund developed a comprehensive engagement campaign for citizens: Local schools and universities helped raise awareness through study tours, brochures, and seminar series. The success was clear: when citizens were given the information, they needed to understand the new system, they responded positively.

› Giving all stakeholders an active role to play, thereby fostering local ownership

The excellent stakeholder engagement was extended to everyone involved in the new system. For example, a new waste collection truck was needed to fit the new recycling bins. Through close collaboration with car manufacturers, a new model of truck was developed from scratch – a testament to the foresight of the municipality in stakeholder engagement.

COUNTRY-SPECIFIC CONTEXT: GREECE

National and regional level legislation play an important role in shaping the local context that the municipality of Kozani operates in.

At the national level, the key piece of legislation is the National Waste Management Plan 2020-2030. Its goal is to promote the development and implementation of strategies across Greece that will encourage separate recycling collection, establish waste and biowaste treatment plants, and reduce overall municipal waste rates. It seeks to achieve three targets: a 55% recycling by weight of municipal waste in 2025 and 60% by 2030; energy production from waste at 10% in 2025 and more than 25% in 2030; and reducing the amount of municipal waste sent to landfill to 10% (by weight) by 2030, five years earlier than the EU Directive target. This legislation will be updated in 2021 to meet the requirements of EU Directive 2018/851. This Directive seeks to further promote the principles of circular economy by maximising the recovery and utilisation of the outputs of waste treatment plants as secondary raw materials or alternative fuels.

At the regional level, the Regional Waste Management Plan of Western Macedonia, created in 2016, plays an important role. This legislation has pursued multiple goals, most significantly in seeking to stabilise, and then reduce levels of waste production, prioritising separate collection of different fractions of recyclable waste, and limited promoting of the utilisation of secondary waste materials. Due to the success in achieving these targets, in 2021 the regional plan will be updated.

While both legislations set ambitious goals for waste reduction and recovery, there are some considerable implications and challenges for SCALIBUR within the Greek context. Due to local regulations, value added products (such as biofertilizers) stemming from biowaste cannot be used in the agricultural sector, thus making such products unmarketable. Furthermore, there is no provision for financial incentives for citizens to increase at-source separation and/or recycling. Waste taxes are still calculated based on the square meters of the household and not on the quality of the waste collected. Knowing the legal framework within which the pilot operates is very important to shape activities that will be impactful in the local context and have a higher uptake potential.

MAIN POLICY BARRIERS IN THE 3 SCALIBUR PILOTS

Albano Laziale

- Implementation of national legislation(s) across regions is not consistent
- Different regulations for waste separation, collection and treatment processes across regions
- Insect rearing: legal aspects
- Production of high quality compost is difficult & often too expensive for municipalities

Kozani

- Local regulations currently limit the use of biowaste to produce added value products (e.g fertilisers for farming or feed for animals)
- Waste tax is based on the square meters of the household not on the quality of the waste collected
- Current production of biowaste is too small to enable a cost-efficient use of biowaste for value added products

Figure 1 Main policy barriers in the 3 SCALIBUR pilots.

Madrid

- Municipal taxation is not linked to the quantity or quality of the generated waste
- There is a need for coherence between the use of economic instruments for waste management and the rest of policies in this area
- Currently there is not an efficient market for the selling of compost to be generated by biowaste treatment

Are you facing similar or additional challenges in your city or region?

Have you found ways to overcome these barriers?

Get in touch with us and join our biowaste clubs and network of cities and regions working on urban circular bioeconomy!

WHERE TO GET HELP!

Good news: You are not alone! Join us!

There are many cities and organisations eager to help you engage the right stakeholders in your city or region in order to convert more urban biowaste into high value-added products and increase the circularity of the biowaste streams.

SCALIBUR and its successor project **HOOP** aim to support not only their pilot cities/regions but also other cities and regions that are motivated to improve their biowaste value chains. You can engage with us in various ways.

› On the national level

Replication workshops and biowaste clubs – you are warmly welcome to join us!

Check **www.scalibur.eu/category/news/** for upcoming events

National help desks:

Kozani – CluBe
Cluster of Bioeconomy &
Environment of Western Macedonia
Email: info@clube.gr

Albano Laziale – Anci Lazio
Associazione Nazionale Comuni Italiani –
Email: project@ancilazio.it

Madrid – FCC
FCC Medio Ambiente – Online form:
www.fcc.es/en/contacto

› On the European level

Visit frontrunner city Lund –

Email: lunds.kommun@lund.se

Network – get connected with other frontrunner and up-and-coming cities interested in closing their urban biowaste loops: **https://hoopproject.eu/network**

Biowaste club help desk – having supported the SCALIBUR pilot cities, CSCP is on stand-by to support you on your biowaste journey, too! Reach out to us for troubleshooting, facilitation, knowledge resources, to connect with other cities or initiatives, and to increase your city/region's visibility:

E-mail: **biowasteclubs@cscp.org**
Phone: +49 202 45958 10
Website: www.cscp.org

SCALIBUR (Scalable technologies for bio-urban waste recovery) brings together a unique blend of organisations and expertise, led by **ITENE Packaging, Transport & Logistics Research Center**. The four-year project began in November 2018.