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D4.3 CIRCULAR Living Labs Workplans

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Content

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1. Introduction

The CIRCULAR project seeks to boost the social innovation ecosystem in Malaysia, Cambodia and Laos by bringing together and reinforcing the links between Teaching, Research, Innovation and Society to design and test innovative solutions in collaboration to control waste management problems, to promote circular economy approaches and improve the quality of life of local communities. CIRCULAR Living Labs include important initiatives for implementing sustainable practices into higher education and local communities throughout Southeast Asia. The work goes beyond the physical space of the Living Lab itself, growing into a dynamic ecosystem where teaching, research, innovation, and social engagement mix to foster experimental solutions and follow in circular economy principles according to the current work plan.
This initiative is a key component of the wider CIRCULAR project, co-funded by the Erasmus+ programme, which is dedicated to sparkle social innovation by connecting educational institutions and local communities. Besides, the collaboration aims to address environmental challenges and promote sustainable development. This project brings together a diverse consortium from Malaysia, Cambodia, Laos, Spain, and Portugal, each contributing unique perspectives and strengths to our collective mission.

The CIRCULAR Living Labs Workplans serve as a detailed guide to transform our vision into reality. It provides a clear framework for activities that foster social innovation and embed circular economy principles across Malaysia, Cambodia, and Laos. This plan outlines the steps needed to address environmental challenges, strengthen connections between educational institutions and local communities, and promote sustainable development.

In this work plan, consortium partners, stakeholders and other members can find a roadmap to follow for the CIRCULAR Living Labs and for other key initiatives. It breaks down the process into manageable phases—planning, execution, monitoring, and evaluation—ensuring every step is purposeful and impactful. The Work Plan also defines the roles of consortium members, strategies for stakeholders' involvement throughout the project and milestones to keep us on track toward our shared goals. By bringing together the expertise of partners from Southeast Asia and Europe, this plan not only ensures practical outcomes but also sets the foundation for sustainable practices that can be replicated beyond this project. Through collaboration and innovation, the CIRCULAR initiative strives to create lasting change, improvement in waste management systems to enhance the quality of life for local communities.

The CIRCULAR Living Lab Work Plans are designed to bring our vision to life within the Living Labs that connect academic knowledge with real-world needs

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of the target community. The objectives of the project below will guide every step of the plan, to ensure that we foster sustainable practices and promote circular economy principles, by empowering communities to take meaningful actions:

1. To set up Living Labs as Innovation Hubs
   We aim to set up Living Labs as vibrant, open ecosystems where education, research, and regional development come together. These hubs will drive the adoption of greener practices, encourage more sustainable resource use, and act as a bridge between universities and communities
2. To provide equipment for Academics Social Innovation
   Building the capacity of educators is a top priority. Through training and collaboration, we will enable them to design and lead social innovation programs that inspire students to take an active role in their communities while tackling everyday sustainability and climate challenges.
3. To Empower Researchers with New Tools
   Researchers will gain access to updated methods and tools for conducting impactful community-based studies on circular economy and waste management, ensuring their work leads to practical solutions that benefit society.
4. To Inspire Students and Communities
   Students and young people are at the heart of this initiative. We want to empower them to become climate-conscious, socially engaged citizens. By raising awareness about circular economy principles and sustainable living style we will promote waste management practices in local communities, all supported by research and innovation from Higher Education Institutions.

These objectives aren't just milestones—they're the foundation of a collaborative journey toward a more sustainable future. Every activity in the workplans builds on these goals, ensuring that our efforts have a circular and long-lasting impact on people, places, and the planet.

1.1 CIRCULAR Living Labs work plans

CIRCULAR Living Labs serves as dynamic platforms to bring together education, research, and community engagement pillars and prioritise practice of Circular Economy principles. These labs act as hubs for social innovation by fostering collaboration among stakeholders to develop solutions within the Living Labs level that are both sustainable and scalable with following parameters:

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- Interdisciplinary Collaboration

The labs unite experts from various fields, including environmental science, engineering, business, and social sciences, to address sustainability challenges through innovative approaches.

- Community Engagement

Local communities are active participants in shaping and testing solutions, ensuring the innovations align with real-world needs and contexts.

- Practical Application of Knowledge

By bridging academic research with real-world implementation, the labs ensure that theoretical knowledge translates into impactful environmental and social solutions.

- Capacity Building and Education

The labs enhance learning experiences, offering hands-on opportunities for students and community members to develop practical skills and knowledge in sustainability.

- Sustainability at the Core

Every activity within the labs is designed to promote long-term environmental stewardship and improve the quality of life for local communities.

These features make CIRCULAR Living Labs an essential component of the work plan, guiding the development and implementation of activities that align with the project's broader goals of fostering innovation, sustainability, and social impact.

1.2 Purpose of the CIRCULAR Living labs Workplans

The Work Plan aimed to assist at every step of the project as a practical guideline to transform the vision of the CIRCULAR initiative into reality. It provides a clear and actionable framework for the cooperation of the three pillars - education, research, and community engagement - to drive sustainable changes in Malaysia, Cambodia, and Laos.
Detailed guidance of the work plan will offer stakeholders and partners consistent answers to their questions about the next steps while incorporating circular ideas to address real-world challenges in alignment the project policy.
Here's what the work plan aims to cover:

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-Roadmap

It outlines the sequential steps required to operate the CIRCULAR Living Labs, by monitoring that all participants contribute effectively under the leadership of partner universities. The roadmap will detail the collaboration mechanisms between academic institutions, industry partners and local communities, for the ecosystem that supports sustainability-driven innovations. This roadmap will serve as a dynamic tool for tracking progress and ensuring alignment with the overarching objectives of circular economy principles.

-Definition of the Timeline

The timeline for the set activities will be agreed by partners and specific deadlines will be established for research activities, technology deployment, knowledge-sharing events (workshops, trainings), and capacity-building initiatives. This structured approach ensures that all involved parties work in synchronization, to prevent delays and optimise resource utilization for a seamless transition toward sustainable practices.

