

Design For Circular Construction Workshop

The second Workshop of the Social Experiment on Circular Economy in Construction and Buildings successfully took place on January 23, 2024.

The workshop was attended by stakeholders representing the construction industry, competent authorities, and academia/ research. For the purpose of the workshop the participants have been divided into 3 groups.



The workshop, based on the outcomes of the first workshop, which stated the overall challenge the industry is facing towards transitioning to a circular model. Applying an interactive process and a methodology of value proposition canvas, we seek to draft 3 different value propositions that could support overcoming constraints and barriers, as well as incentivizing or facilitating the aspects of legislation/policy, market, and collaboration.

The outcomes of the second workshop will serve as input to the third workshop, focusing on validating value proposition developed.

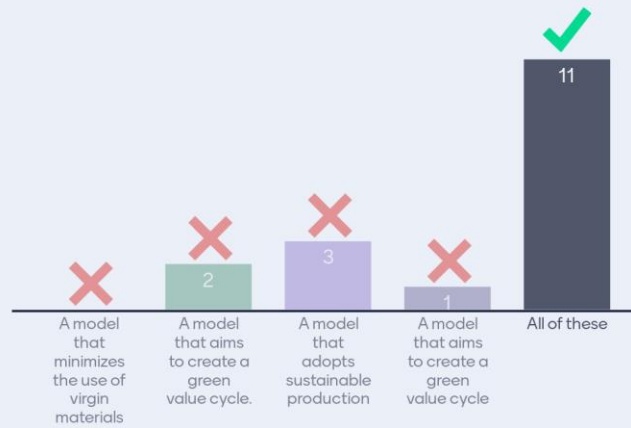
Workshop Elements

The 2nd Workshop included the following elements:

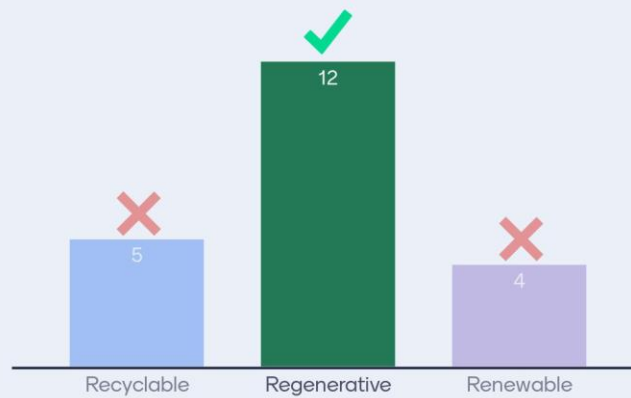
➤ Ice-breaking quiz

Ice-breaking quiz to initiate the workshop using the mentimeter tool and accessing the participants perception about Circular Business Model.

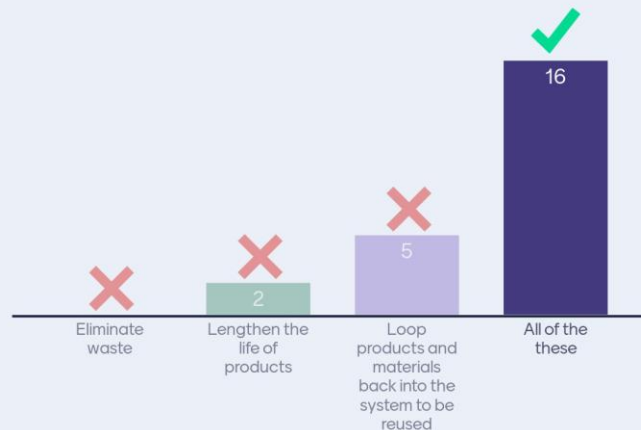
What is a circular business model?



The optimal circular business model is...?



The objective of circular business models is to?



➤ [Overview of the 1st Workshop](#)

At the beginning of the 2nd workshop an overview of the 1st workshop was presented for better communication btw the participants and connection of the outcomes of the 1st workshop with the objectives of 2nd workshop.

[Overall Challenge Workshop 1](#)

Create a financially sustainable circular model for the operation of the entire construction industry supply chain. “The model should be tailored for the specific conditions of the construction industry, considering the Cypriot market's constraints, being an isolated island system with cultural rigidities.”

