

Worksheets

Become training for professionals



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Worksheet course 1-01: Foundations of the Circular Economy



GOAL

This worksheet introduces you to the fundamental principles of the circular economy (CE). By engaging with this exercise, you will explore how circular thinking differs from the traditional linear model and reflect on how these concepts can be applied in your own business or professional context.

After completing the steps in this worksheet, you will have:

- Identified and compared key features of linear and circular economic systems;
- Reflected on linear value loss within your organization or professional context ;
- Connected core circular economy principles to your own work or processes
- Formulated first, practical action idea(s) based on circular principles.



MY NOTES

[illegible]



In your own words:

- Write briefly and practically, as if explaining it in a business context.*

- 

[illegible]

Step 2: Identifying Linear Practices and Value Loss

Think about your current work or organization.

Where is value currently lost due to linear thinking? List 3 examples of current practices or processes that follow a **linear** model:

Fill in the table.

Linear model		
Linear Practice	Description	Why this matters
Example: Single-use packaging	Example: Products shipped in non – recyclable plastics	Example: A single-use, non-recyclable plastic package converts: Reusable resource value → Waste cost Instead of: Resource → Product → Recovery → Reuse → Continued value Material Value Is Destroyed After One Use Disposal Costs and Regulatory Risk Logistics Inefficiency Brand and Customer Perception Loss Missed Circular Economy Opportunity Externalized Environmental Costs

Reflection questions:

- Which of these issues are already recognized in your organization?
- Which ones are often accepted as “normal” or unavoidable?



REFLECTION

[illegible]

Step 3: CE principles in practice

R-ladder

The R-ladder shows different strategies for retaining value: (Refuse, Rethink, Reduce, Reuse, Repair, Refurbish, Remanufacture, Repurpose, Recycle).

Which R-strategies would be relevant to apply for your company?

- Which strategy feels most relevant to your current work or organization?
- Where do you already see small examples of this strategy?
- How could applying this strategy help reduce value loss identified in Step 2?

Focus on direction and potential, not on detailed solutions yet.



ANSWER

[illegible]

Reflection Check

- ✓ What surprised you most about comparing linear and circular systems?
- ✓ How confident do you feel in explaining the circular economy now (on a scale off 1-5)?
- ✓ What would you like to better understand before moving from ideas to decisions?



REFLECTION CHECK

[illegible]

Worksheet course 1-02: Values Thinking in the Circular Economy



GOAL

This worksheet helps you explore how values influence decisions in the circular economy. You will reflect on personal and organizational values, examine how they shape sustainability choices, and identify value tensions that often arise in circular transitions

After completing the steps in this worksheet, you will have:

- Identified key organizational values relevant to circular economy decisions;
- Reflected on how values influence business and design choices;
- Explored tensions between economic, environmental, and social values;
- Identified where circularity could create additional value beyond compliance or efficiency.



MY NOTES

[illegible]



Below are some examples of values relevant to the circular economy. Check the 3 that resonate most with you or your organization:

To further think about other values, you are welcome to explore this tool: <https://www.think2perform.com/values/#start>



- [illegible]

Step 2: Value Mapping Exercise

Imagine you're designing a new product or service based on CE principles.

Which of the selected values would most influence your decisions?

Circular economy initiatives often start from compliance or cost reduction. Their real potential lies in creating additional value for the organization and its stakeholders.

Reflect on your case and answer:

- Where could circularity create additional value for your company?
- Which type of additional value seems most important in your context?

Consider one or more of the following perspectives:

- Economic value – new revenue, reduced dependency, risk reduction;
- Environmental value – ecosystem benefits, resource regeneration;
- Social value – trust, employee engagement, customer relationships;
- Strategic or intangible value – brand, innovation capability, long-term resilience.

FILL IN THE TABLE

Reflect		
Value type	Examples of value created	Specific for your case
Economic / Financial	Cost savings, new revenue, risk reduction	
Environmental	Reduced emissions, less waste, ecosystem impact	
Social / Ethical	Jobs, safety, customer well-being, community impact	
Intangible / Symbolic	Brand, trust, innovation culture, legitimacy	

Step 3: Value Tensions in Circular Economy

Circular initiatives often involve trade-offs between values.
(e.g. short-term profitability vs. long-term resilience)

Reflect on one situation from your work where values were in tension.

- Which values were involved?
- Which value seemed to dominate the decision?
- What was the outcome?



REFLECTION

[illegible]

Step 4: Identifying Additional Value Through Circularity

Circular economy initiatives often start from compliance or cost reduction. Their real potential lies in creating additional value for the organization and its stakeholders.

Reflect on your case and answer:

- Where could circularity create additional value for your company?
- Which type of additional value seems most important in your context?

Consider one or more of the following perspectives:

- Economic value – new revenue, reduced dependency, risk reduction
- Environmental value – ecosystem benefits, resource regeneration
- Social value – trust, employee engagement, customer relationships
- Strategic or intangible value – brand, innovation capability, long-term resilience



REFLECTION

[illegible]

Reflection check:

- ✓ How aware are you of values influencing decisions in your organization (on a scale of 1–5)?
- ✓ What conversation could you initiate to better align circular ambitions with core values?



REFLECTION

[illegible]

Worksheet course 1-03: Systems Thinking in the Circular Economy



GOAL

This worksheet introduces systems thinking as a way to understand the complexity of circular economy challenges. You will explore your circular opportunity as part of a wider system, identify key actors and relationships, and reflect on where influence and change might emerge.

After completing the steps in this worksheet, you will have:

- Understood systems thinking as a mindset for circular economy;
- Defined a relevant system boundary for your circular opportunity;
- Identified key actors, relationships, and feedback loops;
- Recognized potential leverage points to influence the system.



MY NOTES

[illegible]



EXCERCISE

Step 1: Defining your System Boundary

Use the circular opportunity identified in worksheet 1-01

Clarify your system focus by answering the questions below:

What is the focal point of your system?

