Exploring the circular bioeconomy potential in cities

# BIO CIRCULAR CITIES

## How to improve biowaste management in the AMB

**Metropolitan Area of Barcelona**

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Barcelona, 13.09.2023 – 3rd BCC Webinar

This project has received funding from the Bio-based Industries Joint Undertaking (JU) under the European Union's Horizon 2020 research and innovation programme under grant agreement No 101023516.
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# Metropolitan area of Barcelona

## CATALONIA

**7.500.000**
million people

**32.108**
km²

**236**
inhabitants / km²

**3.620.199**
t MSW

## METROPOLITAN AREA OF BARCELONA

**3.200.000** (42.6%)
million people

**636** (1.9%)
km²

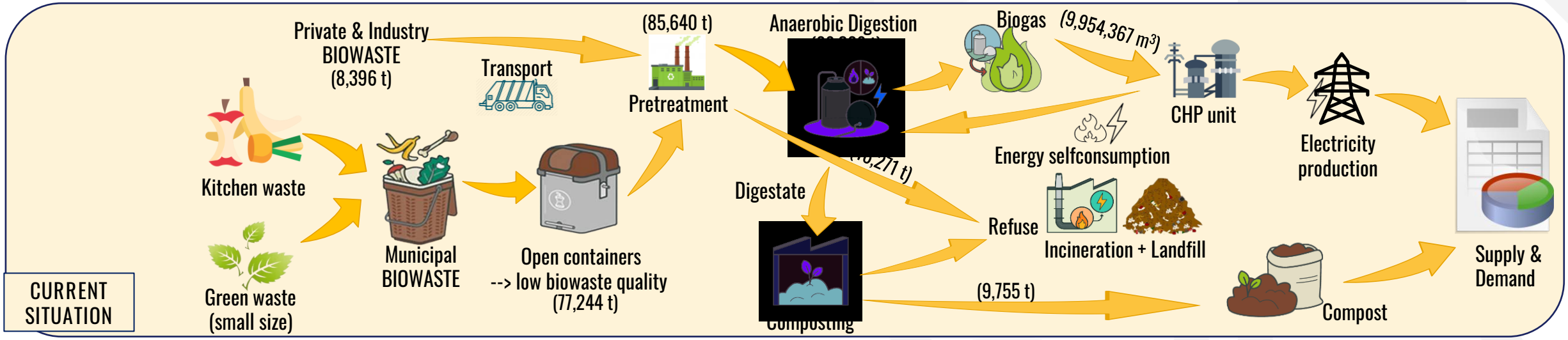
**5.093**
inhabitants / km²

**1.475.000**
t MSW

- 36 municipalities with competences on waste collection
- AMB supramunicipal administration responsible for waste treatment
- Industrial and service is the main economy
- Tourism has high economic importance

# Presentation of the value chain at stake

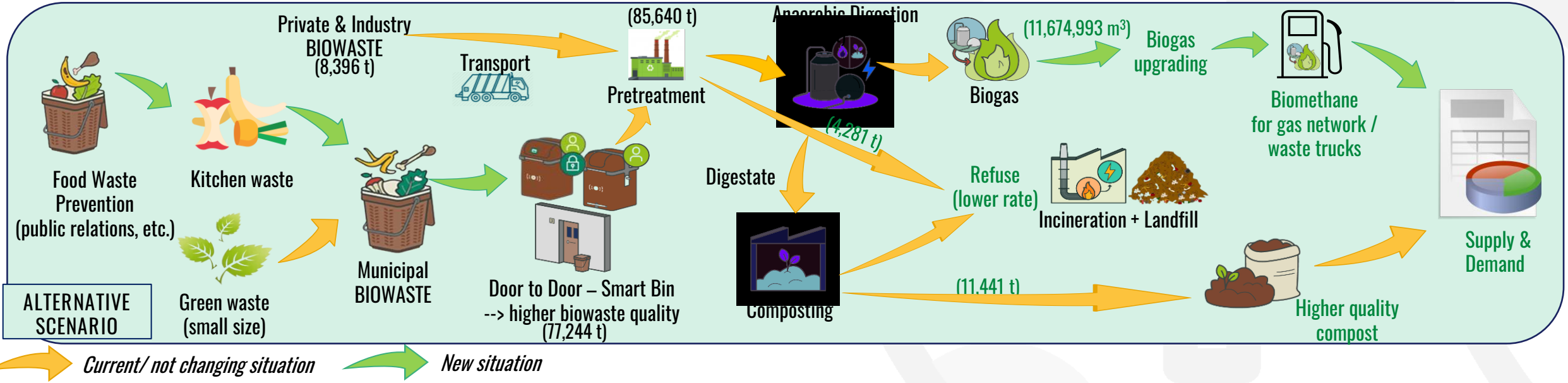
## Biowaste from MSW




Biowaste separately collected from MSW in open bins containers are going through anaerobic digestion to produce biogas and digestate.

