



BIO CIRCULAR CITIES

Exploring the circular
bioeconomy potential
in cities

Stakeholder Engagement through Living Labs,
Peer Review Sessions, and Advisory Board?

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BIOCIRCULARCITIES

Exploring the circular bioeconomy potential in cities.
Proactive tools for implementation by policy makers and stakeholders



Coordination and Support Action



Aim

- Supporting the development of innovative regulatory frameworks aligned with CBE principles
- Exploring models for valorising unexploited bio-based waste streams in 3 pilot areas

Discover Biocircularcities in video

https://youtu.be/kMQp_vmlWqE English version

Watch this video also in Bulgarian, Catalan, Italian, or Spanish.

8 consortium partners



BIOCIRCULARCITIES – 3 pilot areas with different selected value chains



Metropolitan Area of Barcelona (MAB, Spain) Separately collected biowaste

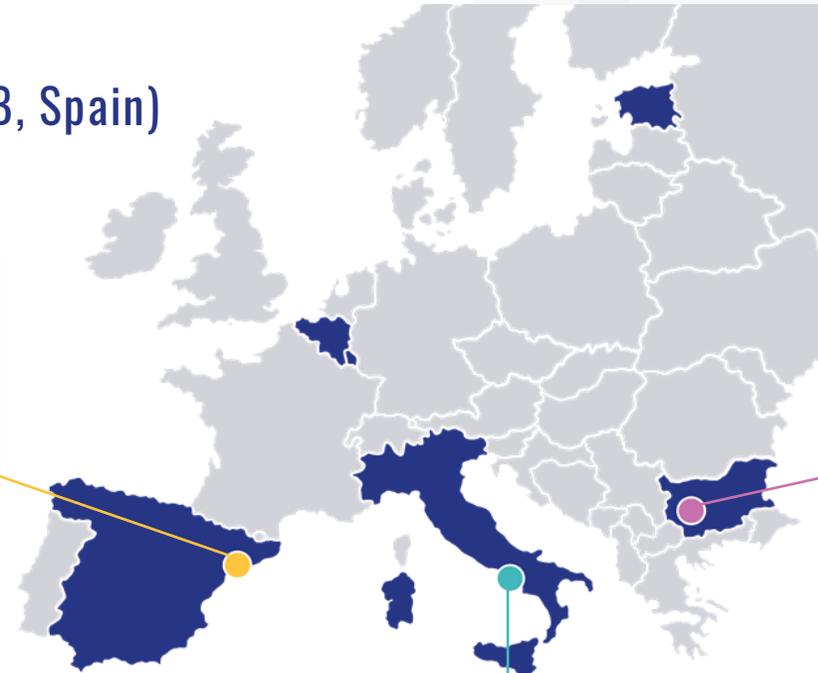


Metropolitan Area of
Barcelona (ES)



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- Improving separate biowaste collection
- Upgrading biogas from anaerobic digestion into biomethane for the local gas grid



Pazardzhik Province (PP, Bulgaria) Forestry residues



Region of
Pazardzhik (BG)



- Lignocellulosic valorisation (production of biobased chemicals)
- CHP plants (bioenergy)

