



**D6.5**

**Report on the education  
and awareness raising  
& acceptance activities**

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## List of acronyms

Acronym	Description
<b>BCM</b>	Biowaste Club Meeting
<b>CE</b>	Circular Economy
<b>DIY</b>	Do It Yourself
<b>ESB-UCP</b>	Escola Superior de Biotecnologia of the Universidade Católica Portuguesa
<b>EU</b>	European Union
<b>EWWR</b>	European Week for Waste Reduction
<b>GWh</b>	GigaWatt Hour
<b>HoReCa</b>	Hotel/Restaurant/Catering
<b>H2020</b>	Horizon 2020
<b>LC</b>	Local Champion
<b>LHs</b>	Lighthouse Cities and Regions
<b>OFMSW</b>	Organic Fraction of Municipal Solid Waste
<b>PDA</b>	Project Development Assistance
<b>STEM</b>	Science, Technology, Engineering and Mathematics
<b>UCBE</b>	Urban Circular BioEconomy
<b>UCBH</b>	Urban Circular Bioeconomy Hub
<b>UWWS</b>	Urban WasteWater Sludge
<b>WP</b>	Working Package



# 1. Executive summary

With the goals of promoting acceptance and usage of bio-based products and of creating awareness for bio-waste recycling, the HOOP project developed and carried out various citizen engagement activities in the 8 HOOP Lighthouses. These can be clustered in citizen science interventions for optimizing the separate collection of OFMSW in the Lighthouse Cities and Regions and innovative pilot actions. The deliverable at hand reports specifically on the various pilot actions carried out in the Lighthouses under task 6.4.

These cities are embarking on a journey to optimize separate waste collection, foster behavior change, and cultivate acceptance of biowaste-derived products. At the core of this transformative effort lies a selection of pilot actions designed to bridge the gap between current practices and best methodologies.

These pilot actions consist of two distinct but synergistic streams: one focusing on education and awareness raising, and the other centering on the embrace of bio-based products. The former stream involves a range of creative approaches, such as specialized training programs to enhance waste recycling awareness, workshops empowering educators to integrate biowaste recycling into curricula, and the development of interactive online teaching materials and tools. Additionally, neighborhood competitions and reward mechanisms infuse an element of excitement into the process. Meanwhile, the latter stream encourages citizen interaction and acceptance of bio-based products through immersive community events, exhibitions, and public spaces. These platforms allow citizens to explore new products, seek clarifications, and engage in design-thinking workshops to co-create localized solutions, like personalized bio-based plastics.

To develop fitting pilot actions for each HOOP Lighthouse, CluBE (supported by CSCP and SfC) consulted all the Lighthouses on how to select the actions that best fit their needs. Additionally, CluBE offered bilateral meetings and consultations before and during the implementation process of these pilot actions. Each Lighthouse even the most upgraded in terms of Citizens Engagement Actions must focus at least on one of two different pillars. The first one is the separate collection, based on awareness raising and education activities through school visits, training the trainers sessions, and games for children and the second is the acceptance of bioproducts by feel and touch actions with the bioproducts and exhibitions of these products in the general public.

Various pilot actions were carried out successfully in the Lighthouses Albano Laziale, Western Macedonia, Bergen, Murcia, Münster, and Porto.

The Western Macedonia Region for example concentrated on school visits and bioproducts exhibitions as well as the promotion of recycling, upcycling, and waste reduction by promoting games constructed by wastes. The Greater Porto concentrated on the bioproducts exhibition to promote the acceptance of these products.

## 2. Introduction

The HOOP Project helps to unlock bio-based investments and adopt local bio economies in Europe through a systemic and cross-cutting approach. It offers Project Development Assistance (PDA) at the 8 Lighthouse Cities and Regions - to shape the technical, economic, financial, and legal expertise needed to develop concrete investments for the valorization of the OFMSW (Organic Fraction of Municipal Solid Waste) or UWWS (Urban Wastewater Sludge) with the aim of obtaining safe and sustainable bio-based products. It should be mentioned that from 1<sup>st</sup> January 2024 will be compulsory for the EU to collect the biowaste separately.

Each Lighthouse will have detailed implementation assistance and a tailored Circular Business Model, as well as financing mechanisms to be used for organizing investment. Moreover, HOOP must introduce stakeholder engagement and citizen science initiatives for the co-design of an improved collection of OFMSW and its later valorisation.

Also, HOOP wants to promote behavioral change and acceptability of biowaste-based products, as well as the limitation of food waste. The HOOP Project also features the HOOP Urban Circular Bioeconomy Hub (UCBH), an online platform that provides opportunities to replicate the PDAs of the Lighthouse Cities and Regions in other cities and regions of HOOP Network of Cities and Regions (currently composed by 76 committed cities and regions from all around Europe). Finally, HOOP continues the work of the projects VALUEWASTE, SCAL-IBUR, and WAYSTUP! which were related to the collection and valorization of biowaste.

In the pursuit of fostering sustainable waste management practices and promoting the adoption of bio-based products, a comprehensive initiative is underway, marked by citizen science interventions and innovative pilot actions. Rooted in the concept of citizen engagement, this initiative encompasses Lighthouse Cities and Regions that serve as pioneering examples of change. These cities are embarking on a journey to optimize separate waste collection, stimulate behavioral shifts, and cultivate acceptance of biowaste-derived products. At the core of this transformative effort lies a selection of pilot actions meticulously designed to bridge the gap between current practices and best methodologies.

The invaluable insights gathered from these pilot actions will serve as the bedrock for identifying emerging "best practices." These practices will not remain confined to the Lighthouse Cities and Regions but will permeate through diverse dissemination channels and replication tools, solidifying a framework for broader adoption. As the journey progresses, the Lighthouse Cities and Regions will embark on an endeavor to upscale these pilot actions. Through this, they will define clear pathways to extend the impact of these initiatives, ensuring their sustainability well beyond the horizon of the HOOP project.

# 3. Preparation of the Lighthouses

The journey towards creating impactful change within our Lighthouse Cities and Regions was carefully paved through a series of focused bilateral meetings, a basis of preparation for the transformative pilot activities. Rooted in the principle of collaboration, these meetings brought together the visionary minds of each Lighthouse City/Region. The objective was crystal clear: to lay the groundwork for pilot actions that would resonate with the cities' unique contexts and foster sustainable practices.

The bilateral meetings between CluBE, CSCP, and the Lighthouse Cities and Regions served as an arena for the exchange of ideas, expertise, and perspectives. These meetings proved to be more than ordinary discussions; they were catalysts for the meeting of minds committed to crafting a better tomorrow. These meetings were mostly online except for some meetings that took place during the General Meetings of the HOOP Consortium. We had more than three meetings with each Lighthouse and many times needed to have some extra meetings in order to solve any challenges that was risen.

The focus of these bilateral meetings was double, reflecting the dual streams of the pilot actions. In one stream, education and awareness raising were at the forefront, especially in Lighthouses that have a great percentage of biowaste collection such as Albano (90%) according to the baseline analysis. Workshops were envisioned, where educators would be empowered to seamlessly integrate biowaste recycling into their curricula. The concept of neighborhood competitions and inventive reward mechanisms added an element of excitement to the educational journey.

The second stream, equally compelling, focused on cultivating acceptance of bio-based products. Community events, exhibitions, and public spaces took center stage, becoming platforms where citizens could immerse themselves in the world of these innovative offerings. In these meetings, design-thinking and co-creation workshops were envisioned where citizens could actively shape the narrative by identifying their needs and crafting localized solutions, including personalized bio-based plastics.

These bilateral meetings were not just preparatory in nature; they were the genesis of a comprehensive framework for action. Collaboratively, the Lighthouse Cities and Regions charted pathways for the upscaling of pilot activities, envisioning a future where the seeds sown during these discussions would blossom into sustainable change. Concrete goals were set, outlining the collective commitment to ensure the longevity of the pilot actions far beyond the project's timeline. The main outcome of these meetings was that all Lighthouses had the opportunity to plan their citizens awareness actions with the consultation of CluBE. Moreover, the baseline analysis that was done at the beginning of the Project gave directions on how each Lighthouse must be approached.

In retrospect, these bilateral meetings stand as a demonstration of the power of collaboration and preparation. All Lighthouses followed a route that drove to the selection of the most suitable actions. A key role played, in the Jour-fix meetings that took place every second Monday of every two months, in which the Lighthouses

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shared their concerns about the pilot actions. CSCP as Working Package 6 Leader, who was responsible of these meetings, and CluBE as Task 6.4 Leader were trying to solve any challenges that came up.

The concrete outcomes of these meetings were a list of actions that can be used for citizen engagement, a methodology on how to implement these actions, and a list of the challenges that were raised.

## 4. Selection of the Activities per Lighthouse

CluBE in collaboration with CSCP prepared a specific framework in order the Lighthouses to select the activities that fit in their area in accordance with the objectives of the Task 6.4. First, it is prepared a 5-step procedure in order to conclude to the most appropriate actions. These steps were decided after the preparation meetings that we had with the Lighthouses in order to be consulted to choose the most appropriate for each of them, depending not only on the mentality of each area but also taking into consideration the urban circular bioeconomy (UCBE) projects that each Lighthouse has already selected to implement in the framework of HOOP project.

### 4.1 Step 1

The first step of this route was the suggestion by CluBE to the Lighthouses of the most suitable actions for each Lighthouse depending on what was discussed in the bilateral meetings. The decision was also made having considered Deliverable 2.3 and the context of each Lighthouse.

#### Almere

The City of Almere has introduced the Raw Materials Collective, which started in 2017 as a pioneer in the Netherlands, is an initiative involving 40 companies, authorities, and knowledge institutions for the transformation of urban waste into new raw materials for products and applications, trying to promote locally the circular economy. Also, the Floriade Expo was a good opportunity for biobased products exhibitions. So, the proposed actions are:

- Promotion of Raw Materials Collective
- Biobased products exhibitions
- Biowaste Clubs as an exhibition



Figure 1. Suggested activities for Almere

## Albano Laziale

Since 2013, Albano municipality has produced various initiatives and awareness information campaigns, such as the promotion of home composting and the Biowaste Clubs promoted by the SCALIBUR project, among many others. Albano Laziale wants to improve the quality of the biowaste from the HoReCa sector due to the worse bad separation than from the households according to other biowaste-related projects such as SCALIBUR. The proposed actions are:

- Open data campaign
- Participatory process to overcome barriers related to organic waste (i.e., how to improve the properly separate collection in the HoReCa sector)



**Figure 2. Suggested activities for Albano Laziale**

## Bergen

In Bergen Lighthouse the acceptance for compost, biogas, and digestate is high but there were some concerns about small amounts of plastic found in the digestates. Bergen has decided to make the separate collection of food waste in paper bags. Regarding more innovative bioproducts, such as insect meal for animal feed, although the perception is increasingly positive, it will require additional efforts to increase citizens' acceptance. As a result, the actions that were chosen for Bergen are:

- Info Campaigns for the expansion of collection of household food waste, with info campaign
- Lending mealworm farms to schools



**Figure 3. Suggested activities for Bergen**



## Kuopio

Kuopio region promoted three awareness campaigns in 2019. These campaigns consisted of a “Hävikkiiviikko”, week against food loss intended mainly to students and by using also social media to achieve their goal. Furthermore, Jätekuikko (waste management company in Kuopio) is constantly campaigning for waste reduction/waste awareness and cooperating with schools, for instance, offering lectures on how to minimize waste. Finally, it was developed a gamification app for waste separation. The aim of this application is to improve recycling rate among their users. As a result, the actions that selected for Kuopio are:

- Information campaigns (social media, local press, online portals)
- Learn through play activities for kids (sorting games, games made from recyclable and upcycled materials etc.)