(e.g. a product, service, process, customer journey, or business decision)



ANSWER

From whose perspective are you looking at the system?

(e.g. your organization, a customer, a supply chain partner, a regulator)



ANSWER

What is the main question you want this system view to help answer?

For example:

- Where are circular options currently blocked?
- How could this system support reuse or longer lifetimes?



ANSWER

What time horizon are you considering?

This choice helps you decide which dynamics matter most right now.

ANSWER

- ☐ Short term (e.g. project or product cycle)
- ☐ Medium term (e.g. fiscal year)
- ☐ Long-term vision (strategic or systemic change)

Step 2: Mapping Key Actors and Relationships

A system is defined by relationships and interactions, not just individual elements.

In this step, you explore who is involved and how value, materials, and decisions flow.

Identify the key components of your system

- What key processes or activities shape outcomes?
(e.g. design, purchasing, production, use, recovery, decision-making)
- What flows through the system?
(e.g. materials, products, waste, emissions, data, money)
- Which actors influence these processes or flows?
(e.g. internal teams, suppliers, customers, recyclers, regulators)



ANSWER

[illegible]

Step 3: Identifying Feedback Loops and Leverage Points

Systems behave the way they do because of feedback loops.

- Reinforcing (positive) loops amplify change
(e.g. higher demand → more investment → even higher demand)
- Balancing (negative) loops stabilize or slow change
(e.g. regulation, capacity limits, cost constraints)

Reflect on your system:

- Where do actions or decisions reinforce existing behaviour?
- Where do limits, rules, or reactions slow things down?

FILL IN THE TABLE

Reflect on your system		
Which key components are connected?	Loop type (positive or negative)	Effect on circular progress

Step 4: Spotting Barriers and Leverage Points via Megatrends

Now consider where external macro-level shifts could influence the system.

A leverage point is a place in a system where a well-chosen intervention can lead to meaningful change. Rather than trying to fix everything at once, leverage points help you focus on where effort has the biggest impact.

Now consider where circular progress is currently blocked or enabled – and where selected shifts could influence the system.

Identify barriers and potential leverage points in your system by considering selected megatrends. What would be your response/action step?

FILL IN THE TABLE

Identify barriers and potential leverage point		
Megatrend	Barrier/limiting factor or potential leverage point	Response / action of the company

Examples of leverage points: design choices, incentive schemes, policy shifts, stakeholder awareness, skills, shared understanding, collaboration structures.

Reflection Check

- ✓ How complex is your system?
- ✓ Who do you need to involve to influence the system meaningfully?

This system map and identified leverage point will be used as input for day 2, especially Worksheets 2-01 and 2-02



REFLECTION CHECK

[illegible]

Worksheet course 2-01: Material Flow Mapping



GOAL

This worksheet helps you visualize and understand material flows within a product, process, or service from a circular economy perspective, including the extraction–processing–use–recovery chain of a raw material. By mapping materials, identifying value leakage, and reflecting on recovery potential, you build a foundation for identifying circular improvement opportunities.

After completing the steps in this worksheet, you will have:

- Mapped the main material flows across the lifecycle of a product, process, or service (primary and secondary resources) ;
- Identified major resources (mass, energy, water) and key points of material loss, waste, or inefficiency ;
- Reflected on where and why value leaks out of the system.



MY NOTES

[illegible]



Use the system components defined in Worksheet 1-03 as a reference

- What key processes or activities shape outcomes?
(e.g. design, purchasing, production, use, recovery)
- What is the product made of? Which components and materials are needed to make it?
- What flows through the system?
(e.g. materials, products, waste, emissions, data, money).

[illegible]

Sketch the material flow for one product, process, or service.

Consider the following phases (as relevant): raw material sourcing, manufacturing, assembly, distribution, use phase, maintenance/repair, end-of-use/recovery/disposal For the raw material industry, consider exploration, extraction (open-pit / underground), ore beneficiation / concentration, smelting / refining, manufacturing (downstream user), use phase, end-of-life, recycling/secondary recovery, disposal (landfill / tailings storage).

[illegible]

Step 3: Adding Materials and Outputs

Annotate your map:

- What are the main material inputs?
- Where is energy or water used?
- What are the outputs (waste, emissions, pollution)?



Annotate your map

Focus on key materials only, detail is not the goal.

Tip: also include components, additives, chemicals, packaging etc.



NOTES



Afterwards, take a photo of the joint result for yourself.

Step 4: Identify Value Leakage

Look at your map and consider:

- Where is waste being generated?
- Where are materials downcycled, lost, or underused?
- How could value be retained?



Mark on your map where value is lost, e.g. by circling or with a cross.

FILL IN THE TABLE

Where value is lost		
Type of value loss	Which life cycle phase?	Why does it happen?

Tip: think beyond technical fixes: habits, contracts, design choices, incentives.



Afterwards, take a photo of the joint result for yourself.

Reflection question:

Which losses are avoidable? Which ones require redesign or collaboration to address?

Which losses are:

- Technically recoverable today?
- Economically viable under current prices?
- Dependent on policy intervention?
- Dependent on cross-industry collaboration?



REFLECTION

[illegible]

Reflection Check

- ✓ Where in your system do circular opportunities seem to cluster?
- ✓ What types of value could circularity unlock beyond waste reduction?
- ✓ What information or partners would you need to explore these opportunities further?



REFLECTION CHECK

[illegible]

Worksheet course 2-02: Life Cycle Analyses (LCA)



GOAL

In the previous worksheets, you mapped material flows and identified value losses within your system. This worksheet builds on that foundation by introducing Life Cycle Analysis (LCA) as a way to look beyond material losses and zoom in on environmental impacts across the full life cycle.

After completing the steps in this worksheet, you will have:

- Applied life cycle thinking to assess environmental impact patterns;
- Identified impact hotspots (not just material losses).