Metropolitan City of Naples (MCN, Italy) Agro-industrial organic waste

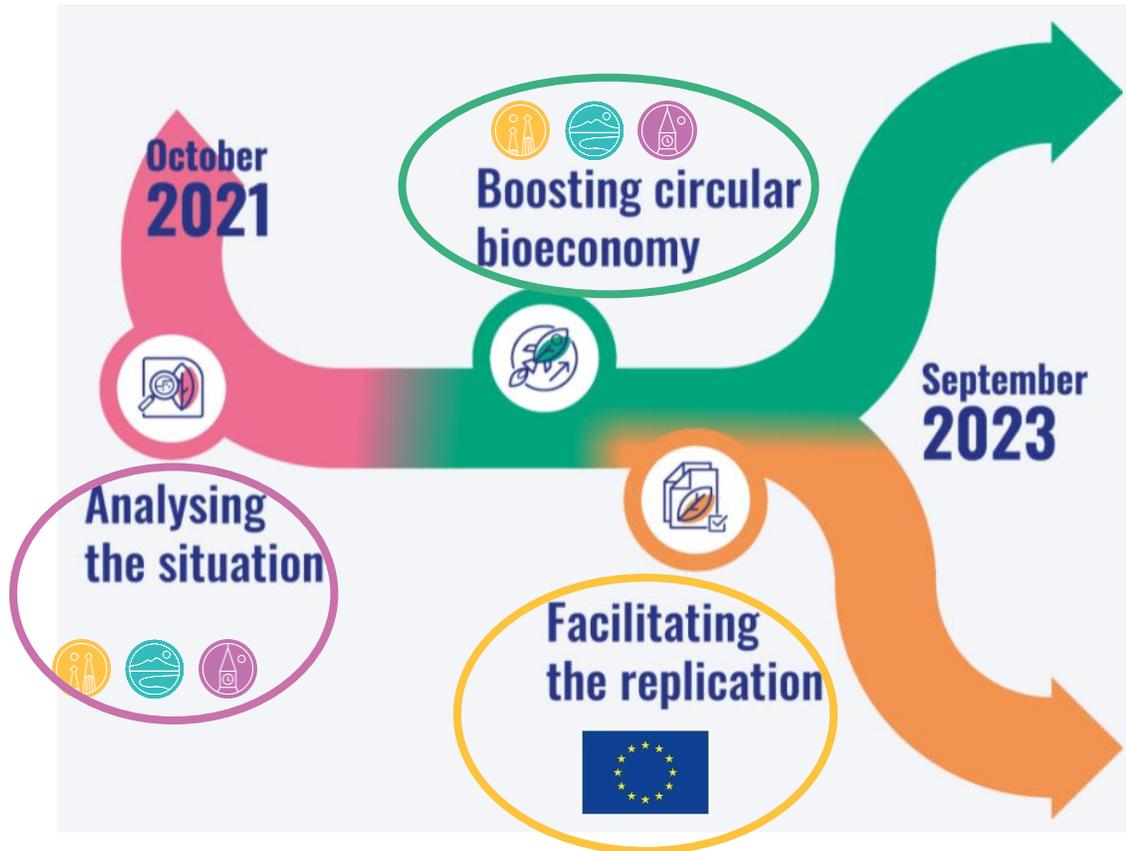


Metropolitan City of
Naples (IT)



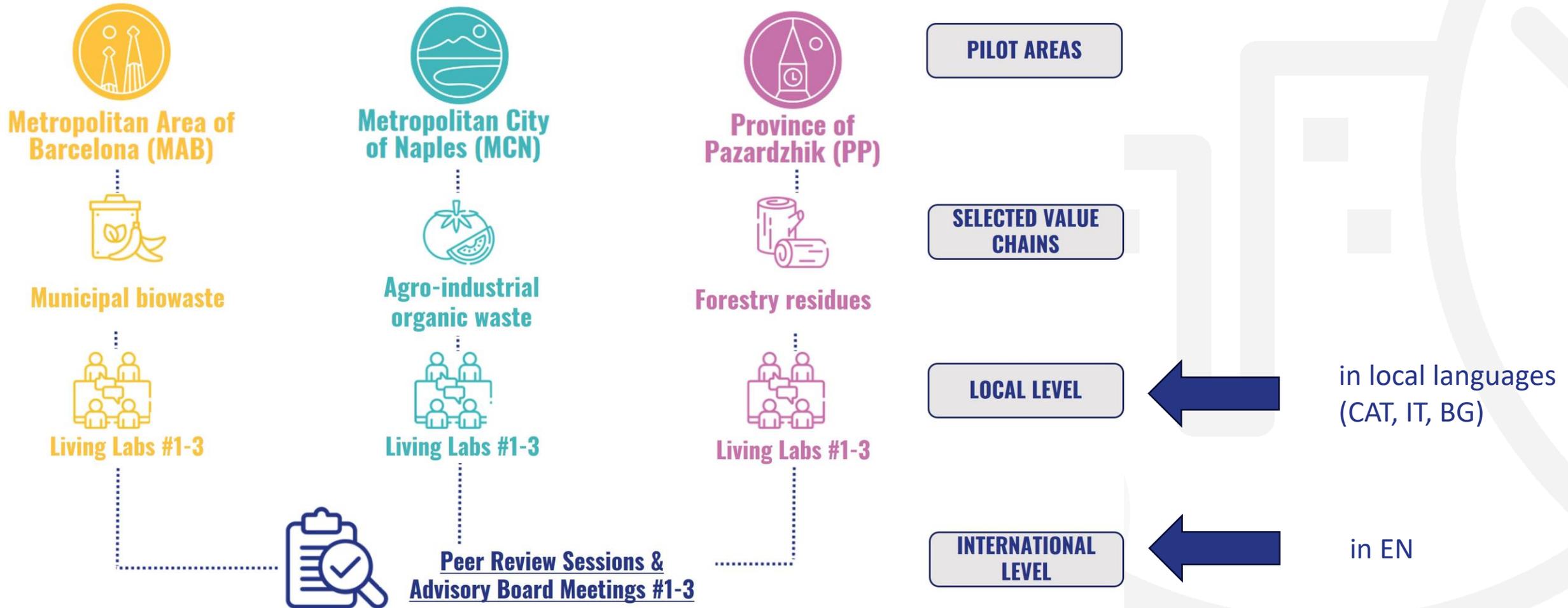
- Processing coffee roasting residues (coffee silverskin) into functional ingredients

BIOCIRCULARCITIES – Main outcomes



- WP2: LCA and LCC of the 3 selected pilot value chains to compare the current state with the alternative scenarios.
- WP3: Biowaste-related policy recommendations based on drivers and barriers identified in the policy framework of the 3 selected value chains
- WP4: Web-based tool to assist policy makers and industry in designing biowaste management strategies
- WP5: Multi-actor approach: Continuous involvement of local and international stakeholders in the project outcomes.