**Figure 4. Suggested activities for Kuopio**

## Münster

Münster promotes campaigns aiming to promote recycling and reduce waste generation and plastic impurities. There are running four awareness campaigns (“The big target”, “Star-Waste”, “Campaign for organic waste bins” and “Initiative Campaign for urban cleanliness”).

Münster also wants to encourage citizens to consume bio-based products, awm communication department is evaluating whether the social acceptance of their organic products could be an additional topic in their annual citizen survey. The actions proposed for Munster are:

- Information campaigns (social media, local press, online portals)
- Block of flats actions (e.g., improving the quality of biowaste collected, etc.)
- Workshop for potential users of bioproducts (biochar)



**Figure 5. Suggested activities for Münster**

## Murcia

Many different awareness-raising campaigns related to waste reduction and circular economy were implemented in the city. Children are considered as a key population segment and all of Murcia's schools provide environmental content. For example, schools organize study tours to show how residues are treated and their impact on the environment. The actions proposed for Murcia Lighthouse are:

- Info campaigns for the expansion of separate collection of biowaste
- Information campaign to overcome possible barriers
- Workshop for potential final users of bioproducts
- Specific actions for schools and high schools



**Figure 6. Suggested activities for Murcia**

## Greater Porto

Greater Porto is promoting awareness-raising campaigns related to waste reduction and circular economy transition. In 2019, it was reported the participation of 22,245 citizens in different awareness campaigns. This is also reflected in the education of the younger people. Through several school campaigns, more than 200,000 children in the region participated in activities related to environmental education.

Also, wants to promote the acceptance of bioproducts depending on the product type. In general, there is a high social acceptance for compost. The actions proposed are:

- Information Campaigns
- Learn through play activities for kids and schools
- Neighborhood actions (communal composting, urban gardening, and biowaste collection)
- Bio-based products (Nutrimais®), promotion, exhibitions, commercial activities, social networks
- Awareness campaigns with a focus (e.g. Home composting, no bags in bins) through social media



**Figure 7. Suggested activities for Greater Porto**



## Western Macedonia Region

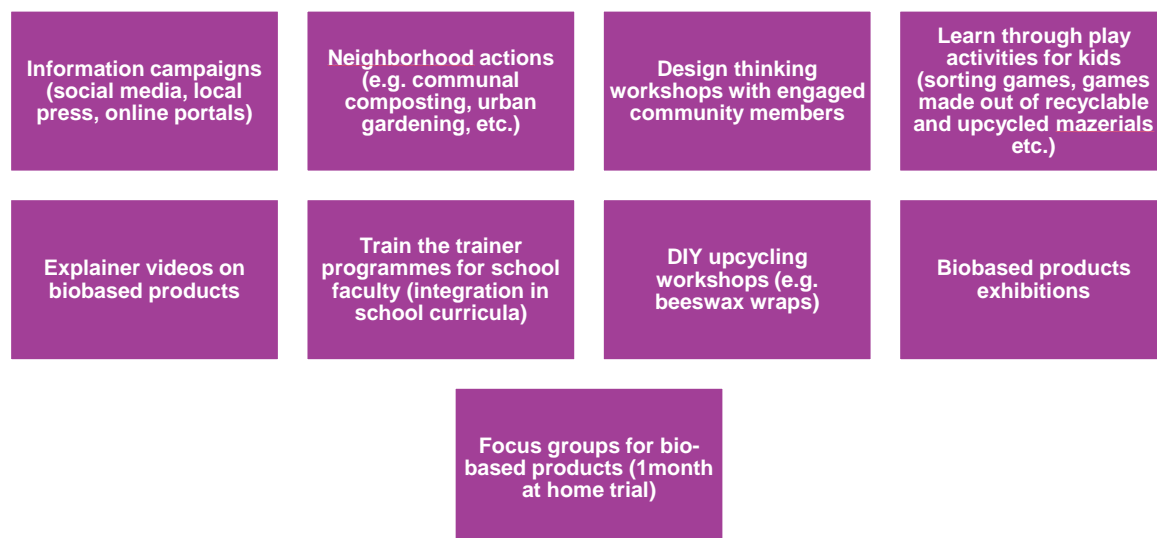
In accordance with the Regional Waste Management Plan, DIADYMA (the waste management company of the Western Macedonia Region) promoted different awareness campaigns related to waste reduction and circular economy principles. Among them, there are several neighborhood events. Furthermore, there is the possibility of having school visits and learning through play activities as first introduced via the Climate Neutral Week that took place in Kozani from the SCALIBUR Project.

<ul style="list-style-type: none"> <li>▪ Awareness and Information campaign</li> <li>▪ DIY workshops – home composting</li> <li>▪ Workshop for potential final users of bi-products</li> <li>▪ Bio-based products, promotion, exhibitions, commercial activities, social networks</li> <li>▪ Specific actions for schools and high schools</li> <li>▪ Learn through play activities for kids and schools</li> </ul>	
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**Figure 8. Suggested activities for Western Macedonia**

## 4.2 Step 2

The Lighthouses had their first contact with a list of suggested actions to inspire them and to give them the opportunity to adapt to their needs and the mentality of each country and more specifically of their city or region in a more general form and these actions are:



**Figure 9. Suggested actions**

## 4.3 Step 3

In the third step, it was created the MIRO board to every Lighthouse that had access and they filled in the actions that were most suitable for them.

Task 6.4: Pilot actions on education and awareness raising & acceptance of biowaste-derived products



### WHAT

The aim of this exercise is to identify possible pilot actions that can be implemented in the Lighthouses until M36. The pilot actions should focus on education and awareness raising, as well as increasing the acceptance of biowaste derived products. Below you can find a list with suggestions about what these actions could be. Ideally, we want to connect this Task to other activities already happening in the Lighthouses.

Hint: Pilot actions are *implementation related activities* that aim to test a new solution and have the potential to be replicated and/or scaled up.

### HOW

Below we have prepared a list of possible pilot activities on awareness raising and increasing acceptance. You can choose **one or two** pilot activities from the list, depending on what is most suitable for your Lighthouse, or suggest other activities that you would like to try in the local context and you think are fitting to the task objectives.

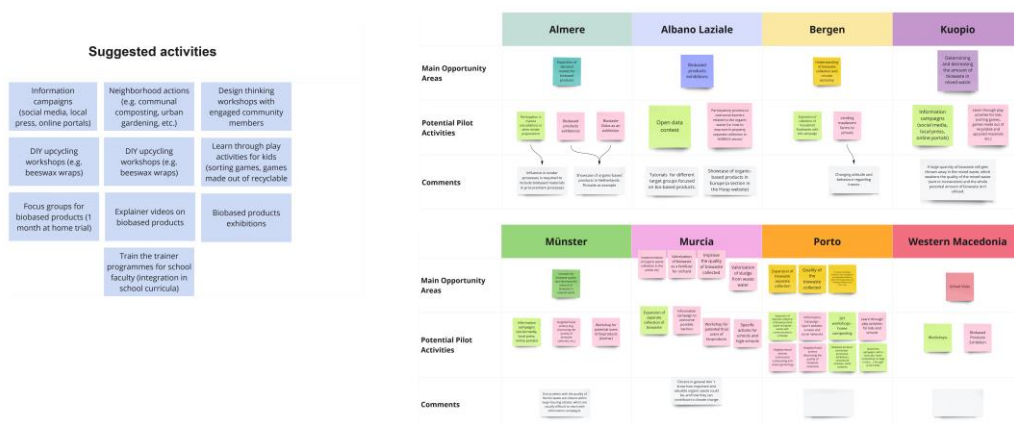


Figure 10. Screenshot taken from the MIRO board (1)

See Annex 1 for more details.

## 4.4 Step 4

After the selection of the most preferable actions, CluBE made a summary per Lighthouse as shown in Figure 11.

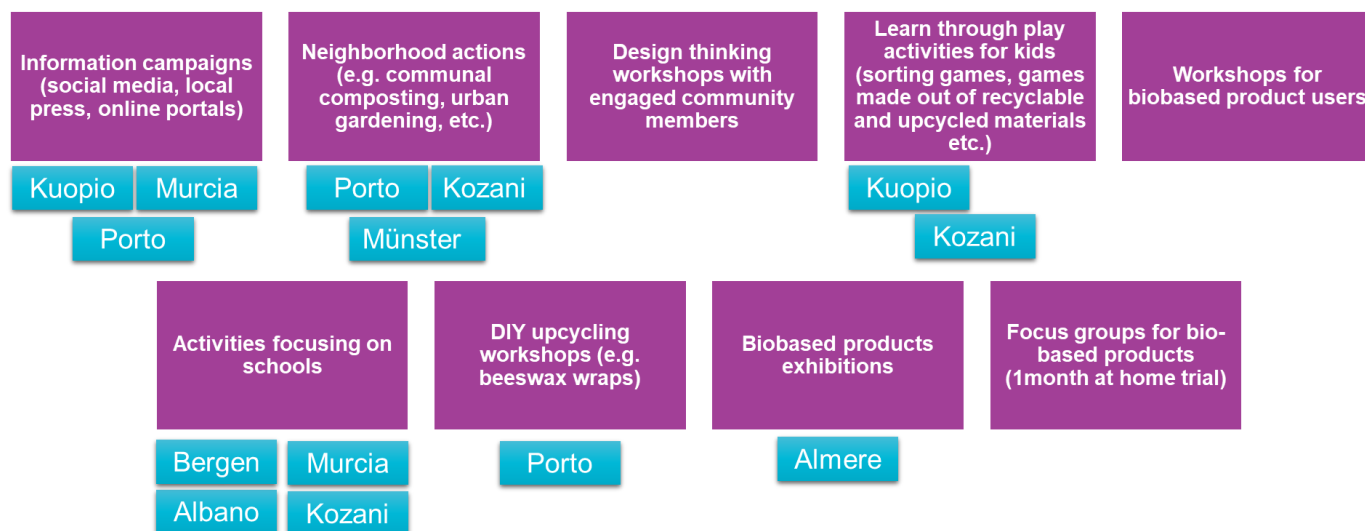


Figure 11. The most preferable actions by each Lighthouse

The most popular selections were:



Figure 12. The most popular preferable actions by all the Lighthouses

### 4.5 Step 5

The fifth step was to introduce to the Lighthouses more analytically the steps on how the selected actions can be implemented and be supported by CluBE, CSCP, and DIADYMA.

#### 4.5.1 LOCAL CHAMPIONS

The “local champions” are citizens who are already very active within their communities on topics of sustainability, circular economy, zero waste lifestyles, neighborhood improvement, social innovation, or similar. The concept of local champions, first introduced in the project SCALIBUR, was also used for the purpose of education, awareness raising, and acceptance activities within the HOOP project. Local champions can be (social) entrepreneurs, local businesses, start-ups, associations, or individual citizens who are motivated and willing to collaborate with other actors towards a common goal. Local champions can be engaged in several ways:

- *Delivering DIY workshops: it can be, for example, as part of a bigger event, at a school, or part of an interactive Biowaste Club*
- *Disseminating best practices: sharing their experiences and learnings with others and replicating in other neighborhoods/regions/countries. Their best practices can be disseminated through for example communication measures such as brochures or videos.*
- *Engaging them in Biowaste Clubs and connecting them with other regional actors to upscale good practices.*

In order to implement local champions activities in the LHs several steps are followed. The first step is to identify the champions in the local communities and reach out to them explaining what you want to promote through their work. Afterward, the aim is to find out more about their story and what activities can be organized in cooperation with HOOP. The last step is to present their stories in order to promote their good practices and finally to potentially invite them to participate in events and Biowaste Club Meetings or deliver a workshop.