Legislation / Policy

- Lack of market surveillance and effective implementation of legislation.
- Lack of standards and specifications of secondary raw material.
- Lack of incentives to implement circular practices in construction projects.

Market

- Small market, in a constrained island system, which does not allow the buildup of economies of scale.
- Lack of availability and high cost of circular products and technologies

Collaboration

- Lack of trust by the construction industry stakeholders towards circular products due to lack of long-term experience, knowledge, standards, and certifications.
- Lack of linkage of research results and the market on innovative solutions and products.
- Lack of stakeholder's coordination and leading authority.

➤ [Presentation about Local Circular Practices](#)

During the workshop four Local Businesses presented their Circular methods developed for the production of a circular product or a circular practice apply through their waste management solution or during the production procedure. The 4 Businesses were.

- Elysee Irrigation
- Nicolaidēs & Kountouris Metal Company
- Pharmakas Quarry PLC / RECS Engineering Quarry
- Latouros Quarry





➤ Group sessions using value proposition canvas method.

The participants were divided in three group and the objective of each group was the design a business solution focused on a specific challenge recognised during the 1st workshop using value proposition canvas method.

At the beginning each group has recognised the customer profile focused on each challenge

Group Collaboration

- **Customer Profile:** A construction company which needs to manage construction and demolition waste at source.

Group Legislation / Policy

- **Customer Profile:** An industry that wants to build/set up a circular asphalt factory in a community in Cyprus.

Group Market

- **Customer Profile:** A Business (Designers of construction projects/products) that wants to design a competitive construction circular product/project.

Group's Structure

- Group Collaboration Coordinator Marios Mavroyiannos (CYS)

Group Members:

Latourou Maria	Industry
Nikolaides Dimitris	Academia/Research
Vattis Dimitris	Industry
Theodorou Lefki	Government
Stavros Pouikas	Industry
Georgiou Mikaella	Industry

- Group Legislation / Policy Group Coordinator Elena Demosthenous (CYS)

Group Members:

Dimitris Christodoulou	Industry
SaraMariza Vryonidi	Academia
Rafail Panagiotou	Academia
Tapakis Minas	Government
Kountouris Antonis	Industry
Papageorgiou Marios	Industry
Pericles Savva	Industry

- Group Market Coordinator Anna Dionysiou (CYS)

Group Members:

Petrou Savvas	Industry
Ernestos Sarris	Academia
Oikonomopoulou Konstantina	Research
Petrides Dimitris	Government
Achilleos Georgia	Industry
Mikkides Charis	Industry
Papas Kostas	Industry

Group Outputs

➤ **GROUP COLLABORATION**

- **Customer Profile Map**

Jobs are to:

1. Waste management plan.
2. Waste segregation at source.
3. Selection of green/sustainable materials

Gains:

1. Cost efficient waste management.
2. Time efficient waste management
3. Maximised waste added value by effective segregation.
4. Collaboration opportunities
5. Increased waste management safety
6. Improved construction companies' reputability/green profile

Pains:

1. High cost (labor, collection, and transport)
2. Lack of trust, leadership and initiatives
3. Cultural Issues
4. Lack of available space
5. Lack of motivation
6. Health and safety concerns
7. Waste de-characterization.
8. Lack of training

- **Value proposition Map**

Products and services:

1. **Publicly available Digital registry for construction and demolition waste which includes:**
 - Shareable assets (equipment and labor)
 - Type, location and quantity of waste.
 - Collection sites.

- Active Construction sites by location

2. Construction companies' cooperative partnership for waste management

Gain Creators:

1. Creates added value to secondary materials by providing accessibility to information for other interested parties.
2. Improved waste added value enables efficient waste segregation and collection.
3. Supports the creation of economies of scale by providing active construction sites, waste collection location and quantity/quality data.
4. Efficient waste segregation improves waste quality and thus market value.
5. Reduces waste management cost and time by creating economies of scale.

Pain Relievers:

1. Easy access to information and secondary materials by being an online publicly available pool of information.
2. Improve trust by increased transparency of information.
3. Reduces costs by enabling partnership and collaboration.
4. Promote cultural change.