Multi-actor contribution



Advisory Board Members

- John Vos from **Biomass Technology Group** (Netherlands),
- Elvira Buonocore from **Dept. of Science and Technology in University of Naples** (ITALY),
- Francesc Giro from **Catalan Waste Agency** (SAPIN)
- Sara Cantone from **SPING - Italian of circular BioEconomy Cluster** (ITALY)
- Barna Kovacs from **BIOEAST** (HUNGARY)
- Holger Gerdes from **Ecologic Institute** (Belgium)
- Nora Szarka from **DBFZ-German Biomass Research Center** (Germany)

Peer reviewers

- 5-8 people
- Chosen according to SPECIFIC needs and questions
- For exemple: many questions about forestry residues (PP chain)
 - search for forestry experts and BBI working with lignocellulosic valorisation

How did we select the LL stakeholders?

9 groups of relevant stakeholders involved the 3 biowaste management systems:

- 1) **Academic and Research institutions:** institutions that perform research specialised in producing and disseminating scientific knowledge, in order to favour the transfer of knowledge.
- 2) **Local Authority:** responsible for developing local policies in order to improve the sustainability of waste management through incentives, resolution of logistic bottlenecks and specific regulations.
- 3) **Local Waste Management Authority:** technical staff supervising the local biowaste management.
- 4) **Companies in charge of managing biowaste:** public or private bodies managing collection, recover, recycling and disposal of biowaste in the pilot areas.
- 5) **Companies valorising biowaste:** public or private bodies transforming the biowaste in added value products.
- 6) **NGOs (including Trade Unions):** operate independently from the government and engage concerned members of civil society, can mobilise and structure public opinion, and advocate for a multitude of issues, such as social rights, environmental preservation, consumer's rights, and many others.
- 7) **Communities:** group of people that can be potentially affected by circular bioeconomy actions, unorganised citizens but also informal organisations like neighbourhood activists, indigenous communities, and a variety of civil society activism forms.
- 8) **Professional Associations:** group of people engaged in the same profession, able to provide technical advice to achieve advancements in the prevention and management of biowaste.
- 9) **Mass media:** local mass media to promote the BCC initiatives.

Living Lab Participants

Local Stakeholders - Area Metropolitan City c																		
N°	Partner	Name of stakeholder	Entity	Related project task/s	Language of preference	Contact details	Final event	Seat invitation mail	Confirmation/ participation (Y/N)	Confirmation received (date)	Agenda	2nd LL: Seat invitation mail	Seat invitation mail	2nd LL: Confirmation/ participation	2nd LL Agenda	3rd LL invitation	3rd LL Confirmation	Note for 1st Living Lab
1	ENT - Rosario	Alberto Grosso	ARPAC	T2.1, T5.3.1;	Italian	a.grosso@arpacompanya.it	yes	02/02/2022	Y	02/02/2022	Y	Y	18/07/2022		YES	YES	NO	pec (data requested) sent from CMNA on Feb 18. Email to send by Friday
2	CMNA -Enrica	Ettore Nardi	Consigliere Segretario Fondazione Ordine degli Ingegneri di Napoli		Italian	ettore_nardi@cmna.com	yes	17/02/2022	Y	17/02/2022	Y	Y	19/07/2022	Yes. Confirmation received verbally	YES	YES	YES	proactive. confirmation received by email and verbally. To be asked topic that he wants to share and some questions from us.
3	CMNA-Enrica	Angelo Bruscolo	CEO waste management company		Italian	angelo@bruscolo.it	yes	21/02/2022	Y	22/02/2022	Y	Y	18/07/2022	Yes. Confirmation received verbally	YES	YES		To be asked topic that he wants to share and some questions from us.
4	CMNA	Josi Della Ragione	Mayor of Bacoli		Italian	jindisco@pec.comune.bacoli.na.it			N									
5	ENEA-CMNA	Renato Passaro	Parthenope University		Italian	renato.passaro@uniparthenope.it	yes	17/02/2022	Y	18/02/2022	Y	Y	18/07/2022	Yes. Confirmation received by email	YES	YES		confirmation received by email and verbally. To be asked topic that he wants to share and
6	CMNA	Carmine Mataro	Co-Portavoce Nazionale Green IT		Italian	carmine@carminemataro.info	yes	21/02/2022	N			Y	19/07/2022			YES		
7	CMNA-ENEA	Salvatore Pace			Italian	salvpace@gmail.com		21/02/2022	N							YES		to be decided if it is worth to be send again
8	CMNA-Gianluigi	Giuseppe Cozzolino	Assessore Ambiente Giugliano			cozzolinog@gmail.com	yes	18/02/2022	Y	18/02/2022	Y	Y	18/07/2022	Yes. Confirmation received by email on 19 July 2022.	YES	YES		confirmation received by email and verbally
9	CMNA-ENEA	Maria Teresa Imparato	Pres. Legambiente Campania		Italian	mt.imparato@legambiente.campania.it		24/02/2022	N									
10	CMNA-ENEA	Maria Patrizia Vittoria	IRISS CNR		Italian	m.vittoria@iriss.cnr.it		21/02/2022	N									
11	CMNA-ENEA	Giuseppe Albanese	L'Altra Napoli ONLUS		Italian	info@altranaoedesign.it		21/02/2022	N									
12	CMNA	Raniero Madonna	ReMade Community Lab		Italian	raniero.madonna@gmail.com	yes	21/02/2022	Y	22/02/2022	Y	Y	18/07/2022	Yes. Confirmation received by email on 20 July 2022.	YES	YES		Enrica action: to make a call on Friday
13	CMNA	Fulvio Bonavitticola	Vice Presidente Regione Campania		Italian	assessore.bonavitticola@regione.campania.it		21/02/2022	N		Y							Enrica action: to make a call on Friday
14	CMNA	Assunta Ranieri	Ottaviano		Italian	a.ranieri@comune.ottaviano.na.it		21/02/2022	N									
15	CMNA	Francesco Pirozzi	Federico II		Italian	francesco.pirozzi@unina.it			Maybe									to be confirmed (verbally). To make a call on
16	CMNA	Mazzimiliano Fabbricino	Federico II		Italian	mazzimiliano.fabbricino@unina.it												
17	CMNA-Gianluigi	Domenico Ruggiero	SAPNA		Italian	Domenico.ruggiero@sapnapoli.it	yes	18/02/2022	Y		Y	Y	18/07/2022		YES	YES		confirmation received verbally