#### 4.5.2 ACTIVITIES IN SCHOOLS

Another option is to implement pilot activities in /with schools. Schools are the most direct area to raise awareness about environmental issues. Through a structured learning experience, students will be empowered to adopt the triad of experience “knowledge-attitude-behavior” and will become active citizens, able to make the correct environmental decisions. To achieve successful raising awareness activities, we should follow the mentioned triad of methodology and be careful to cover the activities with respect to cognitive, moral, and emotional aspects.

Some examples of actions are the implementation of education/Information in/out of the classroom, organizing workshops to promote the circular economy, preparing traditional or classic games made from recyclable materials or via upcycling, using Lego, STEM, Robotics and 3D Printing, and finally create communication campaigns (e.g. social media, production of videos, songs, poems, painting competition, theatrical production, storytelling). It is important to get the appropriate approvals from the relevant institutions in order to organise activities with children.

A step-by-step guide is first to prepare the environmental educational approach, then to get the appropriate approvals. The second step is to prepare the school visit in close contact with the schools and finally to implement the activities by motivating the students to adopt eco-lifestyle and promote it to the entire community.

### 4.5.3 LEARN THROUGH PLAY ACTIVITIES FOR KIDS

After getting in touch with schools and kindergartens, the Lighthouse can organize some games and activities based on recycling and the use of biowaste products. These activities will have as the main factor the joy and fun, through which the children will acquire the desired knowledge. For example, the children can sort waste into the appropriate bin, prepare games such as Jenga with empty milk bottles, or bowling with used plastic bottles.

### 4.5.4 TRAIN THE TRAINER PROGRAMS

Education finds its focal point through train-the-trainer programs. These initiatives resonate within the hallowed halls of learning, equipping educators to integrate waste recycling and biobased product awareness into a program of study. In order to achieve effective training, the Trainers Program that the Lighthouses can potentially follow has the steps below:

- *Organize a two-day training course that will be created to support school teachers in developing techniques for designing and delivering classroom-based training courses. The training course must be suitable for experienced trainers wishing to enhance their skills, as well as for those new to training and wanting guidance in achieving a more professional standard of tuition.*
- *The training must include sessions on planning the learning objectives, matching a range of different learning styles, and how to work with all kinds of audiences.*

### 4.5.5 BIO-BASED PRODUCT EXHIBITIONS AND INFORMATION CAMPAIGNS

The approach of the general community is a complex process that requires very strong preparation. Our aim is to succeed in raising awareness among as many citizens as possible. We are careful in the knowledge-emotion-ethos areas and we want to promote responsible environmental behavior. Exhibitions and campaigns are powerful tools, which can communicate our message. This can be achieved by setting up Info Kiosks with bio-based products (promotion and activities in central squares or shopping malls), creating a social media campaign, producing info spots (TV, radio, social media), and finally organizing information sessions on special target groups (associations of parents & guardians, teachers, etc.). For example, wooden toothbrushes, wooden cutlery, boxes made from recycled or compostable material, straws made from wheat, fabrics made from spent coffee grounds, etc.

The exhibitions are powerful tools, which can communicate our message. We need to approach:

- *Companies/institutes/suppliers, that will present the exhibits (products or ideas).*
- *Citizens, environmentally motivated or not, who will participate in the event.*

Another innovative proposal will be the organization of weekend activities along with the exhibitions, at which children with their parents will take part in. In these activities, sorting games, games made out of recyclable and upcycled materials will be included. Through the project, we can turn the weekend into creative parent-child time but we can also provide full information and knowledge.

The ultimate goals are:

- *to get to know each other,*
- *to compare ideas and know-how,*
- *to raise any potential issues (in the country or EU)*
- *to discuss the acceptance of bio-based products*
- *to make people familiar with the concept of bio-based products,*
- *to see, feel, and touch them in practice*
- *to get familiar with the concept and the way they are created.*

### 4.5.6 EXPLAINER VIDEOS ON BIOBASED PRODUCTS

In the digital era, explainer videos serve as channels of information. By explaining the principle of bio-based products, these videos empower citizens to make informed choices and make a conscious shift towards products crafted from sustainable sources. The Lighthouses must:

- *Find smart messages that are connected with the Lighthouse and try to visualize them. These videos can be animations or recordings of people promoting the message or the bio-based products.*
- *The videos must be short in time and smart and leave a good message at the end.*

### 4.5.7 INFORMATION CAMPAIGNS

Information campaigns, disseminated through social media, local press, and online portals, stand as the heralds of change. By weaving compelling narratives and substantiated knowledge, these campaigns bridge the gap between citizens and the paradigm shift towards sustainable waste management and bio-based products. This can be achieved by:

- *The creation of online posts that will inform people about recycling, the importance of biowaste products use, as well as its impact on the environment. Furthermore, via Facebook, LinkedIn, and other similar applications, we can easily get in contact with the audience of each city and try to organize online information campaigns where participants can get a full glimpse of the HOOP project.*
- *A step-by-step guide is first to prepare what we want to promote, then to get the appropriate approvals and to collaborate with relevant institutions and bio-based products suppliers. Finally, try to be pleasant and smart in approaching the audience.*

### 4.5.8 NEIGHBORHOOD ACTIONS AND URBAN GARDENING

The scale of change extends to the composition of the local communities, encapsulated within neighborhood actions such as communal composting and urban gardening. These initiatives go beyond ordinary actions; they characterize a communal attitude, building relationships while fostering environmentally conscious practices at the neighborhood's level. The Lighthouses must consider the following:

- *Through communication with the Municipality, we can take a glimpse of the neighborhoods that are more interested in recycling or have some privileges among others regarding this matter (for example, in some neighborhoods multiple/different use bins have been installed). After collecting this information, we can proceed with creating advertising brochures and information leaflets which will be delivered to each household to inform the inhabitants about the usefulness of those bins or, in general, about the impact of recycling on the environment and on their lives.*
- *Another innovative proposal is to organize a contest in a neighborhood area. In this way, the inhabitants will be motivated to participate and we will take advantage of this opportunity in order to provide the desired information and knowledge as well as to promote the HOOP's objectives.*
- *Finally, after communicating with the principal authorities and collecting information about recycling food waste household bins, some information actions and activities can be organized in order to inform the inhabitants about the importance of recycling and collecting household food waste specifically, as well as its impact on the environment.*

### 4.5.9 DO IT-YOURSELF UPCYCLING WORKSHOPS

The organization of workshops shows the citizens alternative ways of reusing wastes and transforming them into something useful. The artistry of transformation unfolds through DIY upcycling workshops. The creation of beeswax wraps, for instance, becomes an avenue for nurturing both creativity and environmental consciousness, exposing skills that took place within homes and communities.

Another action is *A Holistic Assessment: Focus Groups for Bio-Based Products*. Incorporating a holistic approach, focus groups are conducted for bio-based products. Citizens are granted the opportunity of a one-month at-home trial, fostering genuine engagement and attaining invaluable insights.

The collective vision is that these activities, shaped by collaboration and driven by awareness, will promote a common fabric, engendering sustainable practices and embracing the promise of bio-based innovation.

### 4.5.10 DESIGN THINKING WORKSHOPS

The resonance of change is amplified through design thinking workshops for the citizens. This collaborative action explodes innovation, bearing solutions that surpass traditional boundaries. The Lighthouse can design a workshop depending on the needs of each area and must consider to categorize at least three different groups of citizens depending on the different needs of each group and find the most suitable time and place to gather. These workshops must be tailor-made for each group in order to promote the acceptance of bio-based products and the importance of biowaste sorting.



## 5. Activities carried out

In this section, the activities carried out by each Lighthouse for the education and awareness raising and acceptance of bioproducts are presented. Many Lighthouses choose to implement actions that are related to the technologies in the UCBE projects that were selected to implement through the HOOP project, as well as the more reliable for their city or region. These actions were strongly connected to the proposed actions in the previous sections and after the bilateral meetings with the Lighthouses.

### 5.1 Western Macedonia

The Region of Western Macedonia runs a big campaign in schools of the region promoting recycling, upcycling, and waste reduction principles, as well as exhibitions of bioproducts.

**Table 1. European Week for Waste Reduction - EWWR in Western Macedonia**

Title	European Week for Waste Reduction - EWWR	
Date	November 19 <sup>th</sup> – 27 <sup>th</sup> , 2022	
Type	Live only	
Organizer	CluBE	
Photos		
Social Media Posts	Facebook	<a href="https://www.facebook.com/photo/?fbid=598052462444322&amp;set=pcb.598053725777529">https://www.facebook.com/photo/?fbid=598052462444322&amp;set=pcb.598053725777529</a>




In the Lighthouse of Western Macedonia, a lot of environmental awareness events were organized. More specifically, the European Week for Waste Reduction – EWWR, the World Environment Day, and the Summer Festival of the 2<sup>nd</sup> Nursery School of Municipality of Kozani were some of the examples from the public awareness events that were organized. In the European Week for Waste Reduction - EWWR, students, educators, and citizens participated in forming a group of 500 people. The event was designed with the creation of environmental education awareness presentations, environmental education games, discussions, and a bio-economy and bio-based products exhibition. The interest of the participants was quite high as they saw the implementation of the circular economy in practice and did not only listen/discuss more theoretical data.

**Table 2. World Environmental Day that took place in Western Macedonia**

Title	World Environment Day	
Date	June 10 <sup>th</sup> – 11 <sup>th</sup> , 2023	
Type	Live only in the Municipalities of Kozani and Eordaia	
Organizer	CluBE	
Photos		
Social Media Posts	Facebook	<a href="https://www.facebook.com/photo/?fbid=598052462444322&amp;set=pcb.598053725777529">https://www.facebook.com/photo/?fbid=598052462444322&amp;set=pcb.598053725777529</a>

On World Environment Day approximately 2000 kids and citizens attended the events. This event was structured to promote environmental education through interactive games related to environmental topics, engaging discussions, and an exhibition highlighting bio-economy and bio-based product acceptance. Participants were genuinely interested because they got to witness the practical aspects of the circular economy in action via games and activities, rather than engaging in theoretical discussions.

**Table 3.** Summer Festival of the 2<sup>nd</sup> Nursery School of Municipality of Kozani in Western Macedonia

<b>Title</b>	Summer Festival of the 2 <sup>nd</sup> Nursery School of Municipality of Kozani	
<b>Date</b>	June 29 <sup>th</sup> , 2023	
<b>Type</b>	All the events were live only – in the Municipality of Kozani and Eordaia	
<b>Organizer</b>	CluBE and Nursery School of Municipality of Kozani	
<b>Photos</b>		
<b>Social Media Posts</b>	Facebook	<a href="https://www.facebook.com/photo/?fbid=598052462444322&amp;set=pcb.598053725777529">https://www.facebook.com/photo/?fbid=598052462444322&amp;set=pcb.598053725777529</a>



In the Summer Festival of the 2<sup>nd</sup> Nursery School of Municipality of Kozani, approximately 50 students and educators joined the events. Each one of these actions was designed according to the objective of the HOOP project, and they aimed to promote the bioeconomy and to achieve the goal of promoting it in the everyday life of citizens. The event was designed with the creation of environmental education awareness presentations, environmental education games, discussions, and a bio-economy and bio-based products exhibition. The interest of the participants was quite high as they saw the implementation of the circular economy in practice and did not only listen/discuss more theoretical data.