MY NOTES

[illegible]



EXERCISE

Step 1: Identify Key Impacts per stage

Use the material flow map from worksheet 2-01

For each life cycle stage, reflect on the main environmental and social impacts and why they occur.

Briefly list:

- The key life cycle stages you will consider;
- The main environmental impacts per stage;
- The underlying causes of these impacts.

FILL IN THE TABLE

Impacts		
Life cycle stage	Main environmental impact	Why does this impact occur?

Where is data already available – or missing?

[illegible]

Step 2: Identify impact hotspots

Look at your life cycle map

Reflect and answer:

- Where are the highest environmental impacts or inefficiencies?
- What assumptions are critical to validate with data?



REFLECT & ANSWER

[illegible]

Reflection Check

- ✓ Which stage had the most surprising impact?
- ✓ Where did LCA thinking challenge your assumptions?
- ✓ How could LCA support better circular decisions in your organization?



REFLECTION CHECK

[illegible]

Worksheet course 2-03: Material Choices and Recovery



GOAL

In the previous worksheets, you explored material flows, value losses, and environmental impacts across the life cycle. This worksheet zooms in on material choices and how they influence sustainability, circularity, and recovery in practice. You will evaluate key materials in your product or process, assess their recovery potential, and explore realistic improvements aligned with technical or biological cycles.

After completing the steps in this worksheet, you will have:

- Identified key materials in your product, service, or process;
- Assessed their sustainability and recovery potential;
- Explored realistic alternatives or design changes;
- Defined practical actions to improve material use or recovery.



MY NOTES

[illegible]



Use insights from the previous worksheets and continue with the same product or service.

- The primary function of the product or component;
- The use context (who uses it, how, how often);
- The expected product lifetime;

[illegible]

Recovery cycles (short overview)

- Technical cycle: for durable products and materials that deliver value over time and can be reused, repaired, refurbished, or recycled.
- Biological cycle: for consumable or dissipative products, or contexts where biodegradation provides clear functional or system benefits, and materials can safely return to natural systems.

Determine whether the product or component primarily belongs in the technical or biological cycle.

Justify your choice based on: Product function, expected use duration, realistic collection, use, and recovery infrastructure



ANSWER

[illegible]

Step 2: Evaluating material impact and recovery

Assess the main materials used in the product or component.

Consider where materials come from, their potential environmental or health risks, and whether they can realistically be recovered at end-of-use.

Reflection:

- Which materials are critical for performance?
- Which are scarce, hazardous, hard to separate, or costly to recover?
- Where do you have influence over these material choices?

FILL IN THE TABLE

Evaluating material impact & recovery				
Material	Origin	Toxic or hazardous	Recyclable / Reusable / Repairable / Compostable?	Existing infrastructure & challenges for recovery

Step 3 Exploring Better Alternatives

Focus on 1–3 materials that are problematic, hard to recover, or have high environmental impact.

Explore potential alternatives that could improve circularity or reduce impact:

You may consider substitutions such as:

- Virgin → recycled
- Fossil-based → biobased
- Conventional → biodegradable
- Mono-material → simplified or standardized materials

FILL IN THE TABLE

Potential alternatives		
Problematic material	Potential alternative(s)	Expected benefits/impact

For each material, reflect briefly on:

- Circular value retention (reuse potential, recycling quality, value preservation)
- Sustainability impacts (climate, toxicity, resource scarcity, social risks)
- System compatibility (fit with technical or biological cycle, infrastructure, logistics, realistic use and disposal)

Reflection:

Does this change lead to genuine system improvement, or mainly shift impacts elsewhere?



REFLECTION

[illegible]

Step 4: Design Interventions for Higher Value Retention

Identify concrete design interventions that could improve value retention for your product and its materials, such as:

- Design for disassembly or separation;
- Increased durability;
- Material simplification or standardization;
- Avoiding problematic additives;
- Material labelling or passports.

FILL IN THE TABLE

Design interventions		
Product/material targeted	Action idea	Expected benefit or improvement

Reflection Check

- ✓ Which material poses the biggest sustainability or recovery challenge?
- ✓ How would the proposed changes affect circularity, cost, sourcing, supply risk, or customer acceptance?
- ✓ What internal or external partners would need to be involved (e.g. suppliers, designers, waste partners, customers)?



REFLECTION CHECK

[illegible]

Worksheet course 2-04: Initiating change for transformation



GOAL

This worksheet helps you understand how to initiate and lead circular change within your organization or team. You'll identify drivers, enablers, and blockers of transformation and define a first step for initiating change based on your role and context.

After completing the steps in this worksheet, you will have:

- Reflected on internal and external drivers for circular transformation;
- Identified enablers and barriers in your organizational context;
- Positioned yourself as a potential change agent;
- Defined one actionable first step for initiating or supporting change.



MY NOTES

[illegible]



EXERCISE

Step 1: Why Change? Understanding your Organizational Drivers

Instructions: Reflect on your organization's internal change dynamics.

- What recent change initiatives (sustainability or otherwise) have been successful? Why?
- What values, pressures, or goals currently drive decisions?
- Who typically champions change – and who tends to resist or slow it?

Identify 2–3 internal and external drivers (use examples if helpful: regulation, customer demand, risk reduction, reputation, efficiency gains, personal conviction, etc.)



FILL IN THE TABLE

Identify Internal and external drivers		
Driver type (internal/external)	Description	Example/evidence

Step 2: Barriers and Enablers of Change

Think about what supports or hinders change in your organization:



FILL IN THE TABLE

Enablers and barriers of change	
Enablers (what supports change)	Barriers (what hinders change)
e.g. sustainability champions	e.g. lack of budget

Step 3: Your Role as a Change Agent

Instructions: Consider your role, influence, and network.