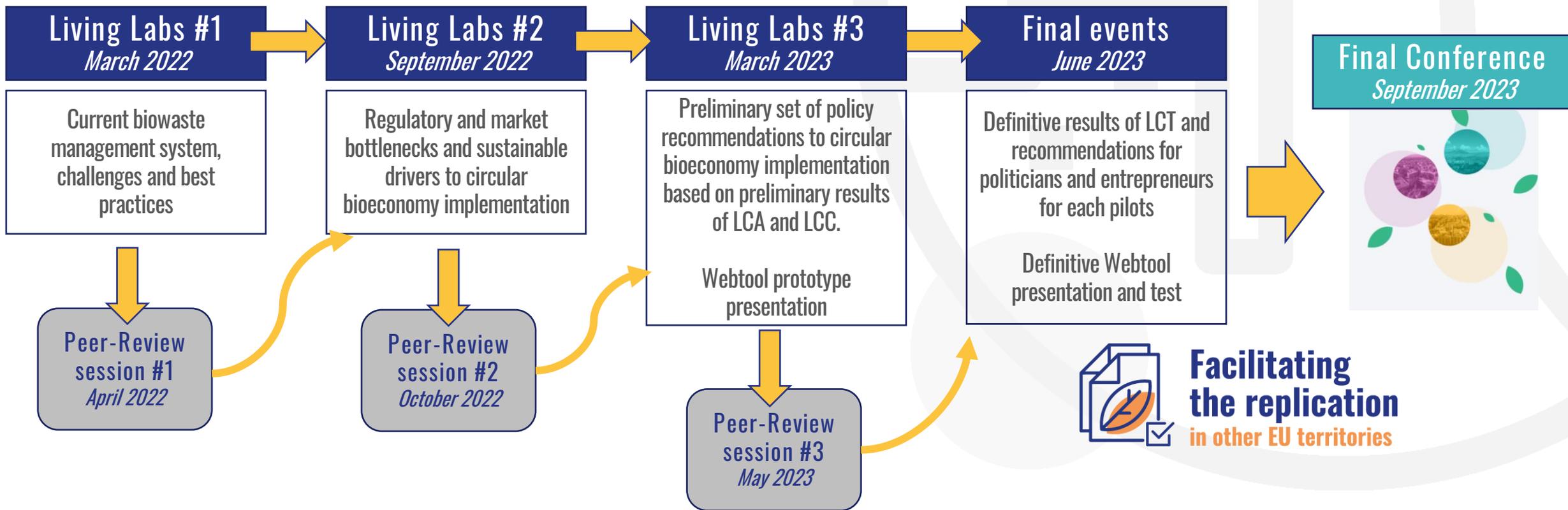
Living Labs and Peer Review Sessions



Analysing the situation
in pilot territories



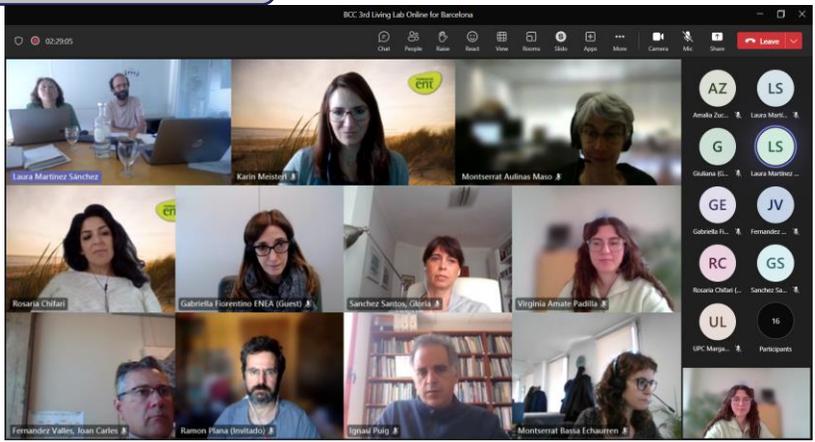
Boosting circular bioeconomy
in pilot territories