-Locations

The implementation of the CIRCULAR Living Labs activities strategically is distributed across various settings to maximize impact and flexibility for communication.

On-campus labs – Research and CIRCULAR Living Labs within universities where students, faculty, and researchers collaborate on sustainability-focused projects, prototype development, and knowledge dissemination.

Off-campus facilities – Engagement with external stakeholders, including, local government agencies, and community organizations, to implement real-world activities of Circular Economy models.

Online platforms – Digital, remote engagement, knowledge exchange, training sessions, and data-sharing mechanisms. Virtual tools will enhance inclusivity, providing broader participation from diverse stakeholders across regions.

-Required resources

CIRCULAR Living Labs requires technological tools, human capital and financial resources to accomplish the workplans, so further in chapters will be a detailed list of resources that will be identified and allocated according to the objectives.

-Allocation of Responsibilities

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Execution of the project requires a well-defined allocation of roles and responsibilities among all members. This document ensures accountability and enhances collaborative efficiency.

The work plans are more than a document—it's a shared commitment from all partners. It reflects the collective effort of all partners in the CIRCULAR project to create a future where education and innovation drive sustainability and better living for everyone. This document aims to accelerate the transformational changes needed for a sustainable future while building on existing circular economy initiatives and practices. By adopting practices from the EU's streamlined regulatory frameworks, SEA countries can maximize opportunities arising from the transition to a circular economy while minimizing burdens on businesses and individuals.

1.3 Integration of the Main Pillars to the local policy

To ensure the effective integration of these pillars into the work plans, Living Labs must adopt structured approaches to the work plan for the following pillars. Citizen Science initiatives should include hands-on workshops, real-time data collection, and community-driven research projects that allow non-experts to contribute to Circular Economy development. Education for Sustainable Development should involve curriculum design aligned with local challenges, experiential learning modules, and partnerships with educational institutions. Community Engagement efforts need to focus on fostering active participation through regular dialogues, co-design sessions, and feedback mechanisms that empower communities to take ownership of projects in the coming future. By translating these plans into actionable steps within pillars, Living Labs can create tangible outcomes, such as community awareness, sustainable practices, and community-driven solutions with long lasting social and environmental impact. Besides it also highlights how these principles are specifically tailored to support the three pillars, ensuring a holistic integration of sustainability, inclusivity, and collaboration. The work plans are designed to drive meaningful engagement, to contribute a shared vision of circularity and social innovation.

Citizens Science

Within the work plan of Circular Living Labs, Citizen Science aims to bridge the gap between scientific research and community-driven action. With an active involvement of citizens in data collection, analysis, and the development of sustainable solutions, this pillar enhances public engagement, strengthens environmental awareness, and fosters grassroots innovation. By leveraging local people's awareness of research, Living Labs can find alternative eco-friendly solutions and contribute to the development of Circular policies at the community level.

Education for Sustainable Development

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The education for Sustainable Development pillar ensures that academics and students acquire the knowledge, skills, values, and attitudes necessary to contribute to the Circular Living Labs sustainable development. By integrating sustainability principles into education, this pillar fosters a culture of responsible decision-making, innovation, and long-term development based on principles of Circular. The goal of Education for Sustainable Development is to empower students, educators, and community members to actively engage in sustainability challenges, equipping them with practical tools to implement Circular Economy solutions. This approach goes beyond theoretical knowledge, emphasizing experiential learning and interdisciplinary collaboration that align with real-world sustainability needs.

Community Engagement

CIRCULAR efforts extend beyond academic and institutional settings to actively involve local communities. By fostering participation, dialogue, and collaboration, this pillar empowers communities to co-create solutions, take ownership of environmental challenges, and drive meaningful change.

The following section presents these values in a structured format, providing detailed insights stakeholders' visions and demonstrating their practical application for each pillar. Additionally, they offer a roadmap for implementation, as outlined in the D4.2 CIRCULAR Living Labs Handbook.

General Values	Citizen Science	Education for Sustainable Development	Community Engagement
Inclusivity and Diversity	Actively involve diverse citizens in scientific research.	Promote equitable access to education on sustainability.	Engagement of a wide range of community members.
Collaboration and Co-Creation	Foster collaboration between citizens and researchers.	Design curricula with input from students and local stakeholders.	Co-create solutions with the community through participatory processes.
Sustainability Focus	Align citizen science projects with sustainable development goals.	Integrate principles of sustainability into all aspects of education.	Implement initiatives that prioritize environmental and social impact.
Transparency and Accountability	Share research findings openly with participants and stakeholders.	Maintain open communication about goals and	Ensure that community inputs are valued and reflected in final outcomes.

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		outcomes of education.	
Innovation and Adaptability	Encourage experimentation in scientific methods and tools.	Adopt flexible approaches to teaching sustainability practices.	Adapt strategies to meet the evolving needs of the community.
Knowledge Sharing	Create platforms for citizens to exchange scientific insights.	Develop resources for lifelong learning in sustainability.	Host workshops or events to share solutions and gather feedback.
Empowerment and Capacity Building	Train citizens to actively contribute to research projects.	Equip individuals with skills to drive sustainable practices.	Strengthen the community's ability to address local sustainability issues.

Table #1 Main values

2. Key Activities and Interventions

The transition toward a circular economy has become a global priority in addressing environmental challenges and sustainable development goals. CIRCULAR addresses these issues within the work plan framework, where partner educational institutions play an important role in the initial phase of the transition. By equipping students of HEIs in SEA, researchers, and communities with the knowledge, skills, and innovative approaches necessary to understand and apply circular economy concepts, the initiative will foster collaboration and ensure a smooth transition.

Hence this chapter outlines the detailed work plan for collaborative initiatives undertaken by partner universities to advance the principles of a Circular Economy on their community level (through the CIRCULAR Living Labs). The Living Lab activities covers specific activities, including awareness programmes, participatory research, curriculum integration, hands-on training, aimed to build capacity for the project outcomes. Within each activity's universities, they can leverage its unique expertise in the context of the region and contribute to a shared vision of sustainable resource management and community engagement of CIRCULAR.