Comment on the reflection points below:

- What sphere of influence do you currently have? (e.g. team, department, suppliers)
- Who do you need to involve or convince to enable change?
- What are you personally motivated to improve in terms of circularity?



COMMENT

[illegible]

Step 4: Anticipate Resistance and Plan Responses

Instructions: Think through possible challenges and how you'll respond.

FILL IN THE TABLE

Anticipate		
Likely Objection or Concern	Source (Who/What)	Your Reframing or Response Strategy
(e.g. "Too expensive.")	(e.g., Finance team)	(e.g., Show lifecycle cost benefits)

Look at the "source" column above – these are likely your essential stakeholders. Please complete this stakeholders list on the next page (e.g. by adding internal teams, suppliers, customers, recyclers, regulators) and assess their role, level of influence and interest in your business.

FILL IN THE TABLE

Stakeholders list			
Actor / Stakeholder	Role in the System (e.g. supply of material, influence strategy)	Level of Influence (low-high)	Level of Interest (low-high)

Tip: Think beyond your organization – include partners, users, regulators, and other affected parties.

Reflection Check

- ✓ What makes change feel difficult in your organization?
- ✓ Where do you feel empowered to make a difference?
- ✓ What support (skills, allies, tools) would help you most right now?
- ✓ How can you align your proposal with internal goals (e.g. cost, compliance, innovation)?



REFLECTION CHECK

[illegible]

Worksheet course 2-05: Wrap-up circular opportunities



GOAL

Across Day 1 and Day 2 (Worksheets 1-01 to 1-03 and 2-01 to 2-04), you built a foundation in circular economy principles, looked at values and feedback loops, analysed material and value flows, and assessed environmental impacts.

This worksheet helps you synthesize these insights and select one opportunity to take forward and further develop in the next phase of the program

After completing the steps in this worksheet, you will have:

- Revisited insights from earlier exercises;
- Formulated clear circular opportunities;
- One selected circular opportunity to develop further.



MY NOTES

[illegible]



EXERCISE

Step 1: Reconstruct Circular Opportunities from Earlier Insights

In previous worksheets (1-01 to 2-04), you explored circular strategies, values, material flows, and environmental impacts.

Now, translate these insights into clear and actionable circular opportunities.

Use input from:

- 1-01 – R-strategies / Circular strategies:
Where could higher-value circular strategies (e.g. reduce, reuse, repair, refurbish, remanufacture) be applied to retain more value?
- 1-02 – Values & ambitions
Which potential opportunities align strongly with your organization's sustainability ambitions, purpose, or strategic priorities.
- 1-03 – System perspective / stakeholders:
Where do dependencies, collaboration opportunities, power dynamics, or system bottlenecks influence circularity?
- 2-01 – Material flow analysis:
Where along the life cycle (upstream, production, use phase, end-of-life) do major inefficiencies or losses occur?
- 2-02 – Life cycle analysis & impacts
Where are the biggest environmental impact drivers and improvement potentials?
- 2-03 – Materials analysis:
Which materials create high costs, waste, scarcity risks, or complexity — and where could alternative materials or smarter use improve circularity?
- 2-04 – Initiating change:
Where is there momentum, willingness, influence, or practical entry points to start implementing change?

For each key issue you identified, formulate a circular opportunity using this structure:

"We could apply [circular strategy] to [product/material/process] in order to [reduce impact / retain value / improve resilience]."

EXAMPLE

Formulate a circular opportunity	
Insight from earlier worksheets	Circular opportunity (formulated clearly)
Example: High material waste in production	Example: Introduce material reuse or redesign to reduce scrap and retain value
Example: High virgin material use	Switch to recycled or bio-based inputs and reduce dependency on primary raw materials
End-of-life products lose functional components	Introduce refurbishment or remanufacturing to recover high-value components
Products break and are replaced frequently	Introduce repair services or modular design to extend product lifetime
Long supply chains with volatile material prices	Localize sourcing or develop take-back loops to increase resilience



FILL IN THE TABLE

Formulate a circular opportunity	
Insight from earlier worksheets	Circular opportunity (formulated clearly)

Step 2: Prioritize

Tip: Keep opportunities specific enough to analyze later (avoid vague ideas like "be more sustainable")

Strong opportunities often combine:

- *A high-impact hotspot (2-04)*
- *A feasible R-strategy (1-01)*
- *Alignment with organizational values (1-02)*

Select criteria that matter in your context (choose 3 to 5):

Step 3: Prioritize Your Opportunities

Instructions: Score each opportunity against your selected criteria (e.g. Low / Medium / High or 1–5 scale).

Opportunity score					
Opportunity	Impact potential	Feasibility	Strategic Fit	Investment level	Overall priority

Tip: If helpful, use quick discussion or dot voting to identify the strongest candidate.

Step 4: Select & justify your circular opportunity

Instructions: Select one opportunity to take forward.



SELECTED CIRCULAR OPPORTUNITY

Why you selected this opportunity?

- What makes it promising?
- Where does it create the most value (environmental, financial, strategic)?
- Why is it realistic enough to explore further?



DESCRIBE WHY YOU SELECTED THIS OPPORTUNITY

[illegible]

Step 5: Readiness check for day 3

Before moving forward:

- What assumptions need validation?
- What information is missing?
- Who needs to be involved next?
- What could block progress?



ANSWER

[illegible]

Transition to day 3

The selected opportunity will now be further developed through:

- Life Cycle Costing (3-01)
- Sustainable Financing (3-02)
- Circular Business Model design (4-01)

Make sure your opportunity is:

- ✓ Concrete enough to analyse;
- ✓ Relevant to your organization;
- ✓ Specific enough to connect to costs, financing, and business models.