Table 4. Center for Open protection of the Elderly in Western Macedonia

<b>Title</b>	<b>Center for Open Protection of the Elderly, Municipality of Kozani</b>	
<b>Date</b>	June 19 <sup>th</sup> , 2023	
<b>Type</b>	Live only	
<b>Organizer</b>	CluBE and Center for Open Protection of the Elderly	
<b>Photos</b>		
<b>Social Media Posts</b>	Facebook	<a href="https://www.facebook.com/photo/?fbid=598052462444322&amp;set=pcb.598053725777529">https://www.facebook.com/photo/?fbid=598052462444322&amp;set=pcb.598053725777529</a>

This Environmental Awareness Workshop focused on elderly people took place in the Lighthouse of Western Macedonia and was basically a workshop that was organized under the HOOP initiative. More specifically, the workshop was organized with the concept of raising environmental awareness in the objectives of the HOOP project. Especially, the idea of the implementation of the “HOOP Trainers” as described in the Deliverable 6.4 citizen science app is worth mentioning, since it attracted interest as a concept of education and awareness raising, but also as a competitive interest as well.

Table 5. Environmental actions at schools in Western Macedonia

<b>Title</b>	<p>Formal Education:</p> <p>Primary School of Akrini, Kindergarten Akrini, Primary School of Mavrodendri, Primary School of Lefkopigi, Primary School of Agios Dimitrios-Ryaki, Kindergarten of Agios Dimitrios-Ryaki, Primary School of Galatini, Primary School of Aiani, 15<sup>th</sup> Kindergarten of Kozani, Pre-school Education Centre "A-BE-BPA-BLOM", <b>19<sup>th</sup> Kindergarten of Kozani, Kindergarten 'Lillipopolis', 2<sup>nd</sup> Nursery of Kozani</b></p> <p>Non-Formal Education: Center for Creative Employment</p>	
<b>Type</b>	All the events acted live – in Schools from the Western Macedonia Region	
<b>Organizer</b>	CluBE	
<b>Photos</b>		
		

**Social Media  
Posts**

Facebook

<https://www.facebook.com/photo/?fbid=598052462444322&set=pcb.598053725777529>

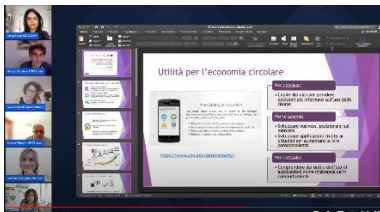
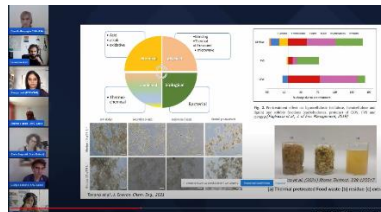
The creation of these educational programs aims to promote the bioeconomy and circular economy and achieve the goal of promoting it in students' everyday lives. Each program was designed with the creation of environmental education awareness presentations showing the impacts of the climate crisis in our everyday life such as wildfires, floods and desertification. The programs include environmental education games such as games for reducing energy bills, board games of how the renewable energy is used in the households, discussions and bioeconomy and bio-based products exhibition from which the children had the opportunity to feel and touch them. The interest of the students was quite high as they saw the implementation of the circular economy in practice and did not only listen/discuss more theoretical data.



## 5.2 Albano Laziale

Albano Laziale undertook a webinar called Nutrient Recovery and HOOP bioeconomy and a biowaste week. In the Table 6 below, you can find more details for these two events.

**Table 6. Nutrient Recovery and HOOP Bioeconomy**

Title		Nutrient Recovery and HOOP Bioeconomy	
Date		June 9 <sup>th</sup> , 2023	
Type		Webinar	
Organizer		ANCI Lazio	
Social Media	LinkedIn	<a href="https://www.linkedin.com/posts/anci-lazio-aba93b63_anci-lazioha-partecipato-alla10edizione-activity-7058819885291716608-IKB_?utm_source=share&amp;utm_medium=member_desktop">https://www.linkedin.com/posts/anci-lazio-aba93b63_anci-lazioha-partecipato-alla10edizione-activity-7058819885291716608-IKB_?utm_source=share&amp;utm_medium=member_desktop</a>	
	YouTube	<a href="https://studio.youtube.com/video/bXxMkXBfbYw/edit">https://studio.youtube.com/video/bXxMkXBfbYw/edit</a>	
Photos		 	

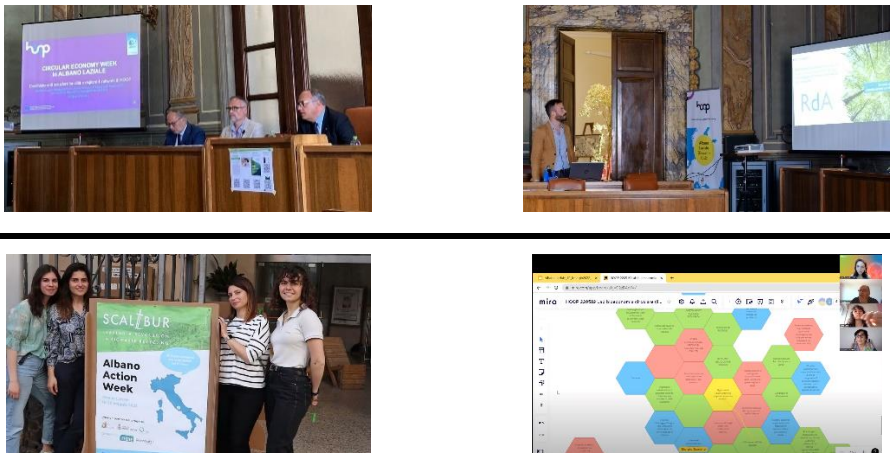
In the Nutrient Recovery and HOOP Bioeconomy webinar event, which was organized by ANCI Lazio on 9<sup>th</sup> June 2023, a huge group of citizens, students, policymakers, universities, and centers of research located in Italy participated. This webinar was held as a pilot action on citizen awareness for bio-economy and bio-based products under the initiative of the HOOP project in collaboration with the “EU GREEN WEEK” (that took place from 3<sup>rd</sup> to 11<sup>th</sup> June 2023). More specifically, the main goal of this action was to promote and deepen European environmental policies within the EU GREEN WEEK 2023, sharing the ongoing work within the PDA of the HOOP project and sensitizing municipalities and researchers to join the HOOP Network. Its main topic included the dissemination of all the information related to the HOOP project and operating in line with the EU GREEN WEEK 2023 objectives, dedicated in particular to skills for sustainable, resilient, and socially equitable communities. After the presentations that took place in this webinar, a huge open dialogue took place between experts in bioeconomy, which aligns perfectly with the main scope of the event, the citizens engagement. All the topics

and opinions that were heard were more than worth mentioning. The most impressive ones are listed in the Table 7.

**Table 7.** The main topics mentioned on the Nutrient Recovery and HOOP Bioeconomy webinar event

Expert	Topic mentioned	Expert's Comment
<b>Andrea Vignoli</b>	The importance of the PDA HOOP process to support local economic growth on the subject of biotechnology	<i>"Organic waste is still considered a problem while through projects such as HOOP it is a truly precious resource"</i>
<b>Camilla Braguglia</b>	"Innovative treatments for the circular bioeconomy for sewage sludge"	<i>"The bioeconomy is based on a sustainable and circular approach because it allows the replacement of inputs of fossil origin with material of biological origin in industrial processes"</i>
<b>Giulia Sagnotti</b>	"What moves to resolve critical regulatory and technical aspects in the organic waste sector?"	<i>"In the future, it is necessary to move towards both strategies, i.e., proximity and centralization, and therefore have a part of the waste managed in a decentralized way and a part instead destined for large plants"</i>
<b>Giorgia Lodi</b>	The usefulness of Open Data for the circular economy	<i>"The usefulness of Open Data for the circular economy is evident above all for better understanding how to act to obtain results of value both for policy makers and for citizens who can use the data as occurs with the "ecocity" application, a good example of an application created from open data by the Spanish government"</i>
<b>Serena Lisai</b>	The HOOP Network, and why it is worth – a must joining it	<i>"The HOOP Network is open to cities and regions and facilitates the connection and identification of solutions to address similar urban challenges in terms of organic fraction and wastewater management"</i>

Table 8. The "BIOWASTE Week" that was organized in Albano Laziale

<b>Title</b>	BIOWASTE Week in Albano Laziale		
<b>Date</b>	May 16 <sup>th</sup> to 20 <sup>th</sup> 2022		
<b>Type</b>	In person		
<b>Organizer</b>	ANCI Lazio, CETENMA, CSCP, ITENE		
<b>Social Media</b> <b>Posts</b>	<b>LinkedIn</b>	<a href="https://www.linkedin.com/posts/anci-lazio-aba93b63_leaflet-progetto-europeo-hoop-activity-6930916819083878400-hvTs?utm_source=share&amp;utm_medium=member_desktop">https://www.linkedin.com/posts/anci-lazio-aba93b63_leaflet-progetto-europeo-hoop-activity-6930916819083878400-hvTs?utm_source=share&amp;utm_medium=member_desktop</a>	
	<b>YouTube</b>	<a href="https://youtu.be/80d05mBByM0">https://youtu.be/80d05mBByM0</a>	
	<b>Photos</b>		

In the Biowaste week that took place in the Municipality of Albano Laziale, from 16<sup>th</sup> to 20<sup>th</sup> of May 2022, different type of groups were invited targeted to the different events of the week and addressed to experts, citizens, students, businesses and public administrators. This event was organized under the synergy of the HOOP initiative with the SCALIBUR project (H2020). More specifically, this pilot action on citizen awareness for bio-based products as well as bioeconomy took place in order to promote knowledge of emerging technological solutions and applications for the generation of products on an organic basis (starting from a variety of biomass from carbon-rich raw materials, including biodegradable waste collected from gardens and parks, food waste and kitchen products from households, from the HoReCa sector, and from the organic fractions of urban solid waste and urban waste water). The activities on the agenda also represented the result of the continuous work for the improvement of separate waste collection carried out by the city of Albano Laziale, and of the pilot initiatives and innovations that have emerged in the context of local initiatives and European projects, such as SCALIBUR and HOOP.



The week opened in presence with a presentation seminar, scheduled for **17<sup>th</sup> May 2022, 10:00 - 13:00**, in the Council Chamber of Palazzo Savelli of the Municipality of Albano Laziale; this seminar was dedicated to international best practices for the circular economy and for the improvement of individual and collective consumption models "BIO-WASTE CLUB - International best practices".

Subsequently, at the same venue, on **18<sup>th</sup> May 2022, 10:00 - 13:00**, a public meeting took place, entitled "New frontiers for the circular economy: investing in the bioeconomy", during which new potential scenarios in terms of economic opportunities for the territory of Albano and more generally for the Lazio Region offered by new technologies within the European project HOOP were presented. The dialogue, open to public and private investors, served to discuss the current barriers and financial opportunities of the circular bio-economy and to present practical cases and good practices.

On **19<sup>th</sup> May 2022**, a participatory process was organized and divided into two separate sessions. The first, in the morning, was dedicated to students (at the "Ugo Foscolo" State High School in Albano Laziale) and connected to the educational initiative promoted by ANCI Lazio and the Lazio Region and produced by Ancitel Energia e Ambiente which provides for the use of interactive educational platform "Green Learning 360°". In the second session, in the afternoon, a webinar was held open to the public, entitled "Circular Cities 2030". Participants contributed to the design and creation of illustrative posters dedicated to the bioeconomy solutions useful for Albano as well as suitable for replicability.

Finally, on **Friday 20<sup>th</sup> May 2022, starting from 15:30 until 20:00**, always at Palazzo Savelli, it was organized an exhibition of the products of various local companies "local champions" that are dedicated to the circular economy and reuse in a virtuous way.