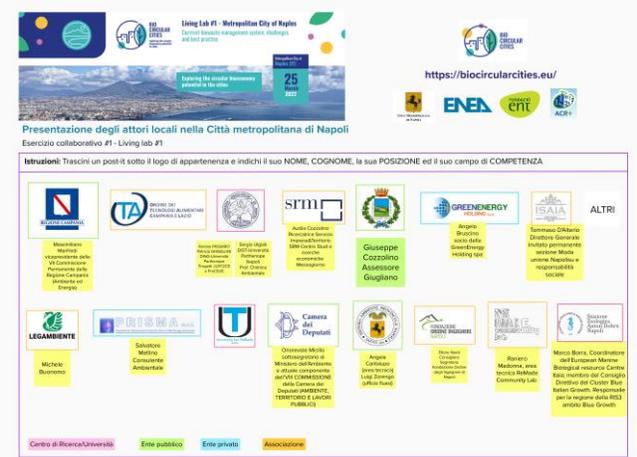
Facilitating the replication
in other EU territories

Online Local Living Labs

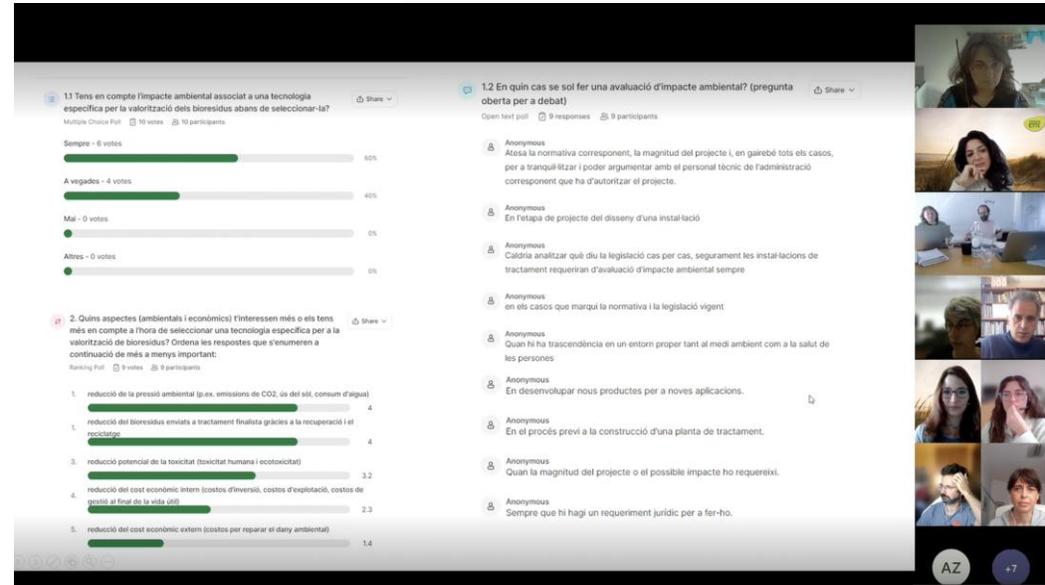
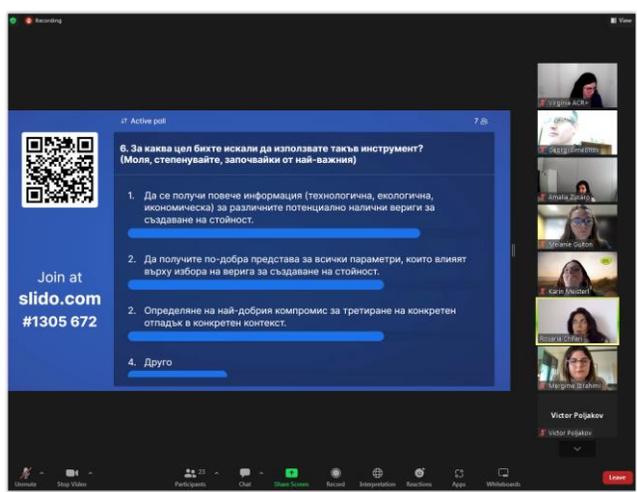
Teams/Zoom meeting