NOTES

[illegible]

Worksheet course 3-01: Life Cycle Costing (LCC)



GOAL

In earlier worksheets, you mapped material flows, value losses, and environmental impacts across the life cycle. This worksheet builds on that work by introducing Life Cycle Costing (LCC) as a way to understand *where and when* costs occur over time — and how circular strategies can shift, avoid, or reduce them. LCC helps move beyond upfront price comparisons toward long-term value and better-informed decisions.

After completing the steps in this worksheet, you will have:

- Identified where costs occur across the life cycle;
- Compared linear and circular cost patterns;
- Recognized cost shifts, trade-offs, and hidden costs;
- Reflected on how LCC could improve decisions in your work.



MY NOTES

[illegible]



EXERCISE

Step 1: Breaking Down Life Cycle Cost Flows

Use the same product, service or system from your previous worksheets.

Map *where* costs occur across the life cycle.

You do not need exact figures – focus on cost types and relevance.

Reflection questions:

- Where are the biggest cost drivers?
- Which costs are often overlooked or underestimated (e.g. waste, inefficiency, downtime)?

FILL IN THE TABLE

Map where costs occur across the life cycle		
Life cycle stage	Cost elements (examples)	Relevance for your product or organization
Acquisition & raw material sourcing	Materials, Purchasing Transport	
Manufacturing / preparation	Energy Labour Scrap waste Defects/rework Quality losses	
Distribution & installation	Transport Packaging Installation effort	
Use & operation	Energy use Consumables Downtime Customer support	
Maintenance & repair	Labor Spare parts Service contracts	
En-of-use / recovery / disposal	Disposal fees Take-back Recycling Reverse logistics	
Externalities	Emissions Regulatory costs Compliance Reputational risk	

Step 2: Circular vs. linear cost comparison

Use one circular idea explored earlier. Compare how costs shift between a linear and a circular approach

FILL IN THE TABLE

Map where costs occur across the life cycle		
Cost perspective	Linear approach	Inspiration: Example for a circular solution
Description approach		Product-as-a- service model (e.g. leasing instead of selling)
Where do costs mainly occur?		More costs shift to maintenance, reverse logistics, refurbishment
Upfront costs		Higher design, tracking or setup costs (e.g. modular design, take- back system)
Long-term costs		Lower material costs over time; reduced waste and repurchasing
Who carries the costs?		Producent retains ownership and carries maintenance / recovery cost
Pros/cons		More stable revenue, material retention Higher initial investment, operational complexity

Reflection

- Which costs move upstream or downstream?
- Where might circularity increase short-term costs but reduce long-term ones?
- Which life cycle stage would benefit most from a circular intervention?



REFLECTION

[illegible]

Reflection check

- ✓ Does your organization mainly focus on upfront cost or life cycle cost today?
- ✓ What prevents wider use of LCC (e.g. lack of data, short-term KPIs, responsibilities)?
- ✓ How could LCC support both circularity and long-term profitability?
- ✓ Which assumption would you most like to validate with better data?



REFLECTION CHECK

[illegible]

Worksheet course 3-02: Sustainable financing



GOAL

In earlier worksheets, you explored life cycle costs and how circular strategies can shift costs over time. This worksheet builds on that insight by focusing on financing: how circular initiatives can be funded, even when they involve higher upfront investments, longer payback times, or new risk profiles. You will explore common sustainable finance options, reflect on what is realistic in your organizational context, and define a first step toward financing circular solutions.

After completing the steps in this worksheet, you will have:

- Understood the role of finance in enabling circular transformation;
- Identified typical financial barriers and enablers for circular initiatives;
- Explored relevant sustainable financing options;
- Defined one concrete step to connect circular goals to financing.



MY NOTES

[illegible]



EXERCISE

Step 1: Understand Your Financing Needs

Use the circular opportunity or solution you have been working on in earlier worksheets.

Identify which activities or investments require financial support.

Examples of financing needs:

- New equipment or infrastructure;
- Product redesign or R&D;
- Pilots or prototypes;
- IT systems, data or tracking;
- Partnerships, take-back or reverse logistics systems.

FILL IN THE TABLE

Financial support		
Activity or investment	Why is funding needed?	Timing (short/long term)

Reflection: Which investments are hard to justify within current budgets or KPIs?



REFLECTION

[illegible]

Step 2: Financial barriers & enablers

Circular initiatives often struggle not because they lack value, but because they do not align with existing financial logic, decision rules, or risk perceptions.

Identify key enablers and barriers for financing circularity in your context. Use the examples below as inspiration and add your own situation-specific insights

FILL IN THE TABLE

Key enablers and barriers for financing circularity	
Examples	How does this apply in your context
Enablers (what helps) Access to public grants or subsidies Long-term strategy or transition budget Clear sustainability targets Regulatory pressure Reliable data on long-term savings Risk reduction Cross department collaboration (finance, sustainability, operations)	
Barriers (what blocks) Short *ROI expectations or payback time expectations Procurement focused on lowest upfront price Unclear ownership of costs and benefits across departments Limited data or experience with circular strategies and business models Perceived financial or operational risk Uncertainty	

*ROI (Return on Investment) refers to how quickly an investment is expected to pay back.

Reflection

What is the biggest financial barrier for circular initiatives in your organization, and why? What can you do about it?



REFLECTION

[illegible]

Step 3: Exploring sustainable financing options

Common sustainable finance instruments include:

- Green or sustainability linked loans;
- ESG or impact investment funds;
- Public grants or subsidies (e.g. EU, national);
- Blended finance (Public + private);
- Internal innovation or transition budgets.

Explore which options might fit your case.

FILL IN THE TABLE

Sustainable financing options		
Source type	Specific option & description	Fit with your circular opportunity (Low / Medium / High)
Internal		
Public funding		
Private capital		
Other		

Tip: You are not looking for a perfect match. The goal is to identify plausible routes and where further exploration or conversations would be useful. Also consider non-monetary support (internal time, pilots, shared resources)

Step 4: From insight to financing story

Use your table to outline a short financing narrative:

- What are you trying to finance, and why now?
- What circular and business value does it deliver?
- What are the main risks or uncertainties, and how could they be managed?
- What do you need from the funder (amount, timing, type of support)?