In **Table 9**, all the experts' comments are listed.


**Table 9. Experts' comments that were heard on the BIOWASTE Week that was held in Albano Laziale**

Expert	Expert's Comment
Andrea Vignoli	<i>"This event represented a real opportunity for local innovation to apply bio-technology solutions that represent the future of the sustainable market",</i>
SCALIBUR website	<i>"The 'Circular Economy Week' raised awareness locally about circular initiatives and emerging technological solutions for the valorization of organic waste."</i>
Massimiliano Borelli	<i>"Improving both the percentage of waste collection and its quality is an objective pursued for years by the Municipality of Albano and the HOOP solutions are welcome to enhance the joint and constant commitment that citizens have shown here in the area, the municipal administration, the company that manages the waste Volsca Ambiente e Servizi. All together we will be able to guarantee a more sustainable future by also giving opportunities for new jobs and new employees in the bioeconomy sector",</i>

## 5.3 Greater Porto

The Greater Porto Lighthouse implemented a Biobased product exhibition.

**Table 10. Biobased Products Exhibition**

<b>Title</b>	Biobased products exhibition	
<b>Date</b>	April 14 <sup>th</sup> 2023	
<b>Type</b>	Escola Superior de Biotecnologia of the Universidade Católica Portuguesa (ESB-UCP)– Porto (Live-only)	
<b>Organizer</b>	LIPOR, 2GoOut, ESB-UCP	
<b>Photos</b>	 	
<b>Agenda</b>	<p>14:30 – 14:45 Welcome <i>Manuela Pintado - CBQF-UCP</i></p> <p>14:45 – 15:00 The HOOP project <i>João Graça - LIPOR</i></p> <p>15:00 – 15:10 The app “Treina o Bitaites” <i>Tânia Pinto - LIPOR</i></p> <p>15:10 – 16:10 Case studies of biobased products <i>André Almeida - ETSA</i> <i>Débora Campos- AgroGrIN/Tech</i> <i>Paulo Correia - IM Florestal</i> <i>Pedro Mendes - Spawnfoam</i></p> <p>16:10 – 16:40 Round-table and Q&amp;A <i>Ezequiel Coscueta - CBQF-UCP [Moderador]</i> <i>André Almeida - ETSA</i> <i>Débora Campos - AgroGrIN/Tech</i> <i>Paulo Correia - IM Florestal</i> <i>Pedro Mendes - Spawnfoam</i></p> <p>16:40 – 18:00 Exhibition and Poster session (with networking coffee break)</p>	



## D6.5 REPORT ON THE EDUCATION AND AWARENESS RAISING & ACCEPTANCE ACTIVITIES

In the biobased products exhibition that LIPOR organized, the LIPOR team that are involved in the HOOP project as well as more than 40 participants from the Porto region, academia, municipal and industry sectors attended. In this public awareness action, a demonstration of the “HOOP Trainers” citizen science app, which is explained in more detail in D6.4, took place with the involvement of all the participants, followed by a small presentation of 4 Portuguese case studies of various bio-based products. After this, a huge open round-table discussion took place between the case-study presenters and the other participants, focused on the bio-based products opportunities, challenges and perspective of how to turn research into business case, skills necessary to make bioeconomy happen. Finally, visits to the exhibition were made, with participants evidencing different degrees of knowledge regarding the products presented – compost, biochar, composites, insects, and struvite, among others.

## 5.4 Münster

Münster Lighthouse having already promoted the awareness raising for many years before, features local champions of the city and runs workshops regarding pyrolysis and promoted best practices.




**Table 11. Activities with Local Champion in Münster**

Title	
Activities with Local Champions	
Best Practice Promotion through Videos with LC (During the Compost-Festival)	
Date	June 17 <sup>th</sup> to 18 <sup>th</sup> 2023
Type	Live
Organizer	awm, CSCP
In cooperation with Stadtlabor Münster in the Compost-Festival	
Social Media Posts	LinkedIn
	<a href="https://www.linkedin.com/feed/update/urn:li:activity:7075753577222131713/">https://www.linkedin.com/feed/update/urn:li:activity:7075753577222131713/</a>
Social Media Posts	YouTube
	<a href="https://www.youtube.com/watch?v=7lhmCXIK-Thk">https://www.youtube.com/watch?v=7lhmCXIK-Thk</a>
Photos	
	

Münster has an active civil society, which drives topics such as sustainability and circular economy. Therefore, it was obvious to involve actors from this civil society in the planned pilot activities. As a first step, local champions, i.e. initiatives in Münster that deal with circular economy, were identified. Many of those local champions were also contributing in the compost festival, which took place in and around Münster. The compost festival thereby was dedicated to human-environment relations using compost as a starting point. The HOOP project participated during the compost festival through giving a keynote on biowaste and the HOOP project during a “circular dinner”. This circular dinner revolved around the topics of waste, circular economy, soil and water and engaged the participants which consisted of practitioners, scientists, as well as interested citizens in discussions. Furthermore, during the festival interviews were filmed with 5 different local champions. Those local

champions are active on topics such as rescued food, biochar production with self-build pyrolysis stoves, educational activities on sustainable agriculture and compost as well as the organization of the compost festival itself. From the interviews, short videos were produced, which will be disseminated by the HOOP communication channels, awm's communication channels and can be used by the local champions for their own purposes.

**Table 12. Workshop with LC on Pyrolysis and Biochar in Münster**

Title		Workshop with LC on Pyrolysis
Date		September 23 <sup>rd</sup> 2023
Type		Live
Organizer		awm, CSCP
Social Media Posts	Site	<a href="https://awm.stadt-muenster.de/aktuelles/newsdetail/workshop-zum-bau-eines-pyrolyse-ofens">https://awm.stadt-muenster.de/aktuelles/newsdetail/workshop-zum-bau-eines-pyrolyse-ofens</a>
	Twitter	<a href="https://twitter.com/awm_muenster/status/1702307053702684783?t=TsgvR3kYjzp-9ttYJSAkmQ&amp;s=19">https://twitter.com/awm_muenster/status/1702307053702684783?t=TsgvR3kYjzp-9ttYJSAkmQ&amp;s=19</a>
	Photos	   

## D6.5 REPORT ON THE EDUCATION AND AWARENESS RAISING & ACCEPTANCE ACTIVITIES



In cooperation with one of the local champions, a hands-on workshop aimed at citizens took place on the 23<sup>rd</sup> September 2023. In this workshop participants were guided to build small pyrolysis ovens for easy biochar production at home, which they were also allowed to take home. Through this workshop, residents got the chance to test and experience the pyrolysis processes first-hand and were able to discuss the benefits and drawbacks of this negative emission technology and its product, biochar. This workshop aimed to increase the acceptance of novel processes and bio-products as well as to disseminate good practices. More information can be found about the UCBE Project in Münster.



## 5.5 Murcia

Murcia organized the Circular economy fair – loop and a Biowaste Club meeting in order to engage with the stakeholders as well as the “Hello Murcia Circular Challenges” event. Finally, Murcia runs several events in the circular educational Lab – CIRCUBICA. Table 13, Table 14 and Table 15 analyse the events in more detail.



**Table 13. Circular Economy Fair-Loop in Murcia**

Title		CIRCULAR ECONOMY FAIR-LOOP
Date		February 7 <sup>th</sup> to 13 <sup>th</sup> 2022
Type		Cuartel de Artillería-Murcia
		The event was streaming (72 hours), live and have the possibility of being saved to watch later (20 hours)
Organizer		Organizer: Murcia Municipality. Moderators: Different moderators, from famous presenters in tv to experts in materials
Social Media Posts	LinkedIn	<a href="https://www.linkedin.com/company/loop-murcia/">https://www.linkedin.com/company/loop-murcia/</a>
	YouTube	<a href="https://www.youtube.com/@loopmurcia697">https://www.youtube.com/@loopmurcia697</a>
	Twitter	<a href="https://twitter.com/LoopMurcia">https://twitter.com/LoopMurcia</a>
	Facebook	<a href="https://www.facebook.com/loop.murcia">https://www.facebook.com/loop.murcia</a>
	Instagram	<a href="https://www.instagram.com/loop.murcia/">https://www.instagram.com/loop.murcia/</a>
Photos		 

The “CIRCULAR ECONOMY FAIR-LOOP” was born to raise awareness and exchange knowledge not only in bioeconomy but also in circular economy in general. A Biowaste Club Meeting was organized in the framework of this fair. This event took place in Murcia with more than 3000 attendees. During the week of the event,

politicians, university community, scientists, companies and citizens in general had the chance to get together and learn and exchange knowledge and experience in circular economy. The main goal of the fair LOOP was to get together during one week long, different profiles regarding circular economy, and also to raise awareness among citizens. In the fair, many workshops, speeches and activities were carried out. These activities were free for everyone (previous registration) and it had a big impact in social media (more than 1 million) and newspapers at regional and national level.

**Table 14. Hello Murcia / Circular Challenges in Murcia**

Title		Hello Murcia! Circular Challenges
Date		April 25 <sup>th</sup> 2023
		April 26 <sup>th</sup> to May 26 <sup>th</sup> 2023
		May 29 <sup>th</sup> to June 2 <sup>nd</sup> 2023
Type		Cuartel de Artillería, Murcia
		Live-only
Organizer		Murcia Municipality, Cetenma
Social Media Posts	LinkedIn	<a href="https://www.linkedin.com/search/results/content/?keywords=hola%20desafios%20circulares&amp;sid=%40IB&amp;update=urn%3Ali%3Afs_updateV2%3A(urn%3Ali%3Aactivity%3A7043562137310441474%2CBLLENDE_D_SEARCH_FEED%2CEMPTY%2CDEFAULT%2Cfalse)">https://www.linkedin.com/search/results/content/?keywords=hola%20desafios%20circulares&amp;sid=%40IB&amp;update=urn%3Ali%3Afs_updateV2%3A(urn%3Ali%3Aactivity%3A7043562137310441474%2CBLLENDE_D_SEARCH_FEED%2CEMPTY%2CDEFAULT%2Cfalse)</a>
	Twitter	<a href="https://twitter.com/CETENMA/status/1639216370197078017">https://twitter.com/CETENMA/status/1639216370197078017</a>
	Photos	 



**Participants**

10 different companies

**Suggested  
Idea about Bio-  
economy**

Obtain keratin from the hair from hairdressers

A competition program that started with an event for ideas, which took place on April 26<sup>th</sup> 2023, in Murcia. This was an event with an innovative methodology in which participants worked as a team on the challenge they want to add value to (urban sustainability) led by circular economy professionals and dynamic experts, through presentations and workshops on business models, value propositions and mentoring

In a second phase, in the following four weeks, participants developed, together with their teams, the implementation of their solution through group mentoring sessions with feedback from specialized coaches regarding circularization methodologies, validation experiments, pricing strategies. The third phase took place between May 29<sup>th</sup> and June 2<sup>nd</sup>, in which participants had to convince the jury with their idea for Murcia to be a more sustainable, intelligent, and resilient municipality. The program ended with a grand award event that took place in June 2023, in which the winners were announced.