Through these partnerships, students and faculties not only gain theoretical insights but also practical experiences to address real-world challenges, thereby fostering a culture of innovation and responsibility. This workplan serves as a guide to understand diverse approaches adopted by academic institutions in

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different geographical and cultural settings to practise the principles of the circular economy. Following the main values and vision of the CIRCULAR Living Labs each stakeholder will implement activities on their community level. By focusing on local needs and resources, stakeholders can implement activities that reduce waste, encourage reuse, and promote sustainable practices.

Living Lab activities foster collaboration among various stakeholders, including researchers, local communities, government agencies, and private organizations, to co-create innovative solutions. These activities often focus on testing sustainable practices, technologies, or services in real-world settings. For example, a Living Lab might involve pilot projects in urban or rural areas to address pressing environmental or social challenges, such as implementing renewable energy solutions or improving waste management systems. The iterative approach of a Living Lab ensures that feedback from participants is continuously integrated, leading to practical and scalable outcomes tailored to the local context.

2.1 Educational Programmes

Educational programmes of CIRCULAR Living labs are designed to build capacity and raise awareness among target groups, ranging from university students to policymakers. These programmes include workshops, training sessions, and seminars that aim to provide knowledge on topics such as sustainable development, environmental conservation, or social equity. Besides, partnerships with academic institutions can facilitate the development of formal curricula or courses, ensuring that educational interventions align with broader goals. For example, integrating climate change education into school programs can empower students to take proactive measures in their communities. The accomplishment of educational programmes will align with the main goal of CIRCULAR, as setting up Living Labs and empowering students, all members and local beneficiary engagement in the activities.

2.2 Community-Based Research

Community-based research emphasises participatory approaches and involvement of local populations in the research process under their Living Labs to address environmental issues within adjustment to the location needs. This type of research prioritises inclusivity and collaboration, ensuring that the knowledge and experiences of the community are central to the outcomes. Methods may include surveys, focus groups, and participatory action research, aimed to generate data that directly informs local policies or initiatives.

Also to ensure the effectiveness of community-based research within this project, specific activities need to be integrated:

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- Community-Led Data Collection: Training local volunteers to conduct surveys and gather qualitative data on environmental and social issues affecting their communities.
- Participatory Action Workshops: Organizing interactive sessions where community members co-develop solutions, such as waste management strategies or sustainable business models.
- Local Policy Feedback Forums: Establishing regular meetings between researchers, policymakers, and citizens to discuss findings and integrate community-driven recommendations into local governance.
- Living Lab Demonstration Projects: Implementing small-scale pilot initiatives, such as urban gardening projects or zero-waste initiatives, where local stakeholders test and refine solutions before broader implementation.
- Collaborative Digital Platforms: Creating online spaces for knowledge-sharing, where communities can contribute data, share experiences, and engage in discussions with experts and policymakers.

Such research not only enhances the relevance of findings but also fosters a sense of ownership and empowerment among community members.

2.3 Public Awareness Campaigns

Public awareness campaigns aim to educate and mobilise the broader community on critical issues through various media channels and outreach strategies. These campaigns may involve social media campaigns as CIRCULAR Bootcamp Activities in Malaysia, Laos and Cambodia, public events, and partnerships with community leaders. As an example social media

The objective is to shift attitudes, encourage to change behaviour, or garner support for specific initiatives. For example, a campaign might highlight the importance of water conservation or promote the benefits of adopting sustainable transportation. Engaging storytelling and accessible messaging are often key to the success of these campaigns.

To ensure effectiveness, the project will incorporate the following public awareness activities:

- Community Events and Workshops: Hosting sustainability fairs, interactive discussions, and hands-on demonstrations to directly engage local populations.
- Influencer and Community Leader Partnerships: Collaborating with trusted figures to amplify key messages and enhance outreach.
- Behavioral Incentives: Encouraging positive change through reward-based initiatives, such as discounts for sustainable practices or recognition programs for eco-friendly actions.

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By integrating these detailed activities, public awareness efforts will effectively complement the Living Labs' mission, ensuring broad community involvement and long-term behavioural shifts.

2.4 Key phases of the project

Activities that will be implemented through the CIRCULAR Living Labs, include cleaning, learning how to sort waste for recycling purposes, demonstration actions showcasing actions to prevent, reduce and mitigate waste production and management; as well as non-formal and informal training actions on:

- What is sustainable development,
- Sustainable Development Goals,
- Circular economy,
- How to make more sustainable choices,
- activities for assessing the environmental impact associated with all the stages of the life cycle of a commercial product, process, or service,
- Joint online lectures and masterclasses.

CIRCULAR Living Labs activities connected with SEA HEIs and will be accomplished by bringing together groups of students to interact and engage on collaborative projects, supporting their concept with different perspectives and outlooks on global issues.

With balanced representation in terms of the profile of stakeholders (public/private and scope), gender and underrepresented groups (which fall under the scope of "people with fewer opportunities" as defined by the Erasmus+ programme), as well as ensuring compliance with the CIRCULAR Diversity & Inclusion principles and Gender Equality principles, the commitment upholds various values such as dignity, equality, understanding, diversity, justice, solidarity, tolerance, peace, non-discrimination, non-violence, empathy, compassion and cooperation.

3. Timeline for CIRCULAR Living labs activities

Implementation of Living Labs activities by USM, UNIMAS, RUPP, SRU, NUOL and SKU will employ wide range of inextricably community-based participatory research activities as: debates on waste management and circular economy related topics; circular extracurricular voluntary and community intervention activities to improve waste management. Additionally, in each CIRCULAR Living Lab, these and other circular economy practices will be implemented according to the timelines agreed upon by the partners.

1. Universiti Sains Malaysia (USM)
Focus Areas: Awareness programmes, Problem-Based Learning (PBL), community-based participatory research, co-curricular activities at partner schools.