Tip: This can later be used as a slide, proposal outline, or funding conversation starter



NARRATIVE

[illegible]

Reflection check

- ✓ Is your organization financially set up for long-term circular investments?
- ✓ Who needs to be involved in financial decisions about sustainability?
- ✓ What funding sources or partnerships could you explore next?



REFLECTION CHECK

[illegible]

Worksheet course 4-01: Innovative Circular Business models



GOAL

This worksheet helps you explore and apply circular business models in your organization or field. You will review circular model types, reflect on your current approach, map opportunities, and define one actionable idea for innovation or transformation.

After completing the steps in this worksheet, you will have:

- Understood common circular business model types;
- Reflected on your organization's current business logic;
- Explored opportunities to integrate circular strategies;
- Summarized findings in a circular business model pitch.



MY NOTES

[illegible]



Circular business models describe *how* value is created, delivered, and captured in a circular way. Common types include:

- Design for Circularity* (e.g. modular, upgradable, recyclable, design for disassembly) is an enabler for all business models.

[illegible]

Step 2: Exploring Circular Business Models

Use your solution from previous worksheets or the chosen circular business model (step 1) as the basis. You do not need to fill in every row – focus on the elements that would change most.

Think about a circular business model by exploring the canvas below and reflecting on the guiding questions below. Take some notes on each of the canvas elements.

POLICIES & REGULATIONS • Insert text here		TRENDS • Insert text here	
KEY RESOURCES • Insert text here	KEY ACTIVITIES • Insert text here	VALUE PROPOSITION • Insert text here	CUSTOMERS & USERS • Insert text here
KEY PARTNERS • Insert text here	DISTRIBUTION • Insert text here		END-OF-USE • Insert text here
POSITIVE IMPACTS • Insert text here		COSTS & REVENUES • Insert text here	NEGATIVE IMPACTS • Insert text here



NOTES

Reflective questions

Value proposition

- What different kinds of value are created for all of the company's stakeholders?
- What products and services does the business offer to help customers accomplish their key activities?
- What experience is offered? How can this be described?
- How could the business's products and services help to make things easier, eliminate obstacles, kill frustrations and make customers & users feel better?
- What do customers & users expect in terms of circularity? What would they wish more or less of?
- What products and services can the business offer to help with adopting circularity practices by customers?
- How do these circularity elements drive or enhance value created for customers?



ANSWER

[illegible]

Customers & users

- For whom is value being created?
- Who are the key target customers and/or end users?
- Who are the relevant customers from a CE perspective?
- What level of customer service is in place and how can this be further developed?



ANSWER

Key resources

- Which raw materials (natural or technical) are the company already using?
- Which and how many machines are used?
- Which products, components, and materials are used? Is packaging used?
- What are the key intangible resources required for delivering the value proposition (knowledge, people, skills)?
- What are the key resources required for enabling CE within the business model?



ANSWER

Key activities

- What are the key activities for value creation?
- Which production or operational processes are used?
- How is circularity taken into account for activities such as design and production?
- What additional activities are required to enable a circular economy within the business model?



ANSWER

Key partners

- Who are the key partners and suppliers of the company? What activities, skills or expertise can they provide?
- Who are the key partners and suppliers that the company cannot perform CE activities without? To what extent do these partners influence the adoption of CE practices?



ANSWER

Distribution

- How is the offer of the company delivered or made available? How does this process work?
- What does the company do to enhance circularity of transportation and secondary packaging?
- What are the 'reverse' channels for product take-back or end-of-life product/material recovery? (if relevant)



ANSWER

End-of-use

- What is the end-of-use scenario for the product, its components and packaging? Can the product meet new needs after usage?
- How is the product disposed of, collected or returned?
- Can the product be repaired, reused or recycled? Can the end-user or other partners be involved or rewarded for facilitating this?
- What influence do the chosen materials, fillers/additives and product design have on the end-of-use or recyclability of the product?
- Are there any other aspects that can affect the recyclability of products?



ANSWER

Costs & revenues

- For what value are customers paying? How are they paying?
- What are the existing or potential sources of revenue?
- What are the costs and the investment required?
- How do CE elements have an impact on costs?



ANSWER

Policies & regulations

- Which rules and regulations impact the business or will impact the business in the (near) future?
- Are there any industry-led initiatives, rules, and practices that are relevant for the business?



ANSWER

Trends

- What economic and market trends are impacting the business?
- What trends are evolving amongst competitors? Are there new entrants?
- What new technological trends are emerging that will impact the business? Are new technologies enabling or threatening the business model, or providing new opportunities?
- What are the big trends in customer and consumer needs and requirements? How will customer expectations and behavior change in the near future?



ANSWER

Positive & negative impacts

- What are the positive impacts for the company, society and/or environment?
 - How can the company contribute to this?
 - What are the negative impacts on the company, society and/or environment?
 - What are the impacts of energy usage, production and transportation?
 - How can the company contribute to limiting these impacts?
 - Which energy resources are the company using? Is energy consumption optimized?
- Could an activity become energy neutral?



ANSWER

Reflection check

- ✓ Where would circularity add the most value – for the business, customers, or environment?
- ✓ What is the main barrier to shifting business models in your organization?
- ✓ What could be a quick win or pilot project to test circularity?
- ✓ Who could you collaborate with to build momentum for business model change?
- ✓ What additional data or approvals would support implementation?



REFLECTION CHECK

[illegible]

Worksheet course 4-02: Technological Innovation in the Circular Economy



GOAL

This worksheet helps you explore how technology can enable circular economy practices. You'll reflect on existing and emerging technologies in your context, assess their potential for circular impact, and define one innovation-related action to explore further.