Value Proposition

Our Publicly available Digital registry for construction and demolition waste which includes:

- Shared assets (equipment and labor)
- Type, location and quantity of waste.
- Collection sites.
- Active Construction sites by location

Helps construction and demolition companies.

Who want to efficiently segregate at source and manage their construction and demolition waste

By

- providing easy access to information and secondary materials by being an online publicly available pool of information.
- Improving trust by increased transparency of information.
- Reducing cost by enabling partnership and collaboration.

And

- Creating added value to secondary materials by providing accessibility to information for other interested parties.
- Improving waste added value enables efficient waste segregation and collection.
- Supporting the creation of economies of scale by providing active construction sites, waste collection location and quantity/quality data.
- Incentivizing efficient waste segregation which improves waste quality and thus market value.
- Reducing waste management cost and time by creating economies of scale.

➤ GROUP Legislation / Policy

▪ **Customer Profile Map**

Jobs are to:

1. Design for minimum waste production.
2. Ensure coordination with all stakeholders to reach consensus.
3. Ensure clean air & minimum disruption of the area.
4. Design so that it is close to road projects.
5. Design so that it is easily accessible with low transportation costs.
6. Ensure availability of raw materials
7. Ensure high return to the community and drive sustainability (jobs/parks/culture shift)

Pains:

1. Insufficient coordination between companies and competent authorities
2. Lack of a holistic and credible impact assessment
3. Minimal knowledge and training knowledge and training of the community and other stakeholders
4. Lack of trust towards the industry
5. Lack of law enforcement and market surveillance
6. No incentives on behalf of the government
7. Lack of high-level initiatives to promote critical projects.
8. No data on possible long-term issues
9. Lack of patience

Gains:

1. Reduced carbon footprint
2. Reduced waste production
3. Land conservation.
4. Increased company reputation
5. Transfer of knowledge in new projects
6. New research for new materials
7. High waste usage (from other waste producers) – saving resources.
8. Cost savings due to easy access to raw materials
9. Efficient production line
10. Culture shift of stakeholders and the community
11. Profit for the company.

▪ **Value proposition Map**

Products and services:

1. **Outsourced Market Surveillance and Compliance Assessment Process on Circular Projects**
2. Creation of a High-level Committee on governmental level
3. Pilot sites for data collection

Gain Creators:

1. Implementation and promotion of circular practices
2. Process for reduced waste production.
3. Creation for a horizontal circular methodology
4. Increased knowledge on impact assessment

5. Exchange of best practices
6. Exchange of data
7. Cost efficient practices.
8. Time efficient practices
9. Community gains (new jobs, new opportunities)

Pain Relievers:

1. Efficient and effective law enforcement
2. Improved communication and coordination
3. Motivation to industries that want to implement circular practices.
4. Better long-term urban planning
5. Reduced resistance
6. Reduced bureaucracy and delays
7. Availability of data
8. Culture transformation of stakeholders

Value Proposition

Our Outsourced Market Surveillance and Compliance Assessment Process on Circular Projects which includes:

- Independent & Accredited companies & experts approved/licensed by a high-level committee.
- Integrated Market Surveillance on all aspects irrespective of which public authority is responsible.
- Compliance Assessment against all relevant specifications/standards and national and European regulations
- Objective Impact Assessment on new & ongoing circular projects.
- Data Collection as a comparison tool for long term impact projections

Helps The Government, Competent Authorities and Industry Stakeholders

Who want to

- Ensure legal compliance
- Implement effective market surveillance on circular projects
- Coordinate all stakeholders involved in circular projects
- Collect data as a tool for long term impact projections
- Promote and invest in circular practices

By

- Enforcing a regular inspection/assessment program
- Ensuring credibility of the impact assessments on circular projects
- Motivating and protecting industry stakeholders that want to invest in circular practices.
- Reducing the resistance of societal stakeholders
- Ensuring efficient communication amongst stakeholders
- Reducing bureaucracy & delays

And

- Implementing circular practices
- Creating process for reduced waste production
- Increasing the knowledge on impact assessment and creating a data pool
- Promoting exchange of good circular practices and data collected
- Implementing cost efficient and time efficient practices

➤ **GROUP MARKET**

▪ **Customer Profile Map**

Jobs are to:

1. Design a circular construction product/project (minimise the use of virgin materials, low energy footprint etc)
2. Achieve market trust regarding the final product.
3. Conformity with Standards and regulations.
4. Create green corporate profile that supports company's social responsibility.