Use of MURAL to interact with Local Stakeholders

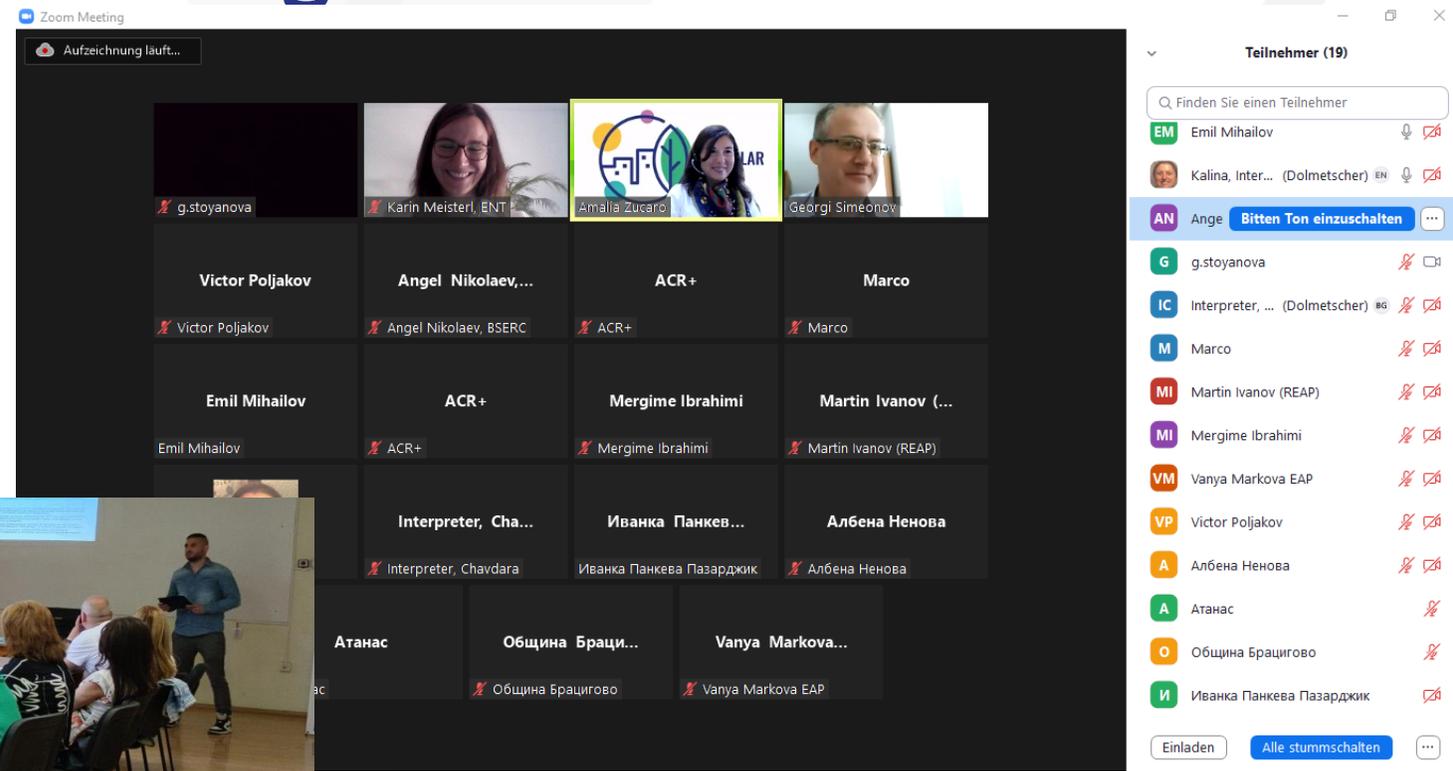


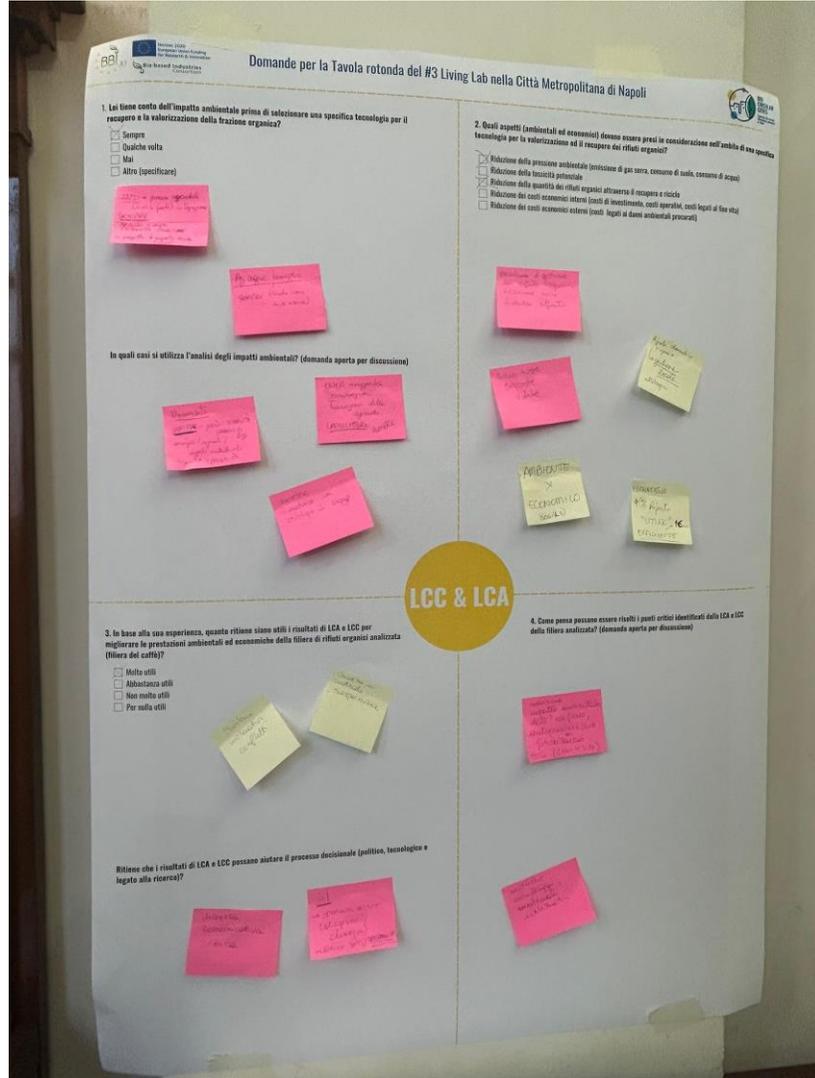
Use of SLIDO for interactive Q&A



Challenges of online Living Labs

Same participants, diferent dynamic!