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Contact: Associate Prof. Dr. Asyirah Abdul Rahim
Email: asyirah@usm.my

Activity	Timeline	Key Outputs	Stakeholders Involved
Awareness programme	January-June 2025	Increased student awareness of circular economy	University students, local schools
Problem-Based Learning workshops	March - September 2025	Practical solutions developed by students	Faculty and student teams
Community-based participatory research	March - September 2025	Research projects addressing local issues	Students, partner schools
Co-curriculum activities at schools	March - September 2025	Integrated circular economy concepts in schools	Partner schools, USM staff

Table# 2 Universiti Sains Malaysia (USM)

2. Universiti Malaysia Sarawak (UNIMAS)
Focus Areas: Awareness programmes, policy development for student associations, co-curriculum activities, case study workshops, research projects.
Contact: Associate Prof. Dr. Zaimuariffudin Shukri Nordin
Email: nzaim@unimas.my

Activity	Timeline	Key Outputs	Stakeholders Involved
Awareness programme	January-June 2025	Circular economy awareness among students	Faculty and students
Student association policy	March - September 2025	Drafted and implemented CE policy	Student leaders, faculty
Co-curriculum activities	March - September 2025	Students engaged in practical CE activities	Student associations
Case study workshops	March - September 2025	CE implementation strategies from case studies	Faculty, students
Research projects	March - September 2025	Publishable outputs on CE practices	Faculty, student researchers

Table# 3 Universiti Malaysia Sarawak (UNIMAS)

3. Royal University of Phnom Penh (RUPP)

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Focus Areas: Solid waste management, campus cleanup, awareness raising, student gatherings.
Contact: Prof. Dr. Seak Sophat
Email: seak.sophat@rupp.edu.kh

Activity	Timeline	Key Outputs	Stakeholders Involved
Solid waste management	March - September 2025	Improved waste handling on campus	RUPP faculty, Clean and Green Team
Campus cleanup drives	March - September 2025	Cleaner campus and community engagement	Students, campus staff
Awareness raising sessions	March - September 2025	Enhanced understanding of CE principles	Students, local community
Student gatherings	March - September 2025	Networking and collaboration opportunities	Students, Clean and Green Team

Table # 4 Royal University of Phnom Penh (RUPP)

4. Svay Rieng University (SRU)
Focus Areas: Teaching and training.
Contact: Asst. Prof. Mom Ket
Email: momket@mail.sru.edu.kh

Activity	Timeline	Key Outputs	Stakeholders Involved
Teaching workshops	March - September 2025	Delivered training modules on CE	Faculty, students
Training programs	March - September 2025	Hands-on CE skill-building opportunities	Faculty, students

Table # 5 Southern Regional University (SRU)

5. National University of Laos (NUOL)
Focus Areas: Education, community participatory research, training, research, and consultation.
Contact: Dr. Vattanamixay Chansomphou
Email: v.chansomphou@nuol.edu.la

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Activity	Timeline	Key Outputs	Stakeholders Involved
Educational workshops	March - September 2025	Students trained in CE concepts	Faculty, students
Community participatory research	March - September 2025	Research addressing local environmental issues	Local community, students
Training sessions	March - September 2025	Skill development for CE practices	Students, faculty
Consultation programmes	March - September 2025	Expert advice for community CE initiatives	Faculty, local stakeholders

Table # 6 National University of Laos (NUOL)

6. Savannakhet University (SKU)
Focus Areas: Teaching and training.
Contact: Mr. Chittakone Insixiengmai
Email: lay_sku@yahoo.com

Activity	Timeline	Key Outputs	Stakeholders Involved
Teaching sessions	March - September 2025	CE concepts taught to students	Faculty, students
Training programmes	March - September 2025	Practical CE knowledge and skills imparted	Students, faculty

Table # 7 Savannakhet University (SKU)

3.1 General progress checkpoints of CIRCULAR Living Labs

To ensure the successful implementation of Circular Economy initiatives within the Living Labs framework, we establish progress checkpoints that facilitate timely adjustments. These checkpoints provide a structured approach to track activities progress, after the initial setup to assess their effectiveness, and address any challenges encountered during execution.

The following key progress checkpoints are oriented to monitor the adjustments progress:

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Checkpoint	Objective	Key Activities	Timeline	Responsible Stakeholders
Review the vision and activities outlines	Ensure readiness on the ground baseline data for comparison.	- Form teams and assign roles. - Collect baseline data on current practices. - Define KPIs.	March 2025	University coordinators, faculty, student leaders
Mid-Term Review	Evaluate progress and ensure alignment with goals.	- Review completed activities against plans. - Identify challenges and gaps. - Formulate solutions.	June 2025	Project leads, monitoring team
Participant Feedback	Measure impact and gather qualitative insights.	- Conduct surveys and focus groups. - Analyze participation data. - Track changes in attitudes and behaviors.	May 2025	Faculty, student leaders, community partners
Data Collection and Analysis	Monitor KPIs and track measurable progress.	- Record metrics (e.g., waste reduction, participation rates). - Analyze trends and outcomes.	May 2025	Monitoring team, data analysts
Final Review and Reporting	Summarize achievements, challenges, and lessons learned.	- Evaluate overall success based on KPIs. - Prepare and share the final report. - Discuss opportunities for scaling.	October 2025	Project leads, faculty, university partners
Scaling and Continuous Improvement	Incorporate learnings and	- Identify best practices for replication.	September 2025	University coordinators,

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	scale successful initiatives.	- Revise strategies for future initiatives. - Establish ongoing partnerships.		stakeholders, sponsors

Table # 8 checkpoints

4. Stakeholder Roles and Responsibilities

The successful implementation of circular economy initiatives relies on the effort of stakeholders. Where each group brings unique expertise, resources, and perspectives, with impactful efforts. Hence each stakeholder has its own responsibilities and will be involved in the following activities of the Living Labs. The role of each stakeholder you can refer to is given in detail in the CIRCULAR Handbook D4.2. This section outlines the roles and responsibilities of key stakeholders for the transition toward a circular economy.

4.1 Academic institutions: Research, innovation, and capacity building.

Academic institutions play a crucial role to foster knowledge, to develop solutions, and to equip individuals with the skills needed for a CIRCULAR Living Lab development.