After completing the steps in this worksheet, you will have:

- Identified technologies that support circular practices.
- Reflected on how digital tools and processes can close loops.
- Explored barriers and enablers to adopting innovation.
- Defined a practical step to leverage technology for circularity.



MY NOTES

[illegible]



EXERCISE

Step 1: Innovation needs and technology enablers

Instructions: Based on your circular opportunity, list technological enablers that could improve performance, traceability, design, or recovery. Reflect on gaps in your system or business model (see 4-01) that may require new solutions.

Please look at the exemplary table on the next page to get some ideas

Fill in the table			
Challenge/ gap or constraint	Type of Innovation Needed (Product / Process / Digital / Organizational)	Useful Technology or Tool	Internal Capacity or Need for Partnership

Example

Challenge/ gap or constraint	Type of Innovation Needed (Product / Process / Digital / Organizational)	Useful Technology or Tool	Internal Capacity or Need for Partnership
No system in place to track materials after sale	Digital	Digital Product Passport (DPP), QR codes, RFID/NFC, blockchain-based traceability	Internal: IT/data architecture, product data governance, master data management. Partnership: traceability/DPP platform provider, standards bodies/industry consortium, key distributors/retailers for adoption.
Lack of data on environmental impact of materials	Digital / product	LCA software + databases (e.g., Eco invent/GaBi), CAD with LCA plug-ins, EPD libraries, material passports	Internal: LCA expertise, procurement data quality, supplier data collection process. Partnership: LCA consultants, suppliers for primary data, industry EPD program operators.
Product not designed for repair or reuse	Product	Design-for-disassembly guidelines, modular architecture, fastener standards, repair manuals, CAD/PLM integration	Internal: circular design training, engineering standards, product governance. Partnership: repair networks, component suppliers, service partners to validate design for repair.
No feedback loop from customer use phase to improve durability/efficiency	Digital / process	IoT sensors, usage analytics, warranty/returns analytics, digital twin, field-service apps	Internal: data science, reliability engineering, customer service integration. Partnership: IoT platform provider, after-sales/service partners, privacy/legal advisors (consent & compliance).
Lack of reverse logistics infrastructure	Process / organizational	Returns management system (RMS), route optimization, IoT-enabled collection bins, digital twin to model return flows	Internal: supply chain redesign, operations planning, customer service scripts. Partnership: 3PLs, postal/courier networks, refurbishers/recyclers, municipalities (collection points).
Customers not incentivized to return products	Organizational / Process	Deposit-return scheme design, take-back portals, loyalty rewards, trade-in pricing tools	Internal: marketing, pricing, customer experience, fraud controls. Partnership: retailers/marketplaces, payment/loyalty providers, logistics for easy drop-off.
Linear revenue model limits reuse or sharing	Organizational / Business model	Product-as-a-Service (PaaS) platform, subscription billing, usage tracking, predictive maintenance	Internal: finance/accounting model shifts, contract management, service operations. Partnership: financing/leasing partners, insurers, service providers for maintenance & refurbishment.
Employees lack skills to implement circular design	Organizational / Cultural	Circular design playbooks, training academy, communities of practice, design reviews & KPIs	Internal: HR/L&D, engineering leadership, change management. Partnership: universities/training providers, industry networks, specialist consultancies.
Waste separation and low-quality sorting outputs at end-of-life	Process / Digital	AI-powered image recognition sorting, robotics, sensor-based sorting (NIR), smart bins	Internal: operations excellence, quality management, EHS. Partnership: waste management firms, recycling tech providers, local authorities/material recovery facilities.
Inventory mismatch drives overproduction and waste	Digital / Process	AI demand forecasting, inventory optimization, supply chain resilience tools, S&OP digitization	Internal: data integration (ERP), forecasting capability, cross-functional S&OP discipline. Partnership: AI/APS software vendors, key distributors for sell-out data sharing.
Poor transparency in value chains blocks circular sourcing	Digital / Organizational	Supply chain traceability platforms, supplier portals, chain-of-custody tools, audit management systems	Internal: supplier management, compliance, data stewardship. Partnership: tier-1/2 suppliers, certification bodies, platform providers, industry consortia.
Need alternatives to hard-to-recycle or toxic materials	Product	Advanced biomaterials databases, simulation tools, green chemistry screening, materials R&D platforms	Internal: R&D capability, testing labs, regulatory expertise. Partnership: material innovators, universities, contract labs, certification/regulatory advisors.

Instructions: Select one promising technology or innovation path. Plan next steps to explore or test it.

- What will you explore (or prototype)?
- Who needs to be involved (internal or external)?
- What information, funding, or skills are required?
- What is your timeline or trigger for decision-making?

Tip: Use this to initiate conversations with innovation, IT, or R&D Teams



Explore or test

[illegible]

Step 2: Evaluate Impact and Feasibility

Instructions: For each technology identified, assess its potential to support circularity. Please see an example on the next page.

Fill in the table.

Potential				
Technology	Circular Benefit (e.g. reuse, efficiency)	Investment Needed (Low / Medium / High)	Technical Readiness (Low / Med / High)	Risks or Dependencies

Example				
Technology	Circular Benefit (e.g. reuse, efficiency)	Investment Needed (Low / Medium / High)	Technical Readiness (Low / Med / High)	Risks or Dependencies
Blockchain + QR for materials	Enables reuse & recycling	Medium	High	Data standards, stakeholder adoption
AI sorting systems	Increases recycling rates	High	Medium	High CapEx, maintenance complexity
IoT for product-as-a-service	Enables reuse, reduces waste	Medium	High	Data privacy, reliability of sensors
CAD for modular design	Enhances repair, remanufacture	Low to Medium	High	Requires design culture shift
Predictive maintenance systems	Extends product life	Medium	High	Integration into existing infrastructure
Digital Product Passports (DPPs)	Lifecycle transparency	Medium	Emerging	Regulatory alignment (EU DPP rollout 2027–30)

Where is technology a critical enabler, and where might simpler changes suffice?

