

Integrated Sustainability Assessment Methodologies in the RECREATE

23/04/2026,

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From Circular Innovation to Proven Sustainability

Circular Innovation

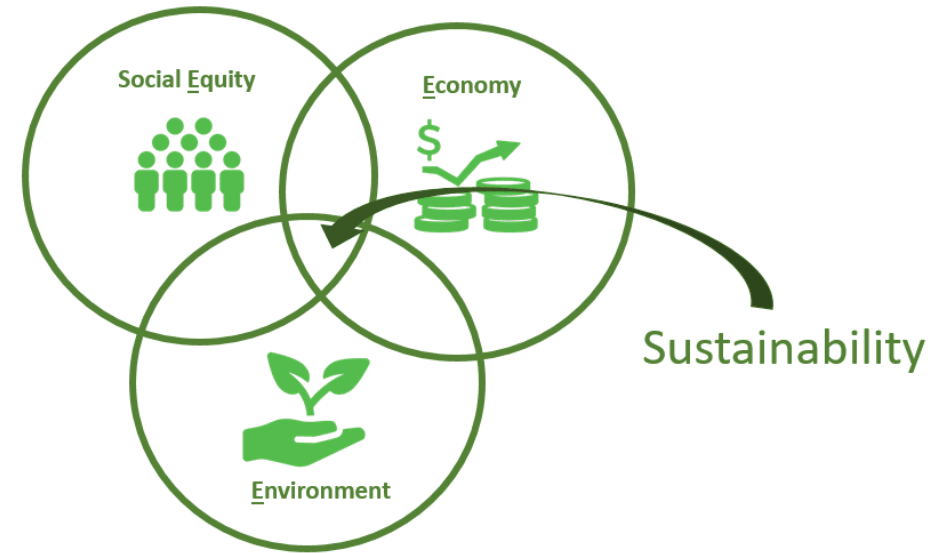


- Recycling
- Reuse
- Secondary materials
- Closed loops



Circularity is a design principle. Sustainability is a measurable performance outcome.

Proven Sustainability



- Quantified CO₂
- Lifecycle cost
- Risk assessment
- Comparable metrics

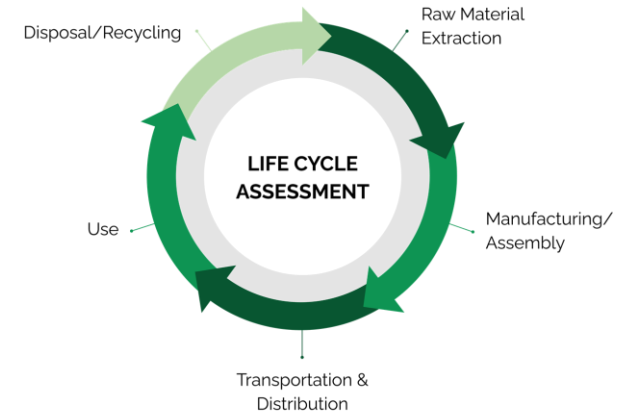


Assessment Gap

Linear Model

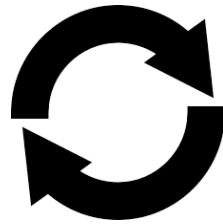


- Single life cycle
- Static modelling
- Environmental focus



Circular Model

- Multi-loop flows
- Value retention
- Secondary markets
- Allocation complexity



Why Evidence Matters for Markets?

€ Investors
Require decision-grade lifecycle data

 Policy Makers
Require taxonomy & regulatory alignment

 Industry
Market adoption depends on quantifiable risk reduction

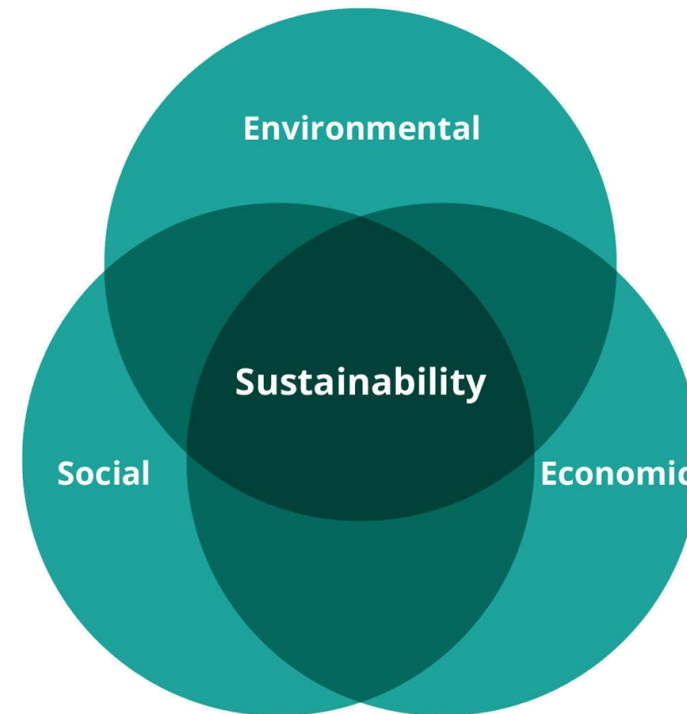
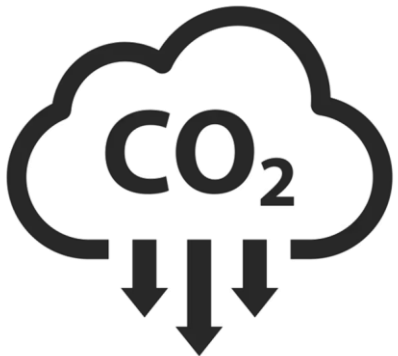
RECREATE Integrated Framework