**Table 15. Circular Educational Lab - Circubica in Murcia**

<b>Title</b>	CIRCULAR EDUCATIONAL LAB – CIRCUBICA	
<b>Date</b>	Permanent venue for circular education	
<b>Type</b>	Cuartel de Artillería, Murcia	
	Live-only	
<b>Organizer</b>	Murcia Municipality, Cetenma	
<b>Social Media Posts</b>	<b>Site</b>	<a href="https://www.laboratoriodeeducacioncircu-lar.com/">https://www.laboratoriodeeducacioncircu-lar.com/</a>
	<b>Twitter</b>	<a href="https://twitter.com/CETENMA/status/1639216370197078017">https://twitter.com/CETENMA/status/1639216370197078017</a>

### Photos



The concept behind the design of this venue was to create a place where private companies could donate their waste. Those wastes are cleaned and sorted in order to give them an opportunity for a second life. Additionally, in the “CIRCULAR EDUCATIONAL LAB” children are able to play with these “products” and artists have the chance to use them for their design.

## 5.6 Bergen

Bergen ran a yearly program in schools related to insect farms. Table 16 explains the idea and the implementation of the program.

**Table 16. Insect farm in Bergen**

Title		Insect farm
Date		2022-2023
Type		In person, at Local primary schools and kindergartens
Organizer		BIR communication department
Social Media Posts	Site	Not Available

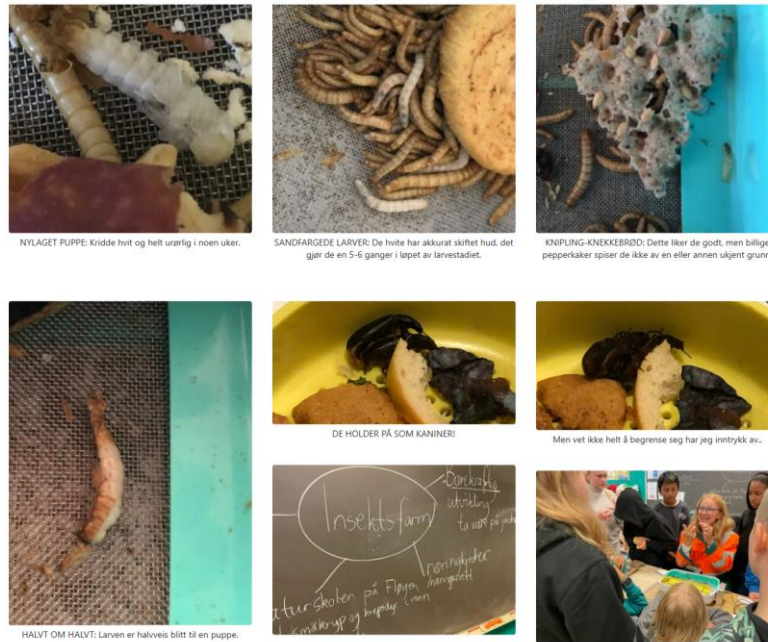
### Photos



TID FOR Å SMÅKE: Familie trinn på lysthøveden skole var ikke vanskelig å be i. Mange kan jo godt forstå og kjenne igjen den følelsen du har når du lurer på om du skal tørre å smake på noe nytt, altså om du skal spise matbollarne, eller ei. De fleste elevene tørte å smake etter litt frem og tilbake, og da klirret stemningen og energien i klassen ganske mye, for da som tørde å smake bli jo så fornøyd med innsatsten sin!



STOR BEGISTRING: Sjeldent får vi anledning til å stille for insekter, passe på dem og sørge for at de har alt det de trenger for å overleve (riktig temperatur, mat, vann og leveforhold).



### Main Comments after the Event

Hello BIR

This was very exciting. The edible larvae were eaten right away. Many learning points about life cycles and possible use of insects. We will be happy to lend it again later!

Gerran kindergarden teacher

Hello Tina!

Thank you for lending, it has been a very good experience and much learning!

We have enjoyed beetle-racing, observations and task solving. As a biologist I imagine how much pupils enjoy a different learning situation and getting close to nature, even in the classroom!


These insects' farms were basically consisting of mealworm terrariums (2 boxes) that were obtained from In-vertapro which is a startup producing yellow mealworms and involved in one of the UCBE projects in Bergen. Firstly, they were used at big events where people could see and feed larvae supervised by BIR staff. Later the idea developed was that the boxes could be borrowed out for a week. This was very popular, and two boxes have been travelling around constantly, except on holidays. Teachers come and collect the box and deliver it back to BIR after a week. Teachers report that pupils are engaged in learning about biology, nutrition, and circular ecosystems. Observing insects breaks down barriers and conceptions about insects and small organisms. It is important that pupils are allowed to observe, touch, feed, and care for the insects. This gives better learning than theoretical learning.

Next to the insect farms Bergen also aimed to implement local champions activities. Many local champions already take part in a yearly event on circular economy practices, namely the Reuse Week. Therefore, the identification of the local champions was done on the basis of the existing event. After the identification of the local champions, the LH started to conduct a booklet which includes interviews of local champions. So far, the booklet includes three local champions. Furthermore, the LH is considering additionally interviewing those local champions in the scope of the Reuse Week. Similar to the activities in Münster, the aim is to create videos that inspire further citizens and other stakeholders in the circular economy and lead the way in up-scaling their circular ideas and practices.

## 5.7 Almere

The city of Almere started in 2023 information campaigns for the citizens in order to promote the new system of collection.

**Table 17. Information Campaign for new containers in Almere**

<b>Title</b>		Information Campaign for new containers in Almer
<b>Date</b>		Continuous from 2023
<b>Type</b>		Social media and video campaign
<b>Organizer</b>		City of Almere
<b>Social Media Posts</b>	<b>Site</b>	<a href="https://english.almere.nl/waste-and-recycling">https://english.almere.nl/waste-and-recycling</a>
	<b>Facebook</b>	<a href="https://www.facebook.com/ge-meentealmere/videos/207410165652130">https://www.facebook.com/ge-meentealmere/videos/207410165652130</a>
<b>Photos</b>		 

The city of Almere recently modified the way garbage is collected by putting in a new system of containers. Alongside this action, information is being disseminated to the public in an effort to raise awareness of the need for better biowaste separation. The city is also preparing a broader marketing campaign and the implementation of a monitoring system to assess the impact of this adjustment. Finally, Almere introduced the “Waste Trainer” who creates videos to promote the new collection system of the city. The videos are available in the Facebook page of the City of Almere.



## 5.8 Kuopio

City of Kuopio had three meetings with local stakeholders for engagement purposes of the HOOP Project.

The first meeting took place in order to discuss about the currently high grade uses of lime for the reject stabilization. The price of lime is increasing, so an alternative and less expensive lime or other stabilization material should be found. The alternative material should have low concentration of heavy metals and other harmful chemicals. Some industrial side streams have been looked at, but no suitable alternative has been found yet.

The second meeting had as main topic the activities that Gasum Ltd has with the UWWWS and OFMSW. The discussion concentrated on the biogas production unit that Gasum Ltd has in Kuopio. Gasum has a plan to upgrade and expand production in Kuopio in the near future. The exact timetable for the expansion is not yet revealed but it should be in the next few years. Currently the energy output from Gasum Kuopio is about 30 GWh per year. Another topic that was discussed one more time was the use of lime. Currently Gasum Ltd uses high grade lime for the reject stabilization. Gasum is looking for an alternative to lime due to lime's high price.

Finally, the third's meeting main topic was to clarify the activities that Jätekuukko has with the OFMSW. Jätekuukko has a plan to upgrade and expand waste sorting in Kuopio in the near future. The exact timetable for the expansion is not yet revealed but it should be in the next few years. Jätekuukko is looking for companies and activities that would bring something new to the Jätekuukko area. The new company or activity should also support companies already operating there.

Another topic that was discussed is the collection and reuse of textiles. A new waste directive (active since 1<sup>st</sup> January 2023) requires collection and reuse/recycling of the textile waste. At the moment textile waste is mostly burned for energy, but this should stop and the textile should be reused as such or turned into raw materials for reuse. Jätekuukko is considering different options on how to organise the collection and what to do with the collected material. One option is to have a big textile recycling centre Kuopio where the material is turned into fibre-like raw material for the textile industry.



## 6. Future Activities

After the pilot actions that were implemented and presented to the previous chapters, all Lighthouses were asked to continue the implementation of such actions regarding education and awareness raising, and acceptance. This chapter presents the planned future activities for each Lighthouse.

Almere, wants to promote the new waste collection system that is introduced to the citizens through information campaigns via social media including infographics, short videos, and photographs. Furthermore, the City of Almere is planning to have biobased products exhibitions and combine the National Replication Workshop with existing event “Fibertastics” (entrepreneurs and governmental staff as target group). The general idea is to offer workshops in one timeslot during the events. Furthermore, Almere is planning to organize a biowaste-based product expo that will coincide with other circular economy-related activities. To bring to citizen meetings, the city of Almere would like to establish a mobile display showcasing items made from biowaste. Additionally, HOOP information booths displaying some of the city's open markets may be found.

Bergen is organizing the “Reuse Week” in November 2023 and is planning to organize a Biowaste Club Meeting in order to raise awareness and to achieve acceptance of bioproducts. Moreover, they want to promote the Local Champions to encourage more and more people to be part of this initiative to bring them to the forefront. Finally, Bergen started to look at the scheduled events for next year to step up any further actions.

Albano Laziale, is trying to create synergies with schools to raise the awareness about biowaste and to create gadgets that can be given to students such as compost containers. Also, they want to continue working with local champions that started from SCALIBUR project and potentially to give them some kind of rewards.

Greater Porto, intends to have actions in cafeterias for raising awareness about biowaste and spent coffee grounds. Also, the bio-based products exhibitions is still running until the end of November 2023.

Münster is currently planning a BCM in November 2023 to discuss pyrolysis with technical experts and municipal stakeholders with a special emphasis on “Stockholm-model”. By the end of September 2023, they offered a workshop to citizens to build mini pyrolysis ovens for their own use and an interactive session is included to discuss pyrolysis technology in general. At the same time, they are organizing also another workshop with students to discuss the results of the “HOOP Trainers” citizen science app. Finally, a video concerning the actions of their local champions is ready to be published.

Western Macedonia Region is planning to continue the school visits across the region setting a target of one school per week. Also, when big events are taking place, is planning to organize bio-based product exhibitions and games made from wastes. Moreover, during the Waste Reduction Week in November 2023 will organize several workshops for reuse and recycle, such as bee wax fabrics, trash art, and Do It Yourself. Finally, they are planning to further expand the Local Champions by organizing inspirational speeches to the citizens.

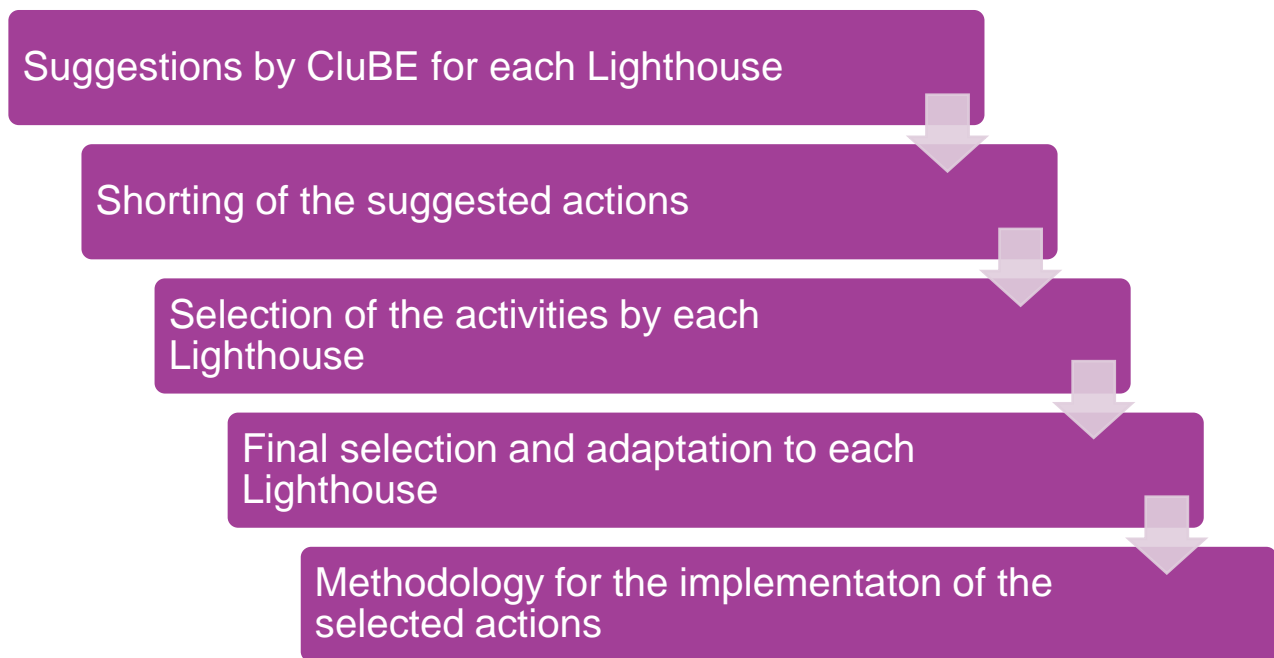
Table 18 below categorizes the future actions that the Lighthouses intend to implement in the near future.