Key Responsibilities for Education for Sustainable Development:

- Conduct research to identify sustainable practices and develop innovative solutions.
- Integrate circular economy concepts into curricula and co-curricular activities.
- Facilitate capacity-building programmes, such as workshops, training, and participatory research projects.
- Collaborate with other stakeholders to pilot and scale circular economy initiatives.
- Publish findings and case studies to promote knowledge sharing and replication of successful models.

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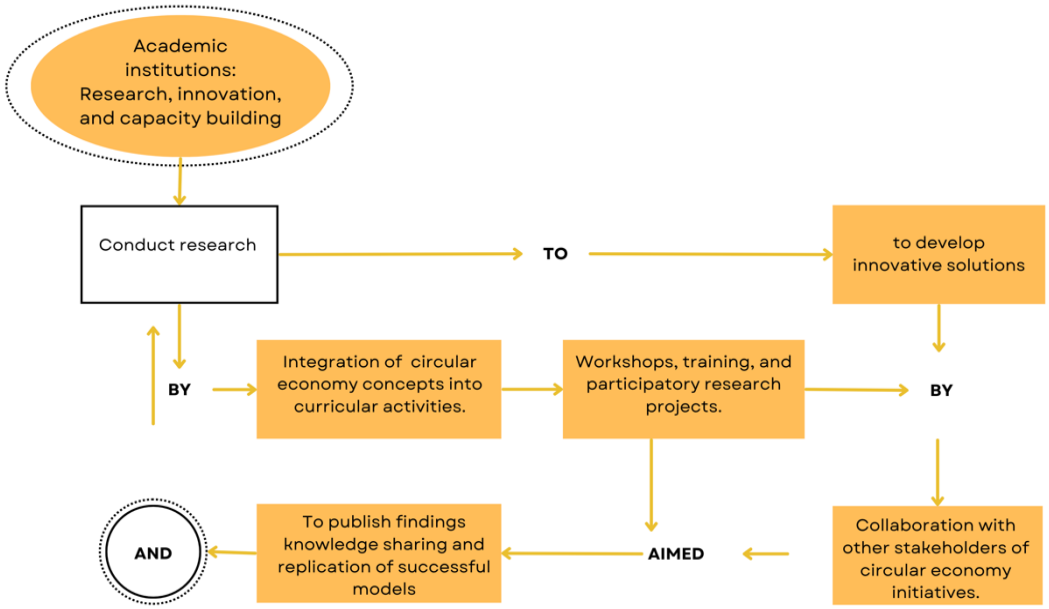

Figure # 1 Research, innovation, and capacity building

4.2 Local governments: Policy support and infrastructure development.

Local governments create an environment for circular economy practices through supportive policies, regulations, and infrastructure development. They may be involved to test new waste management policies with researchers, besides local governments can allocate funding to future local startups and community-driven sustainability initiatives incubated in the Living Labs.

Key Responsibilities:

- Establish policies that encourage sustainable practices, such as tax benefits for recycling businesses.
- Develop infrastructure for waste management, recycling, and resource recovery.
- Monitor and enforce regulations to ensure compliance with circular economy principles.
- Facilitate partnerships among stakeholders to address systemic challenges.
- Promote public awareness campaigns to drive community engagement and adoption.

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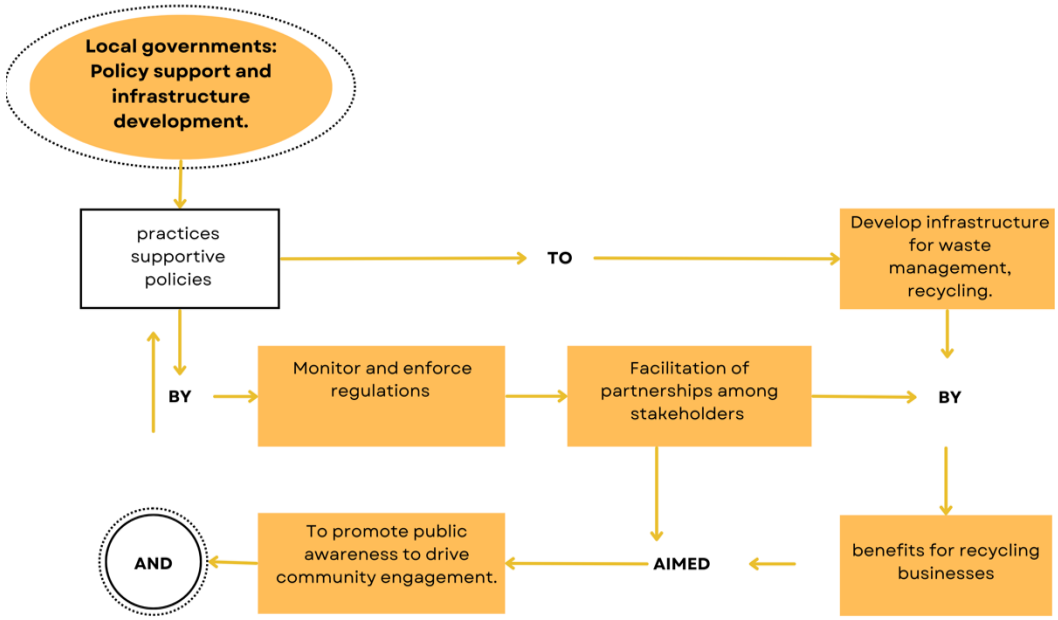

Figure # 2 Policy support and infrastructure development

4.3 Businesses: Adoption of sustainable practices and investments

Businesses are instrumental in integrating circular economy principles into production, distribution, and consumption systems. Also, they will be active participants, co-developing and testing circular economy solutions tailored to local context needs.

Key Responsibilities Citizen Science:

- Adopt sustainable production methods, such as designing for reuse, repair, and recycling.
- Invest in technologies and processes that reduce waste and maximise resource efficiency.
- Collaborate with academic institutions and governments to develop scalable solutions.
- Educate consumers about sustainable consumption and product life cycles.
- Track and report on their progress in achieving circular economy goals.