On-site Local Living Labs

Very interactive, networking among participants!

Online Peer Review Sessions

Use of MURAL to interact with International experts

Regulatory, social, environmental, and techno-economic barriers and drivers to circular bioeconomy implementation along the different stages of the agro-industrial value chain in the Metropolitan City of Naples

Instructions: In the following Table you will find some general examples of drivers and barriers for the different stages of agro-industrial biowaste management.

The coffee residues chain in the MCN was selected as an example of biowaste from the agro-industrial sector.

Please ADD more drivers and barriers using the post-its "New Barriers" and "New Drivers" for each stage of the agro-industrial biowaste management chain.

	ALL STAGES	1) GENERATION	2) COLLECTION & STORAGE	3) TREATMENT	4) BIOWASTE-BASED PRODUCTS	5) MARKET	
DRIVERS/BARRIERS	<p>Lack of political will to change the current situation</p> <p>Too complex/contradictory regulations</p> <p>Promoting agro-industrial symbiosis for the use of biowaste and by-products</p> <p>Grants to agro-industrial biowaste research</p> <p>S.U.L. it is very important that proposed solutions provide income and jobs. This applies to all stages and should be clearly advertised.</p> <p>AT - Can some synergies between management narrative in industries be considered to ensure circular bioeconomy?</p> <p>FG - Putting the biowaste management narrative in a quantitative perspective easily measurable by the public, so that people can appreciate the potential improvement in their well-being or health condition</p>	<p>Lack of experience and best practices' sharing</p> <p>Simplification of paperwork for implementing biowaste chains for SMEs</p> <p>Strengthening industrial awareness of the benefits of circular biowaste management</p> <p>AT - Need for clear assessment of sanitary risk and risk dissemination along the value chain</p> <p>FG - The coffee issue is now for almost all the stakeholders, at all levels</p> <p>S.U.L. there are some competitive uses of this waste, e.g. growing mushrooms on coffee waste. Therefore, in all proposed cases we should make sure that we are not creating unwanted competition</p> <p>Feni: Depending on the technological route chosen, it demands very specific and continuous kind (quality) of biowaste during all the year, but agrifood products ranges largely according to season and climate changes.</p>	<p>"Unclearly about 'by-products': products and waste definition and how to get the 'end of waste' status"</p> <p>Updated and extensive database on generation of agro-industrial waste flows (quantity, quality, destination)</p> <p>Food losses prevention in agro-industrial processes due to too strict product standards (size of coffee seeds)</p> <p>S.U.L. when waste is collected (e.g. coffee waste) should some benefit go to the cafeteria that collects and stores it?</p> <p>S.U.L.: how can coffee waste be collected easily in a town environment? Would this create new urban traffic?</p> <p>Feni: the agri food waste collected that would become organic fertilizer for the next year will now amount that food producers buy industrial fertilizers. The compost production in current scenario must be marketed. Example in Brazil, 40% of leaves (biomass) or sugarcane must remain in the soil for nutrient cycling.</p>	<p>S.Ugarte: Contamination of the feedstock</p> <p>AT - Financial interest of the industrialists in valorizing or putting the biowaste to the collection</p> <p>FG - Unclear and not yet tested strategies</p> <p>T - Emerging chain with "soft" transports (as bicycles limit transportation impact)</p> <p>AT - Need for data to assess the environmental impact of the valorization process (e.g. extracting process)</p>	<p>Lack of planning security for long-term investments for innovative infrastructures</p> <p>Lack of decentralized innovative biowaste valorisation</p> <p>Difficulty in using biowaste if it is not defined as by-product (classification of 'end of waste')</p> <p>Easily accessible information for the valorisation of agro-industrial waste streams</p> <p>S.U.L.: new solutions and proposed patterns need teaching the needed technologies for the proposal to be successful</p> <p>FG - Novel field for research, business, and the promotion of start-ups</p> <p>FG - Need for specific and not possibly directly available technologies</p>	<p>Lack of comprehensive regulations on the "from biowaste to product" status</p> <p>Lack of in-depth environmental analysis for the use of biowaste as food</p> <p>Legal and/or economic incentives for new local value chains (e.g., tax reductions)</p> <p>Comprehensive and clear list of biowaste-based products</p> <p>AT - Existing local market for the products</p> <p>S.U.L.: It is important to provide clear information about the lack of contamination or potential damage from waste derived products, to prevent reluctance in using</p> <p>Feni: In Brazil, it is totally forbidden by legislation to make food from residues (even by products from agri food sector). Personally, I would hardly eat something made by 'residues' going through a production chain... maybe if it is locally produced, then I would better accept it</p> <p>FG - A profit-driven free market may not be ready for new strategies in the field. Governmental interventions - even in terms of incentives - may be appropriate</p>	<p>Conflict of interest between different products (e.g. compact vs. bio-based ingredients)</p> <p>People's reluctance to use products made from biowaste (especially food-based products)</p> <p>Low cost of biowaste-based compared to fossil-based products (e.g. VAT reduction for bio-based products)</p> <p>EU Quality certification of biowaste-based products</p> <p>Fluctuations in market demand for biowaste-based products</p>