Table 18. Categorized List of Future Activities

Planned Activities	Lighthouse
Action in Cafeterias	Greater Porto
Bio-based Exhibition	Almere, Western Macedonia, Greater Porto
Actions with Local Champions	Bergen, Albano Laziale, Western Macedonia, Münster
School Visits	Albano Laziale, Western Macedonia
Information Campaigns	Almere
Workshops	Almere

## 7. Conclusions

This Deliverable outlines the procedures that followed in order all Lighthouses to be familiar with actions related to the education and awareness raising and acceptance activities. CluBE introduced a route to the Lighthouses in order to select the activities that fit better to their case in 5 steps. These steps are presented in the graph below.



**Figure 13. The step-by-step procedure for the implementation of the Task 6.4**

The implementation of all these actions that took place in most of the Lighthouses created a library of actions for future events related to circular economy. It is worth mentioning that in the implementation phase, each Lighthouse may differ from the original plans in order to achieve the HOOP goals of the Task 6.4 and according to the schedule of each City/Region that may change due to the challenges described later in this chapter.

Some of the challenges that came up during the implementation of the Task 6.4 are:

- *Getting the appropriate permissions, especially for schools is always a challenge due to the age of the audience. Many times, needed to get permissions from the parents.*
- *Gather audience is always a challenge for such events.*

## D6.5 REPORT ON THE EDUCATION AND AWARENESS RAISING & ACCEPTANCE ACTIVITIES

- *Preparation of the appropriate material for specific target groups. The material is different for children and elderly people.*
- *Weather conditions for outdoor activities.*
- *Covid-19.*
- *Changing attitude of the audience – difficult to accept new behaviors, especially when promoting new ways of waste sorting or the use of biobased products.*
- *Promotion of digital campaigns – no interest.*
- *Lack of interest.*
- *Very low participation.*

Despite, the challenges, the Lighthouses managed to implement their activities regarding citizens awareness and to promote the HOOP Key objectives. The positive impact is that the Lighthouses trained to select tailor made actions for promoting circular economy and acceptance of products different from the usual.

Most of the Lighthouses implemented several actions in order to raise the awareness, to impact on the educational techniques in order to change the behavior of the citizens as well as to promote the wider use of the bio-based products. This report can be used as a future guide for all Lighthouses and other cities that joined the HOOP Network of Cities and Regions in order to be inspired on how to implement activities with the citizens.

The bio-based products exhibitions is a tool in order the audience to feel and touch these products and to start using them in their everyday life. This helps the environmental consciousness, and it is changing behaviors of the past that cause only negative impacts to the environment. Moreover, most of the businesses are forced to transform their products by using sustainable materials in order to comply with the EU legislation.

The school visits are the most powerful way to promote the recycling, upcycling and waste reduction behaviors because the behavioral change starts from the young people. The children are a vehicle that they are passing all the information to their households and as a result the audience getting wider.

Some of the main learnings gained from the actions are:

- *Raising awareness of circular economy and highlighted the importance of citizen engagement.*
- *Inspiring citizens to adopt sustainable consumption habits and behavior patterns.*
- *Promoting new sustainable services, e.g., sharing economy, lengthening product life cycles through reuse, repair, remanufacturing and refurbishment.*
- *Further encouraging waste reduction, energy savings and circular thinking.*

Having in mind the learnings from the pilot actions as well as the methodology that used from the selection of the activities until the implementation, these actions can be turned into new “best practices” and transferred into the various dissemination and replication tools.

Together with the Biowaste Club members, each Lighthouse can identify pathways about how the pilot actions can be extended and how the developed outcomes (tools, training materials, etc.) will be used further after the end of the HOOP project.

## 8. Annex



Task 6.4: Pilot actions on education and awareness raising & acceptance of biowaste-derived products

### WHAT

The aim of this exercise is to identify possible pilot actions that can be implemented in the Lighthouses until M36. The pilot actions should focus on education and awareness raising, as well as increasing the acceptance of biowaste derived products. Below you can find a list with suggestions about what these actions could be. Ideally, we want to connect this Task to other activities already happening in the Lighthouses.

Hint: Pilot actions are *implementation related activities* that aim to test a new solution and have the potential to be replicated and/or scaled up.



### HOW

Below we have prepared a list of possible pilot activities on awareness raising and increasing acceptance. You can choose **one or two** pilot activities from the list, depending on what is most suitable for your Lighthouse, or suggest other activities that you would like to try in the local context and you think are fitting to the task objectives.

Figure 14. Screenshot taken from the MIRO board.



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## Suggested activities

Information campaigns (social media, local press, online portals)	Neighborhood actions (e.g. communal composting, urban gardening, etc.)	Design thinking workshops with engaged community members
DIY upcycling workshops (e.g. beeswax wraps)	DIY upcycling workshops (e.g. beeswax wraps)	Learn through play activities for kids (sorting games, games made out of recyclable)
Focus groups for biobased products (1 month at home trial)	Explainer videos on biobased products	Biobased products exhibitions
	Train the trainer programmes for school faculty (integration in school curricula)	