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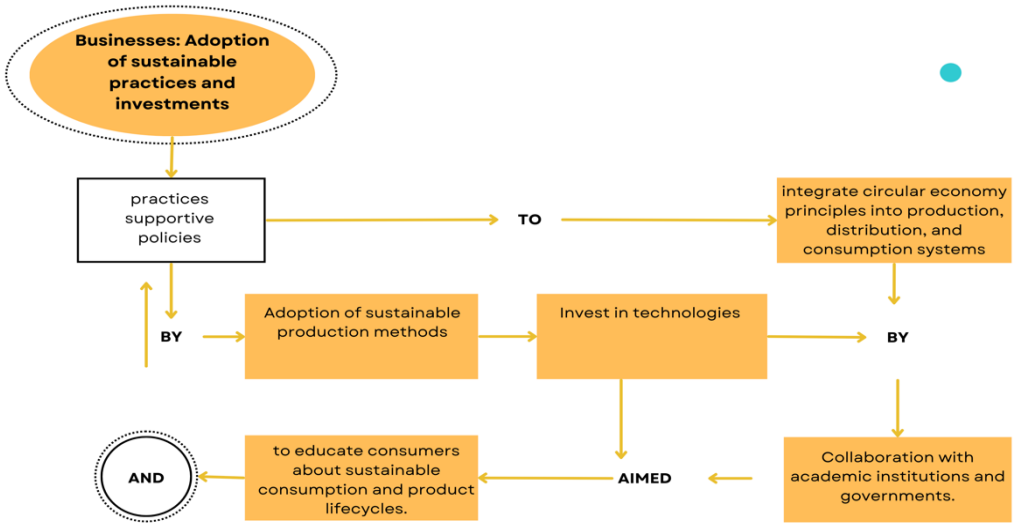

Figure #3 Adoption of sustainable practices and investments

4.4 Community groups: Grassroots participation and local insights.

Community groups bring valuable local knowledge and play a crucial role to foster grassroots adoption of circular economy practices.
Key Responsibilities Community Engagement:

- Act as a bridge between stakeholders and local populations to ensure inclusivity.
- Participate in awareness programmes, workshops, and participatory research projects.
- Advocate for local issues and sustainable practices tailored to their community's needs.
- Lead grassroots initiatives such as clean-up drives, waste segregation campaigns, and repair workshops.
- Monitor and provide feedback on the effectiveness of implemented programs.

5. Required Resources

Resources are integrated across universities to provide a more streamlined approach, besides CIRCULAR ensures that all necessary required resources are

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set for achieving the final goal. Streamlined processes aligned efforts to help universities focus on what matters most—working efficiently, addressing challenges effectively, and ensuring progress toward shared objectives.

All required resources will be used within the CIRCULAR framework and each Living Lab has also acquired specific equipment and tools from project funding for their activities, as outlined in the proposal. These resources play a crucial role in planned activities, supporting both research and practical applications.
For example, one of the key tools purchased is **SimaPro**, a life cycle assessment (LCA) software. It will help researchers analyse the environmental impact of products, processes, and systems. With SimaPro, universities will:

- Conduct life cycle assessments to measure sustainability impacts.
- Compare different materials and production methods to identify eco-friendly options.
- Simulate alternative scenarios for better decision-making.
- Integrate sustainability analysis into coursework and student projects.
- Support industry and policy collaborations with data-driven insights.

And other tools will be used according to the project outline.

University	Human Resources	Financial Resources	Technical Resources
USM	- Faculty members for workshops and research. - Student volunteers for co-curricular activities.	- Programme funding for awareness campaigns and community-based research. - Logistics support for partner schools.	- Training materials for problem-based learning. - Equipment for community outreach and data collection.
UNIMAS	- Faculty and researchers for case studies and policy development. - Student association leaders.	- Funding for co-curricular programmes and case study workshops. - Support for research projects and awareness events.	- Software for research projects. - Infrastructure for hosting student association activities.
RUPP	- Faculty advisors for campus cleanups. - Student groups for awareness and waste management projects.	- Budget for cleanup drives and student gatherings. - Support for educational campaigns.	- Waste segregation stations. - Tools for solid waste management initiatives.
SRU	- Trainers for teaching and business-related workshops.	- Programme funding for training and student activities.	- Projector and digital tools for teaching.

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	- Faculty to conduct research and consultations.	- Support for consultations and educational materials.	- Access to business case studies and databases.
NUOL	- Faculty for training sessions and consultations. - Community facilitators for participatory research.	- Resources for community-based projects. - Support for educational outreach activities.	- Portable equipment for field research. - Online platforms for training and collaboration.
SKU	- Agricultural and environmental faculty for training. - Student teams for implementation projects.	- Funding for sustainable agriculture workshops. - Support for training materials and logistics.	- Tools for agricultural demonstration projects. - Infrastructure for field-based training activities.

Table #9 Required resources

6. Monitoring and Evaluation Framework

Effective monitoring is a cornerstone of the CIRCULAR Living Labs initiative, to ensure that progress toward implementing circular economy principles will be measured, assessed, and continuously improved. Our monitoring framework monitors alignment of the work with standards with consideration of regional and institutional specificities.

The monitoring framework for the CIRCULAR Living Labs focuses on evaluating progress across the three pillars—Citizen Science, Education for Sustainable Development, and Community Engagement—with measurable indicators tailored to the objectives of the initiative. This chapter outlines the approach to track progress, with reliability of the chosen strategies, and will ensure accountability in achieving the goals of the CIRCULAR project.

Key Monitoring Objectives

1. To assess the impact: Measure the effectiveness of Living Labs in promoting circularity, fostering innovation, and achieving sustainability goals.
2. To ensure the alignment: Verify that the activities and outcomes align with the overarching goals of the CIRCULAR project .
3. To Encourage Continuous Improvement: Provide actionable insights to refine and enhance interventions based on real-time data and analysis.