Pains:

1. Low quality and availability of secondary materials as input for the industry/circular products.
2. High Investment for Research and Development for new production of circular products
3. High cost of secondary materials
4. Lack of market trust about products end incorporate recycle content
5. Lack of secondary material quality data
6. Lack of industry expertise and experience in designing circular
7. Low diffusion of new technologies eg (3d printing,AI)
8. Low availability of funding tools for innovative products
9. Management of residual waste management

Gains:

1. Sustainable flow of secondary materials
2. Minimise the use of virgin material and reduces dependency on primary resources.
3. Less waste generation which allows more efficient management
4. Assigning value to existing material creating new market and new jobs in the sector
5. Development and improved local knowhow and expertise in circular design.
6. Promote of new technologies that can support circular design.
7. Greener industry profile and sustainability score
8. Collaboration btw different stakeholders.
9. Improve success rates in research proposals as national and European research focuses on sustainability and circularity and digital transition.

▪ **Value proposition Map**

Products and services:

1. **Development of a digital tool kit for the design of circular construction projects**
 - Digital workflow to quite designers' step by step to access the circularity of different design options/strategies and benchmark between them.
 - Tool will be connected to libraries of available products/material at each step accompanied by a circularity or sustainability score.
 - Tool will allow the comparison btw different options based on overall circularity index.
 - Tool will incorporate all applicable technical specifications and national and European regulations.
 - Tool will incorporate a growing library of real-world local and or international cases/examples.

2. **Development of solutions for analysis of products life cycles (digital Tool) for identifying the value and material markup of a product.**
3. **Participation at research programs with the scope research results to contribute to standardisation or to the development of a new technology.**
4. **Develop a strategy for employee reskilling and education about CE.**

Gain Creators:

1. Improve building Lifecycle Management (BLM)
2. Design for long-term use (Increase building utilisation, Design for Longevity, Design for Adaptability, Design for Disassembly)
3. Design for building efficiency. (operational efficiency low footprint, Reduced costs over the building whole life)
4. Improvement of the efficiency of the construction process i.e Modular Design (less waste, faster= cheaper)
5. Pathways for circular products
6. Support greener designers/projects profile and enable green products market.

Pain Relievers:

1. Manage support conformity with regulatory framework
2. Matching construction stages to relevant materials
3. Improve visibility of innovative and circular materials/products available in local and international market.
4. Improve design process timewise
5. Support cost estimation of circular construction projects

Value Proposition

Our Digital Circular construction tool kit for the design of circular construction projects which includes.

- Digital workflow to quite designers' step by step to access the circularity of different design options/strategies and benchmark between them.
- Connection to libraries of available products/material at each step accompanied by a circularity or sustainability score.
- A Tool for the comparison btw different options based on overall circularity index(cost)
- Access to all applicable technical specifications and national and European regulations.

Helps Businesses (Designers of construction projects/products)

Who want to

- Design a circular construction product/project (minimise the use of virgin materials, low energy footprint etc)
- Achieve market trust regarding the final product.
- Conformity with Standards and regulations.
- Create green corporate profile that supports company's social responsibility.

By

- Compliance with regulatory framework
- Matching construction stages to relevant materials
- Improving visibility of innovative and circular materials/products available in local and international market.
- Improving design process timewise
- Estimating and control of costs over the building whole life

And

- Improving building Lifecycle Management (BLM)
- Designing for long-term use (by Increasing building utilisation, Design for Longevity, Design for Adaptability, Design for Disassembly)
- Designing for building efficiency. (operational efficiency, low footprint, reduced costs over the building whole life)
- Improving the efficiency of the construction process i.e Modular Design (less waste, faster= cheaper)
- Creating pathways for circular products,
- Supporting greener designers/projects profile and enable green products market.

DESIGN FOR CIRCULAR CONSTRUCTION
THE VALUE PROPOSITION CANVAS

SHARED GREEN DEAL

Social sciences & Humanities for Achieving a Responsible, Equitable and Desirable GREEN DEAL