**Figure 15.** List of the most popular suggested activities

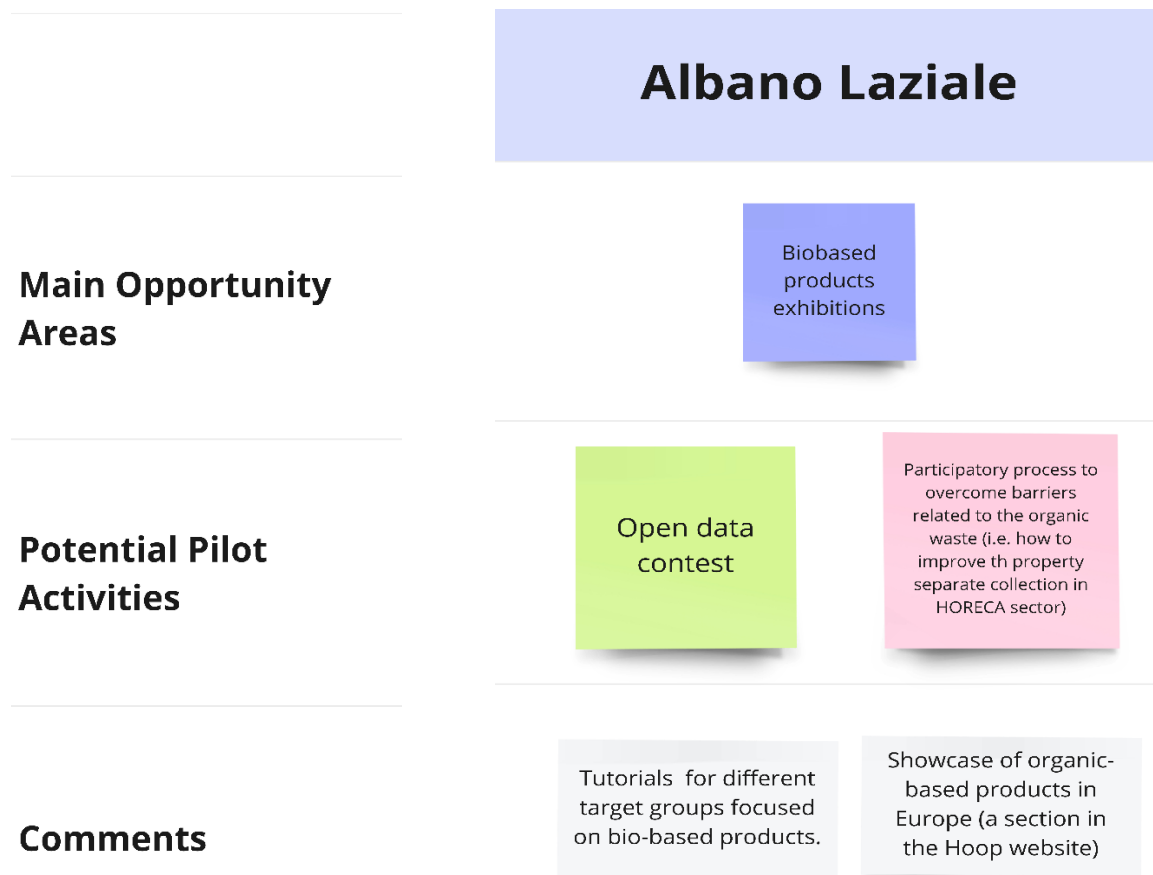


Figure 16. MIRO inputs of Albano Laziale Lighthouse



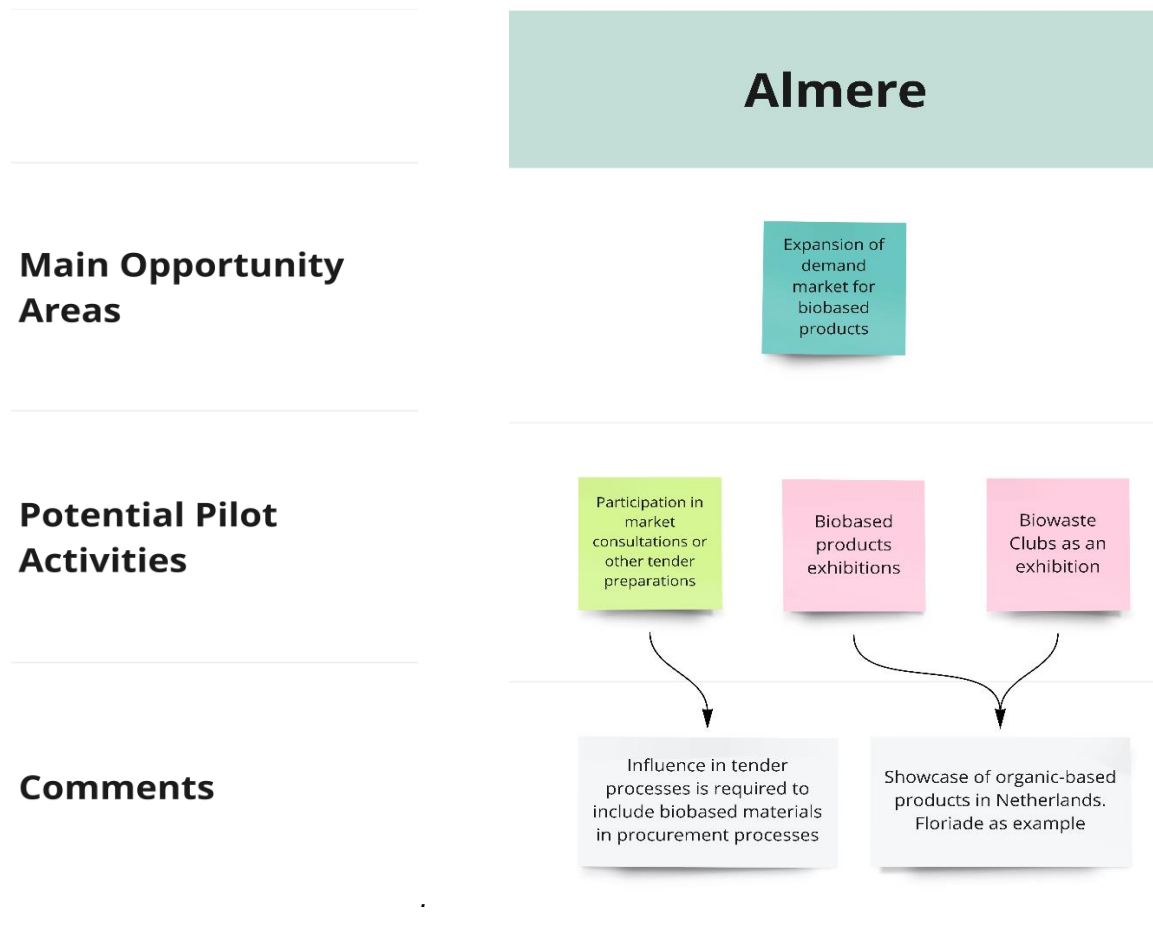


Figure 17. MIRO inputs of Almere Lighthouse

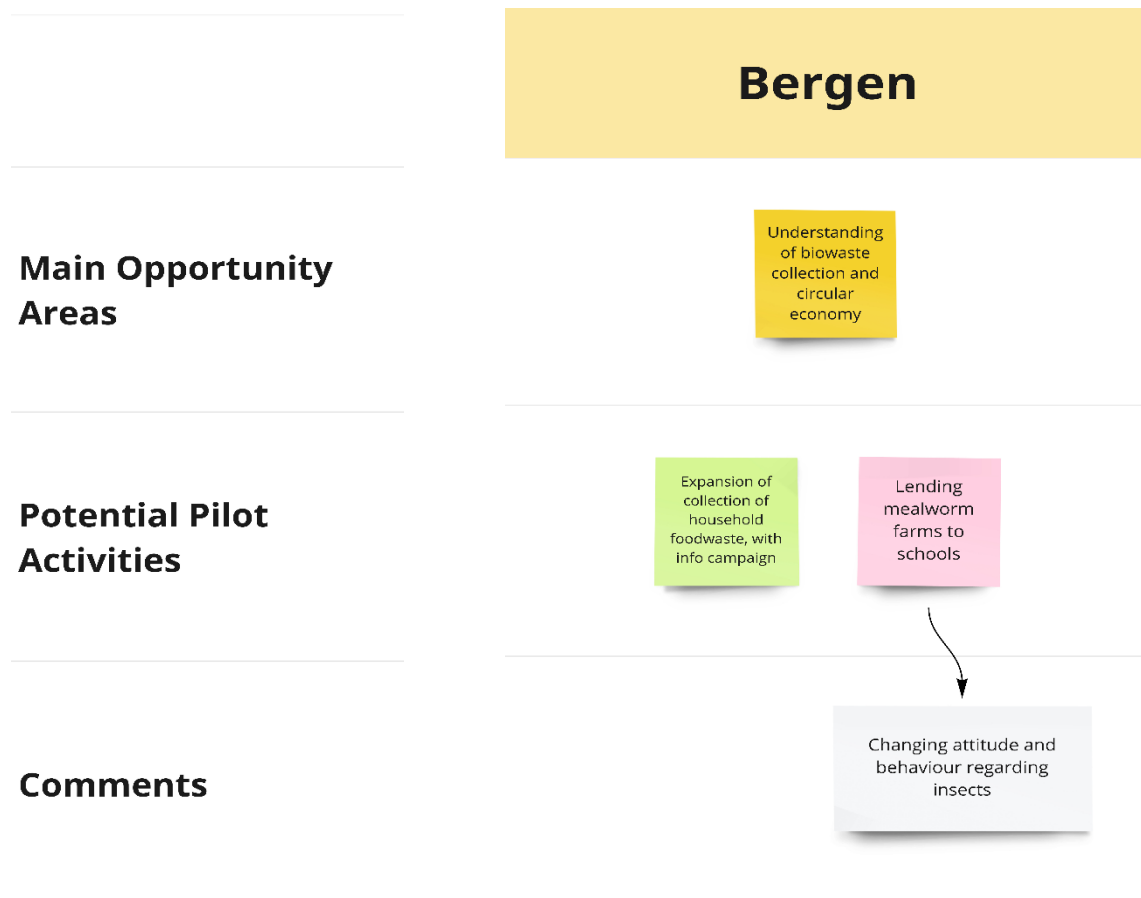


Figure 18. MIRO inputs of Bergen Lighthouse



Figure 19. MIRO inputs of Kuopio Lighthouse

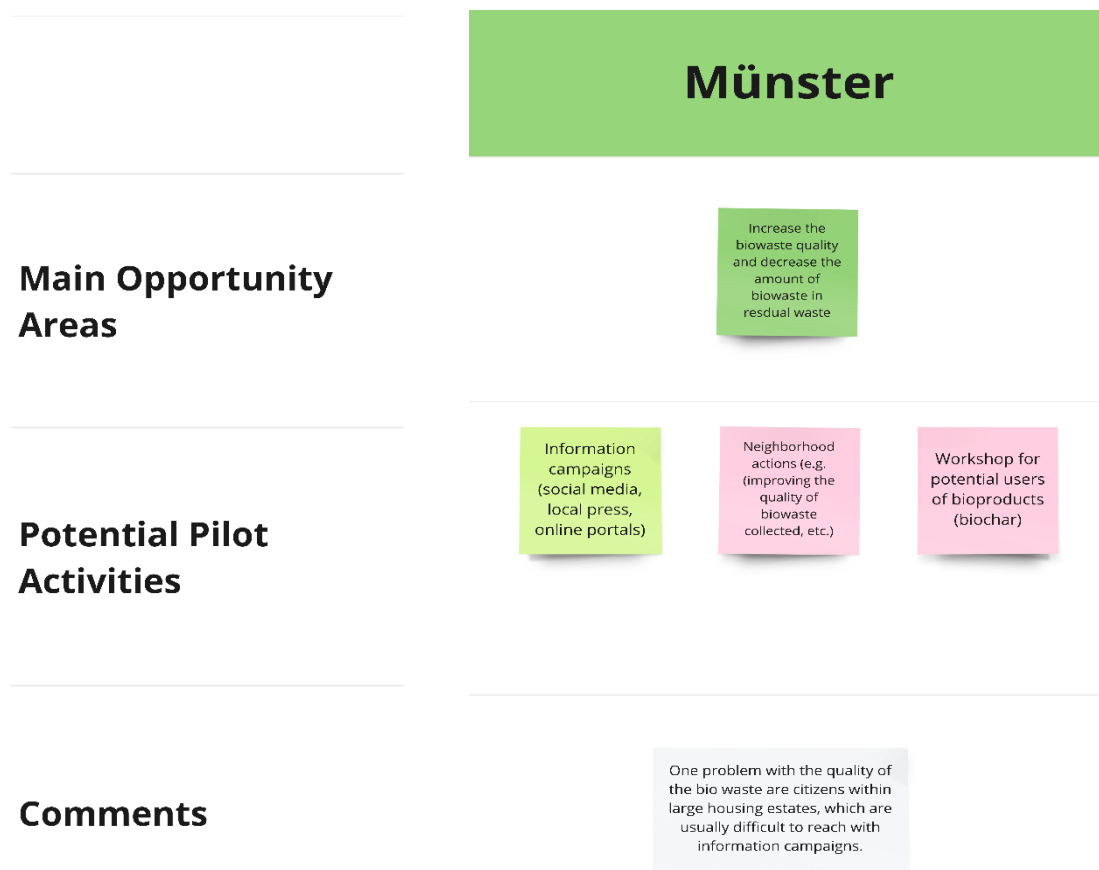


Figure 20. MIRO inputs of Munster Lighthouse



Figure 21. MIRO inputs of Murcia Lighthouse



Figure 22. MIRO inputs of Porto Lighthouse

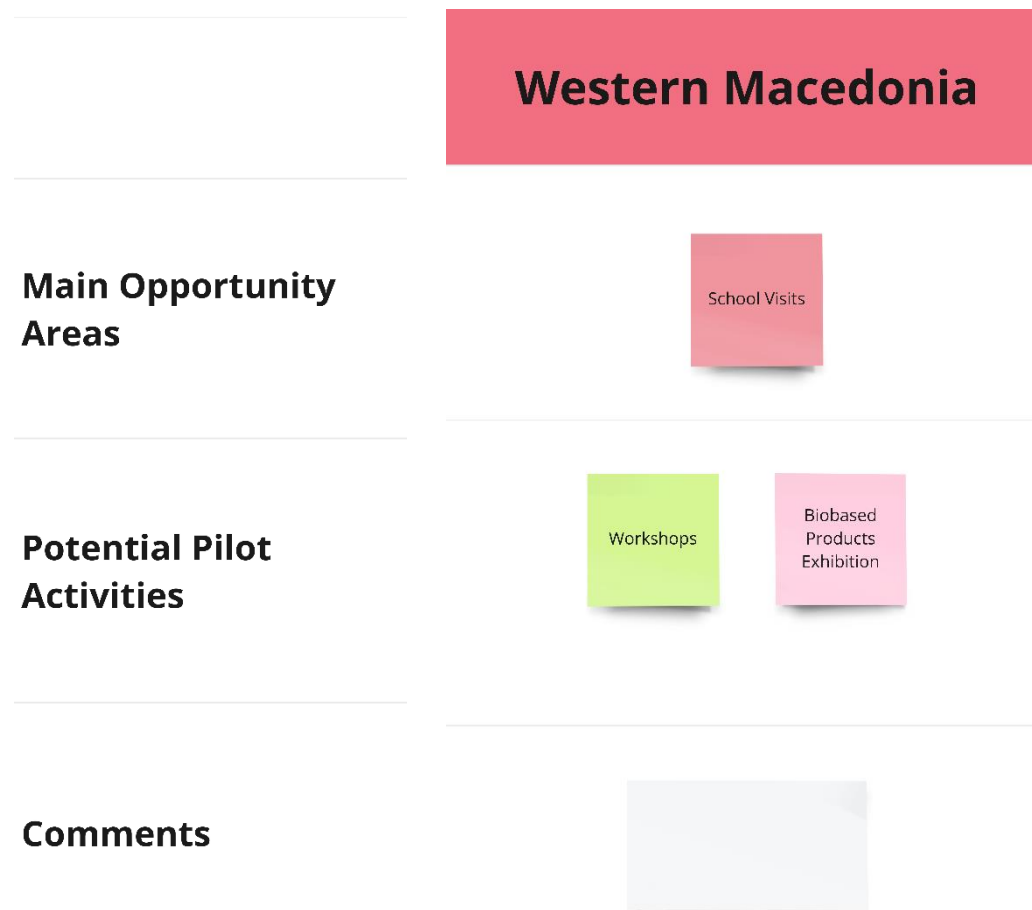


Figure 23. MIRO inputs of Western Macedonia Lighthouse