Pillar	Indicators	Methods

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Citizen Science	The implementation of project activities and comparing project results with initial objectives besides number of attendees to events and the number of people who receive training, according to reports or attendance lists.	- Surveys and feedback mechanisms
	- Collection of feedback on the: -quality of activities, - meetings coordination, -general project management.	Direct questionnaires and surveys that concerns: Coordination meetings (Feedback from attendees: in person and online); Feedback from Consortium members regarding project management and communication processes.
Education for Sustainable Development	Number of thematic groups formed (≥6); Number of students involved from SEA HEIs (≥90) and in EU HEIs (≥10); Number of EU academics and researchers involved in CIRCULAR Living Labs (≥8); Actions and collaborative projects organised (≥12);	- Pre- and post-activity assessments of sustainability knowledge.
	Training activities, with a specific impact.	- Documentation and analysis of curriculum enhancements. -Feedback from attendees
	CIRCULAR Living Labs (≥8); Number of actions and collaborative projects organised (≥12);	- Analysis of participation rates and qualitative feedback on learning experiences.
Community Engagement	Direct participant observation and onsite monitoring activities	- Community feedback surveys and interviews.
	Number of citizens and/or representatives from local communities reached (≥60).	- Case studies of engagement their impact on the community (survey)
	- CIRCULAR Living Labs (≥8); Number of actions and	- Attendance of participants

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	collaborative projects organised (≥12);	

Table #10 Monitoring framework

6.1 Feedback mechanisms to improve initiatives during implementation.

Key components of feedback mechanisms include regular monitoring, surveys, attendance lists (for Living Lab activities), official documents and thematic group documenting, event report, summaries etc. These tools help identify areas of improvement, address challenges, and reinforce positive aspects of the initiative. Besides it will be an open communication and to encourage constructive criticism, organizations can adapt their strategies to meet objectives more efficiently, mitigate risks, and enhance overall performance.

- Collection of feedback on the quality of activities via direct questionnaires and surveys
- Events (feedback from attendees). Training activities

A well-structured feedback system ensures that initiatives remain flexible and responsive to the needs of the participants and stakeholders, leading to more successful outcomes.

7. Risk Management

Risk management is a critical component for CIRCULAR Living Labs and its sustainable development. Since sustainability efforts often involve complex systems, multiple stakeholders, and evolving technologies, there are various risks to consider for success of the project. These include environmental, financial, social and operational risks. The current CIRCULAR Living Labs Work plan was developed to help with identification, assessment and mitigation of potential threats to the success of Living Labs sustainability. This ensures that risks are managed proactively, and those initiatives can achieve their desired outcomes without causing unforeseen harm or setbacks.

Key Elements of Risk Management in Sustainability Initiatives

Risk Type	Description	Strategies
Stakeholder Misalignment	Challenges in coordinating diverse stakeholders, including universities and local communities.	Establish clear roles and responsibilities for each stakeholder; create regular multi-stakeholder meetings facilitated by partner universities to align goals and resolve conflicts.
Community Resistance	Lack of support or trust from local communities,	Conduct community consultations and co-design workshops to ensure

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	especially when projects disrupt traditional practices or lifestyles.	local needs are integrated into projects; use social outreach programmes led by students and faculty from partner universities to build trust and awareness.
Innovation Gaps	Difficulty in translating innovative ideas into scalable and practical solutions tailored to local contexts.	Partner with research and development centres within universities to prototype and test solutions; engage students and researchers in innovation challenges to address local issues effectively.
Regulatory Challenges	Complexities in navigating local policies and regulations across Southeast Asian countries.	Collaborate with legal and policy departments at universities to interpret regulations; engage government representatives as stakeholders to ensure alignment with national and regional policies.
Monitoring and Evaluation Gaps	Difficulty in tracking the effectiveness and impact of initiatives across multiple living labs.	Develop shared monitoring frameworks using input from partner universities; host regular reviews to assess progress and make data-driven adjustments.

Table #11 Risk management

Effective risk management ensures that sustainability initiatives are resilient, adaptive, and more likely to succeed in the long term. By identifying potential risks early, assessing their impact, and implementing mitigation strategies, we believe that projects can be better prepared to handle challenges and achieve their sustainability goals. Continuous monitoring, stakeholder engagement, and flexibility are essential to navigate the complexities of the CIRCULAR project and minimize the negative impacts. These regular reviews allow for adjustments as projects evolve and new risks emerge.

8. Ethic policy of CIRCULAR Living Labs

Ethical principles should be at the foundation of the CIRCULAR Living Labs in all steps of work realization such as: designing and implementing sustainability initiatives, setting up Living Labs, building skills and knowledge and tracking progress. To ensure that sustainability efforts are ethically driven, they will foster not only environmental benefits but also social justice, inclusivity, and equity.

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Ethical practices in these projects ensure that all stakeholders are treated with respect, their voices are heard, and their well-being is prioritized within promotion investigations about their need. By integrating ethics, we can ensure that sustainable solutions are fair, responsible, and designed to create long-term positive impacts for both the environment and society.

Stage	Ethical Considerations
Living Labs setting up	Inclusive and Fair Participation: It is important to ensure that all stakeholders, including local communities, universities, and governments, have an equal priority in the design and implementation of their projects. Ethical practices demand that power balances will be addressed, and that the solutions proposed are culturally relevant and locally approved.
Skills and Knowledge training	Equitable Access and Responsibility: In building the capacity of educators, researchers, and students, ethical considerations ensure that training, resources, and research opportunities are available to all, regardless of socioeconomic status, geographic location, or gender.
Empowering Communities	Active Engagement and Social Justice: Empowering communities requires a commitment to inclusivity, ensuring that all members of the community, including marginalized groups, have access to the resources, knowledge, and platforms necessary to actively participate in sustainability efforts.
Staying on Track	Transparency and Accountability: Setting clear goals, tracking progress, and adjusting based on feedback is essential. Ethical tracking involves monitoring outcomes transparently, sharing results with all stakeholders, and ensuring that the sustainability efforts align with the needs and well-being of the communities involved.

Table #12 Detailed Ethical Considerations

Integrating ethics into each stage of sustainability initiatives ensures that the projects are socially responsible and that they generate fair and equitable outcomes. By focusing on inclusivity, fairness, transparency, and social justice, these efforts contribute to a more sustainable future that is beneficial not just for the environment but for all stakeholders involved, including vulnerable groups. Ethical practices are vital to avoid exploitation and ensure that sustainability efforts contribute to creating a just, resilient, and thriving society.