Experts of the 2nd Peer-Review Session

Anne Trémier
 Research Director
 INRAE

Sergio Ugarte
 Managing Director
 SQ Consult BV

Michele Giavini
 Owner
 ARS AMBIENTE

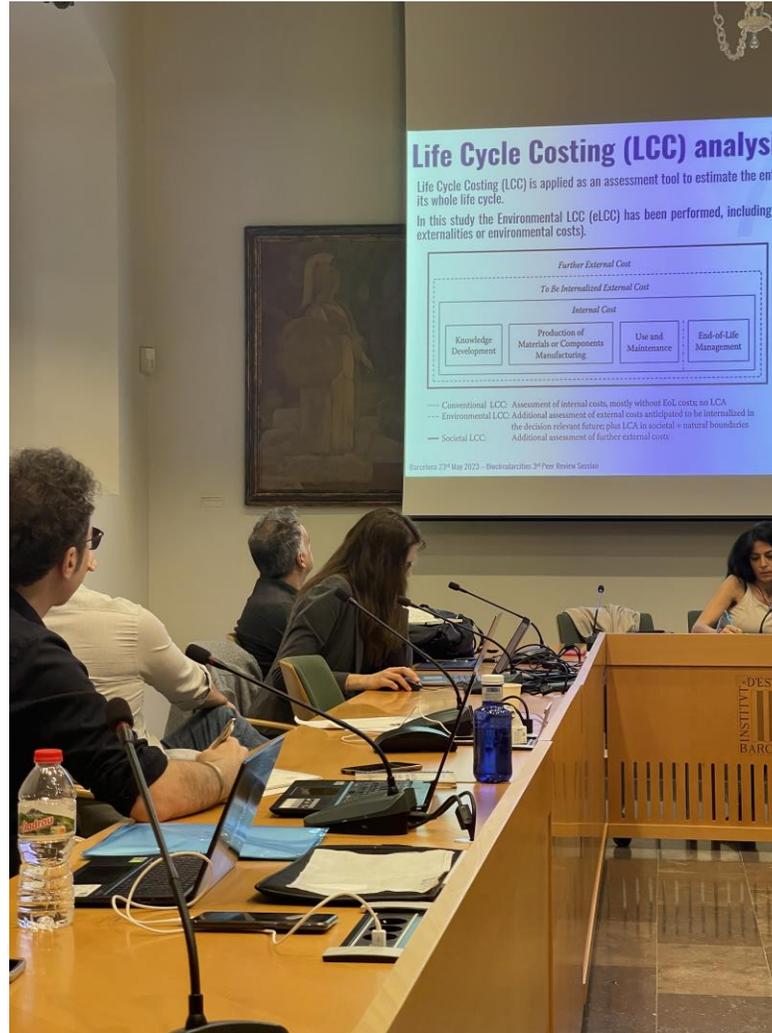
Francesco Gonella
 Professor
 Università Ca' Foscari Venezia

Feni Agostinho
 Professor
 Paulista University

Sergio Ugliati
 Professor
 Parthenope University

Biocircularities

Valuable written contribution, but actual discussion limited also because of limited duration (no common coffee break etc.)



On-site Peer Review Session

Very fruitful and interactive discussion!

Pros and Cons of online/presential Stakeholder Engagement

Online meetings with stakeholders

Pros

- More flexible scheduling and participation.
- Potential to reach a wider range of stakeholders.
- Lower costs (Room rental and technical equipment, travel and personnel costs).
- Less time required

On-site meetings with stakeholders

Pros

- More immersive and hands-on experience.
- More interactive discussion and more comprehensive results.
- Facilitates direct interactions and relationship-building.
- Enables networking between stakeholders and the development of new collaborations and project ideas.

Cons

- Less active contributions and inputs through discussion.
- Many stakeholders do not turn their cameras on, further hinders fruitful interaction.
- Potential technical difficulties.
- Limited sensory/tactile experience.
- No networking opportunities during coffee breaks for potential future collaborations (also as an incentive for participation).

Cons

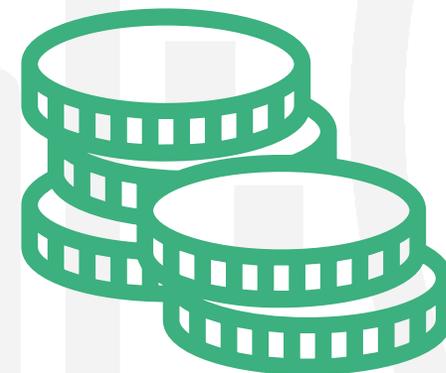
- More difficult to schedule and coordinate.
- Requires more economic resources (Room rental and technical equipment, travel and personnel costs).
- May exclude some stakeholders: more time needed

General recommendation

To avoid over-representation of municipalities and research institutions during the Living Labs

→ For new projects: Plan financial resources to ensure greater participation of BBIs and NGOs

→ **Payment of participants!**





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Thank you

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