# Presentation of the alternative scenario

Biowaste from MSW




The alternative scenario introduces food waste prevention measures to reduce the quantity of biowaste produce. To improve the quality and the quantity of the biowaste collected, more efficient system as Door to Door and smarts bins collection systems are used. Finally, to produce added value bioproducts, biogas from the anaerobic digestion is upgrade to biomethane.

# Stakeholder involvement

LOCAL LEVEL

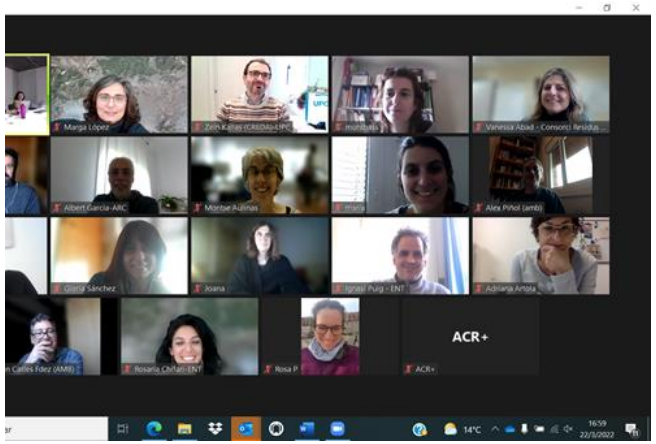
Multi-actor contribution
List of potential stakeholders

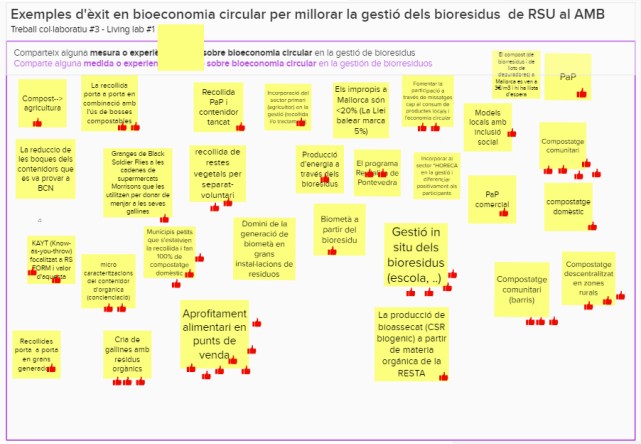
- Local administrations
- Regional administrations
- SMEs
- Researchers
- Educational representatives
- Environmental consultants

- Online dynamics: Miro, Slido
- Presential dynamics: workgroups, round table

| Living Lab #1 *March 2022* | Living Lab #2 *September 2022* | Living Lab 3 *March 2023* | Final event *July 2023* |
|---|---|---|---|
| Current biowaste management system, challenges and best practices | Regulatory and market bottlenecks and sustainable drivers to circular bioeconomy implementation | Preliminary set of policy recommendations to circular bioeconomy implementation based on preliminary results of LCA and LCC. Webtool prototype presentation | Definitive results of LCT and recommendations for politicians and entrepreneurs for each pilots Definitive Webtool presentation and test |
| Online event | Presential event | Online event | Presential event |