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9. Sustainability and Impact

Sustainability in Living Labs is demonstrated through long-term environmental benefits such as community empowerment, where locals are actively engaged in decision-making and capacity-building. Successful living labs are scalable and replicable, with models adaptable to other regions. They maintain financial resilience through diverse funding sources, ensuring continuity, while fostering ongoing innovation and knowledge-sharing through partnerships with universities, businesses, and governments.

The CIRCULAR sustainability strategy will focus on ensuring that project results and deliverables continue to be available and used beyond the implementation period in Consortium countries and beyond.

It is based on the principles of ownership, equity, accountability and proportionality, and will especially focus on:

a) designing the framework for the long-term maintenance of results achieved and structures created;

b) expanding project reach and transferring results to other HEIs and stakeholders in SEA.

Under the leadership of USM, Consortium members will jointly agree on the Sustainability Strategy, which will be described in the Sustainability Plan (D6.6). All partners, and SEA HEIs in particular, will actively contribute to define, implement and review the Sustainability Strategy.

Sustainability activities will include:

- maintenance of the website domain for 5 years;
- updates to the website through monthly news, updates and relevant information linked to topics covered by CIRCULAR;
- maintenance of the CIRCULAR Virtual Hub (USM, UNIMAS, RUPP, SRU, NUOL and SKU will appoint human resources to ensure that information is updated, that news and - collaborative opportunities are published, and that data and reports are uploaded;
- Allocation of a space to the continuation of CIRCULAR Living Labs and seek top-management endorsement for purchasing additional equipment;

Besides social and cultural integration ensures that the projects resonate with local communities, by addressing their needs and generation of positive impacts. Stakeholders support the sustainability of ongoing adjustments that will optimize outcomes over time.

10. Expected Outcomes

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The implementation of circular economy initiatives is expected to generate significant environmental, social, and economic benefits. By adopting sustainable practices and fostering collaboration among stakeholders, these initiatives will contribute to long-term sustainability and resilience. This approach is built on the 3 following concepts: Environmental, Social, Economic.
Besides, all Consortium members in partnership with CIRCULAR Living Labs will make conferences, meetings and other events at local, national and international level to present the project, and promote it among their networks as Associated Partners and other key stakeholders. Special efforts will be deployed by SEA HEIs to promote the project at an institutional regional and national levels, to attain an optimal level of awareness and engagement to:

- Raise awareness on and increase the visibility of CIRCULAR.
- Engage and promote the cooperation of a diverse pool of stakeholders on waste management, circular economy and sustainable development.
- Promote the long-term use and maintenance of project results and deliverables

Hence this Work plan will deploy an integrated and comprehensive strategy to increase the visibility of CIRCULAR policy notably in Malaysia, Cambodia and Laos, promote the cooperation with a diverse pool of stakeholders on waste management circular economy and sustainable development, and promote the long-term use of project results beyond the end of the funding period, including by other public and private HEIs in Malaysia, Cambodia and Laos.

10.1 Environmental impact: Reduced waste and resource consumption.

A key goal of circular economy practices is to minimize environmental harm by reducing waste and optimizing resource use.

Expected Outcomes:

- Decreased reliance on non-renewable resources through improved recycling and reuse systems.
- Reduction in the volume of waste sent to landfills and incinerators.
- Improved waste segregation and management practices, resulting in higher resource recovery rates.
- Mitigation of environmental pollution, such as plastic waste in water bodies and greenhouse gas emissions from improper waste disposal.
- Preservation of ecosystems and biodiversity by reducing the demand for raw material extraction.

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10.2 Social impact: Empowered communities, enhanced quality of life.

The circular economy fosters social well-being by engagement of communities, building awareness, and creation of inclusive opportunities.

Expected Outcomes:

- Empowerment of local communities through education, training, and participation in sustainable practices.
- Enhanced awareness and behavioural changes among students, businesses, and residents toward sustainable consumption and production.
- Creation of healthier living environments through improved waste management and reduced pollution.
- Strengthened collaboration among stakeholders, leading to greater social cohesion and shared responsibility.
- Improvement in community participation rates in recycling and clean-up activities.
- Increased adoption of sustainable practices in daily life among residents.

10.3 Economic impact: New business opportunities.

The shift to circular economy models has the potential to generate economic benefits and open new opportunities.

Expected Outcomes:

- Development of green businesses and job opportunities, particularly in recycling, repair, and sustainable production sectors.
- Cost savings for businesses and communities through resource efficiency and waste reduction.
- Enhanced economic resilience to reduce imported raw materials.
- Attraction of investments in sustainable technologies and infrastructure.
- Strengthened local economies through the creation of circular value chains.
- Reduction in waste management costs for municipalities and organizations.

By addressing environmental, social, and economic dimensions, these initiatives ensure a holistic approach to sustainable development. The expected outcomes will not only benefit current stakeholders but also create lasting positive impacts for future generations.

11. Conclusion

The transition to a Circular economy within the framework of the CIRCULAR Living Labs will be systemic, deep, and transformative, practice in Southeast Asia HEIs and beyond. However, active cooperation and alignment across all

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stakeholders—universities, research institutions, businesses, policymakers, and local communities—are essential. The Living Labs serve as dynamic platforms where stakeholders can co-create solutions that integrate sustainability into education, community engagement, and real-world applications.

To ensure that the CIRCULAR Living Labs drive lasting impact, all stakeholders must actively engage in knowledge sharing, policy innovation, and the adoption of circular practices tailored to the specific environmental and socio-economic contexts of their regions. By fostering multi-sector collaboration and enabling local communities to take an active role, the Living Labs ensure that the transition to a circular economy is not only environmentally sustainable but also socially inclusive and economically viable. Through this work plan, the CIRCULAR Living Labs will act as catalysts for systemic change, creating replicable and scalable models that contribute to the broader global shift toward sustainability.

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