Lifecycle stages



Assessment Dimensions

- Life Cycle Assessment (LCA)
- Life Cycle Costing (LCC)
- Social Assessment
- Circularity Assessment and Enhancement



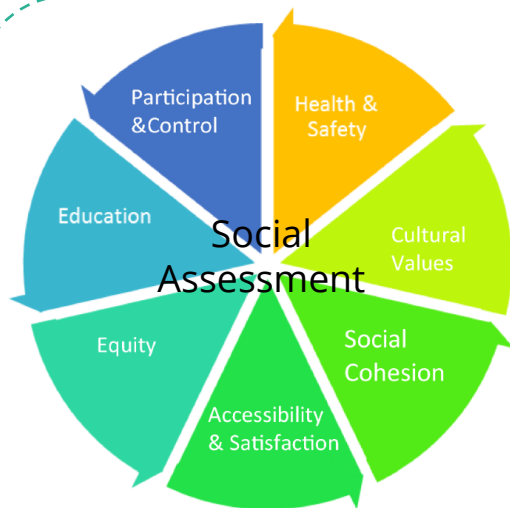
Sustainability Assessment



LCA

- Functional unit definition
- System boundaries
- Baseline vs Circular scenario
- Impact categories (CO₂, energy, resources)

- Energy consumption during operation
- Operational expenditure comparison
- Cost difference between baseline & circular scenario



- Pre-defined stakeholder-oriented criteria
- Semi-quantitative scoring scale (1–5) - Consistent scale
- Comparative assessment
- Evidence-based expert evaluation

Circularity Assessment

Circularity Assessment (CASTech)

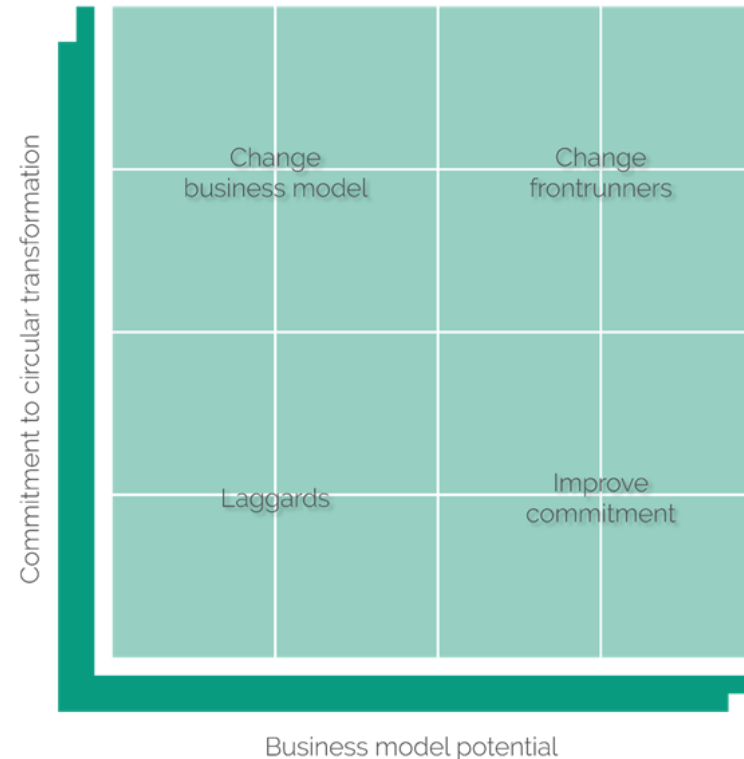
Assessment of the circularity potential and commitment.

Adjustments made for the following risks:

- Circular risks
- Linear risks
- Technology risks
- Pathway risks



**Circularity
assessment for
each demo case
(CASTech Score)**



CAS Matrix

The circularity of a **firm** assessed through its application of a circular business model is manifested by its **potential** to sustainably contribute to the circular economy and **capabilities** of a firm to seize it.