# Stakeholder involvement





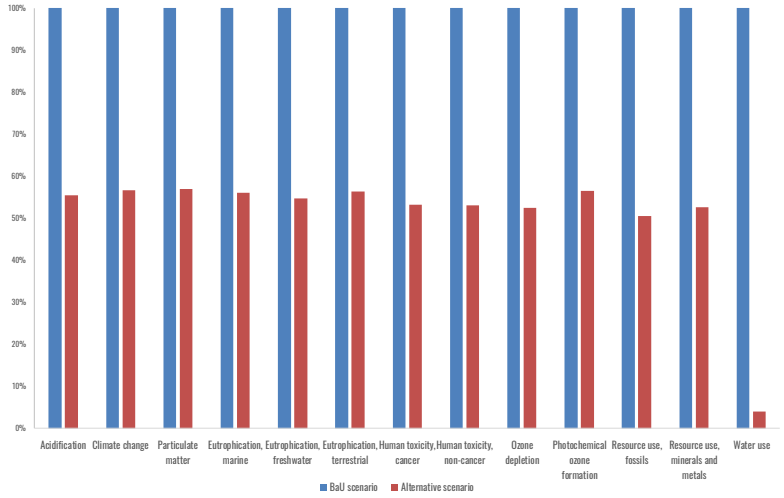
l'elecció d'una determinada tecnologia per a la gestió de bioresidus? Ordena les respostes que s'enumeren a continuació de més a menys important:

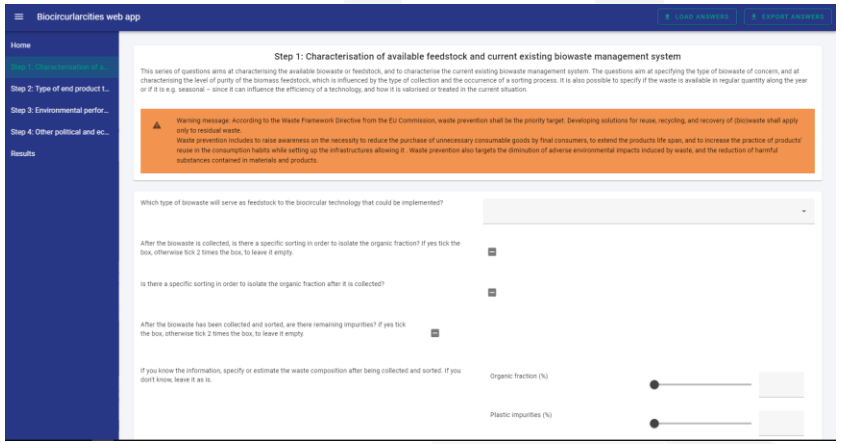
Ranking Poll · 8 votes · 8 participants

1. Gestió i ús sostenible dels recursos biològics — 6.4
2. Millor tecnologia disponible — 5.6
3. Incentius i accions per donar suport a la transició del mercat cap a una bioeconomia circular sostenible — 5.4
4. Qualitat i disponibilitat de matèries primeres — 5.3

# Stakeholder involvement

- Stakeholders provided valuable feedback on each living lab:
  - They help us to identify the challenges of the waste management, best practices already in place and the drivers and barriers of the bioeconomy implementation.
  - They gave us feedback on the LCC/LCA analyses and the web tool prototype



# Stakeholder involvement. Main inputs

- It could be easier to treat biowaste if the quality is good. Biowaste is a field with a lot of future that may not have been highlighted yet.
- Technologies are ready but that means that lot of money must be invested, and work should be done to reach the market.
- They suggest that to extend the use of the webtool to other case studies it would be important to strengthen the technical characterization of technologies (e.g., splitting each technology into different variants), to add more choices of technologies and to add a detailed analysis of the policy context, in particular the available economic incentives

# Status of the implementation

- Focus on improving the quality of the biowaste separately collected
  - 4 municipalities collect biowaste DxD
  - 3 municipalities collect biowaste with smart bins


- New collections taxes base on participation on the biowaste collection.
- The upgrading to biomethane is not implemented yet.

# Main conclusions and lessons learnt

- Food prevention measures would help to reduce the quantity of biowaste collected.
- Improving the quality of the biowaste separated collected must be one of the focus points.
- New regulation to make more efficient collecting systems (door to door or smarts bins) compulsory is needed or regulation to ban open bin containers.
- LCC/LCA play a significant role in terms to choose the best technology to treat the biowaste stream. In the decision-making process the answers about if you take into consideration the environmental impact associated to this technology have reflected the diversity background of the stakeholders.
- The web tool prototype could be a good tool to help choosing the right technology.
- It has been a bit difficult to engage stakeholders from private companies.
- Online events tend to have more participants, but they are less engaged on debate.

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# Thank you

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