Please note:

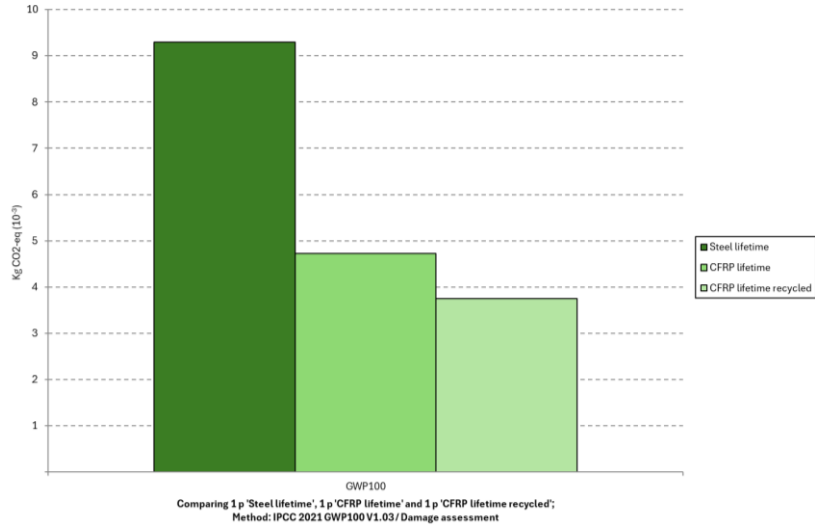
Evaluation of the circularity on the **pre-company stage technologies**.



This is an **ASSESSMENT** not a measurement!

Results of ESESA – Democase

Environmental assessment



CO₂ emission reduction (with virgin fibers): 49.14%
 CO₂ emission reduction (with recycled fibers): 59.68%

Economic assessment

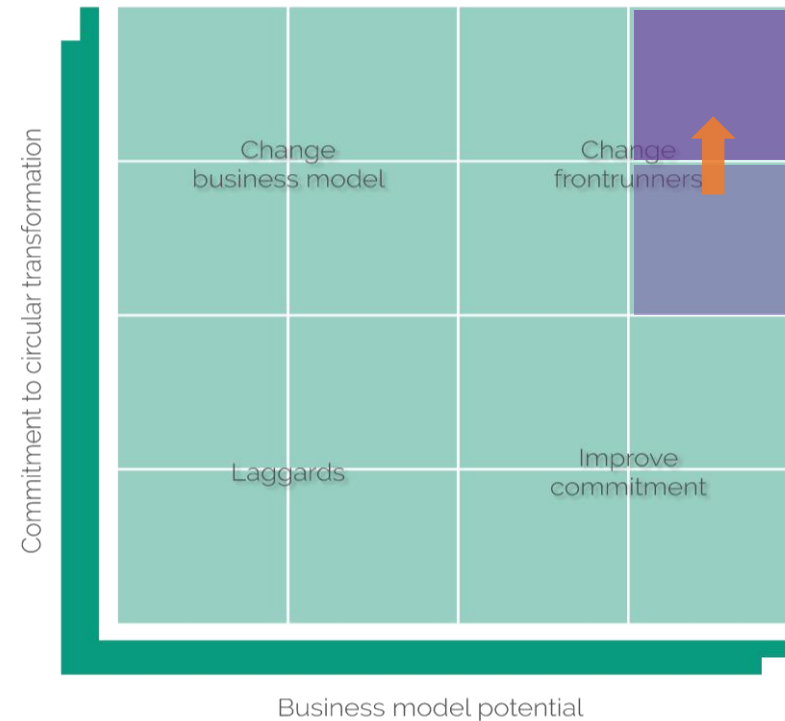
Savings for total manufacturing costs: 36.23%
 Savings for lifetime costs: 41.87%

Social assessment

Overall Social Score (average of 11 indicators)

- Steel: 3.1
- CFRC: 3.4

Circularity assessment



Circular Business Model Potential Score: **40.6**

Commitment to Circular Transformation Score: **27.9**

Total score adjusted for Risks: **65.8**

Recommendation

The KER can be labelled as **Circular frontrunner** as it indicates high circular potential of the current business model as well as commitment to the circular transformation.

The results demonstrate significant potential and the team should focus on commitment by establishing a **dedicated Circularity Team** which would focus on seeking investments and sales to implement this solution.



CityBot steel vs Composite



Funded by the European Union

Conclusions

Integrated sustainability validation is essential

Multi-dimensional assessment builds credibility

Evidence-based circularity enables real markets

RECREATE provides a framework that can be applied elsewhere



Questions?

Thank you for your attention!