[illegible]

What technical, organizational, or cultural barriers might limit circular tech adoption? Please look at the examples below to get some ideas:

- Lack of integration between systems (ERP ↔ IoT ↔ CRM)
- Immature tech (e.g. recycling of composites, biodegradable sensors)
- High upfront investment

- Silo thinking: sustainability and innovation teams don't collaborate
- Short-term KPIs dominate decision-making
- Procurement policies favor lowest-cost instead of circular criteria

- Resistance to change from employees or leadership
- Low risk appetite for piloting new business models
- Lack of awareness of circular business value

[illegible]

Worksheet course 5-01: Collaborative Strategies for Circular Economy



GOAL

This worksheet supports you in identifying and developing collaborative strategies to drive circular transformation. You'll reflect on your current partnerships, explore where collaboration can unlock value, and define one action to foster circular cooperation.

After completing the steps in this worksheet, you will have:

- Mapped existing stakeholders and value chain actors.
- Identified collaboration gaps or opportunities.
- Explored mutual benefits and shared goals.
- Defined one step toward building or strengthening circular partnerships.



MY NOTES

[illegible]



EXERCISE

Step 1: Identify your (circular) collaboration needs

List the key actors in your product or service's value chain that are needed for your circular solution. Include suppliers, customers, logistics, service providers, recyclers, etc.

If there are multiple value chains within your organization, for example due to diversification or a conglomerate structure, limit yourself to one value chain on which you will focus

Example				
Opportunity area	Type of partner needed (supplier, customer, NGO...)	What could be shared or created	Benefits for all parties	Need or Goal (e.g. recover materials, access users, influence design)
Product take-back scheme	Logistics / Reverse logistics provider	Shared infrastructure for return and transport of used products	New revenue from second use, data on returns, reduced landfill	Recover materials, reduce waste
Recyclable packaging	Packaging supplier	Redesign of mono-material packaging	Easier recycling, meets regulation, enhances brand image	Improve recyclability of packaging
Repair and refurbishment	Local repair SMEs or social enterprise	Local service network for product repair	Job creation, waste reduction, customer engagement	Extend product life
Circular input sourcing	Material supplier	Switch to recycled or bio-based feedstocks	Cost reduction, emissions savings, meets circular procurement standards	Reduce virgin material input
Transparency in supply chain	IT/data platform provider	Digital Product Passport / blockchain	Trust and traceability, regulatory readiness	Enable circular traceability
Design for disassembly	Industrial designer / R&D	Product redesign based on modular or repairable principles	Easier maintenance, modular upgrades, secondary markets	Influence product design for reuse

Key actors value chain.				
Opportunity area	Type of partner needed (supplier, customer, NGO...)	What could be shared or created	Benefits for all parties	Need or Goal (e.g. recover materials, access users, influence design)

Reflection:

What type of collaboration already exists in your organization? Where is trust strong—or missing?

Think about where collaboration could:

- Close material loops;
- Share infrastructure;
- Enable transparency and data sharing;
- Reduce waste collectively;
- Co-create new business models .



REFLECTION

[illegible]

Reflect on what helps or hinders collaboration in your context.

Reflection Collaboration	
Enablers (Trust, networks, shared goals...)	Barriers (Competition, silos, IP concerns...)

Step 2: Your Collaborative Action Idea

Define a concrete action to initiate or strengthen a circular collaboration.

Examples			
My Action Idea	Who Will I Involve?	First Step	Desired Outcome
Launch a pilot project with a local logistics partner for product take-back	Logistics company, sustainability manager	Map top return locations & volumes	Functional reverse logistics system for reuse & recycling
Co-develop modular packaging with a supplier using only recyclable components	Packaging supplier, product design team	Run a co-design sprint	Market-ready recyclable packaging within 6 months
Initiate data-sharing agreement for material traceability	IT provider, procurement department	Define scope for Digital Product Passport	Greater supply chain transparency, ready for EU compliance
Partner with repair cafés for local repair workshops	NGO / Repair initiative, local government	Contact 2 local partners and define pilot format	Create value from repair and community engagement
Jointly create training on circularity with supplier network	Tier 1 suppliers, L&D department	Run initial survey on needs and readiness	Align supplier practices with circular goals

Collaborative action idea			
My Action Idea	Who Will I Involve?	First Step	Desired Outcome

Reflection questions

- What is the issue or opportunity?
- Why does it matter to both of you?
- What specific action or support are you inviting?
- What's the next step you propose?

Tip: Use this to prepare a call, meeting, or internal alignment session.



Reflection questions

[illegible]

Reflection Check

- ✓ How well do current partnerships support circularity?
- ✓ What would help you build stronger circular alliances (e.g. dialogue, contracts, incentives)?
- ✓ Are there overlooked actors (e.g. repair shops, reverse logistic firms, NGOs) that could be strategic allies?



Reflection

[illegible]

Worksheet course 5-02: Circular Maturity Assessment



GOAL

This worksheet helps you assess the current state of circularity in your organization or project. You'll reflect multiple dimensions of circular maturity, identify strengths and gaps, and define one key area for development.

Link to the Circular Maturity Tool:

https://route.circular.qualtrics.com/jfe/form/SV_bJYBRXMPInaMKIS?CVM=become

After completing the assessment in the CMT, you will have insight in:

- How the Circular Maturity Tool (CMT) works and to perform a circular maturity measurement for your company or organization;
- Explanation how the status of your company's transition to a circular way of working can best be addressed;
- Advice on which next steps for the company should be wise to make on the theme of strategy.

After completing the 4 questions in this worksheet, you will have:

- Conducted a basic self-assessment of circular maturity;
- Identified areas of strength and potential growth;
- Prioritized one strategic area for development;
- Defined an action to increase your circular maturity.



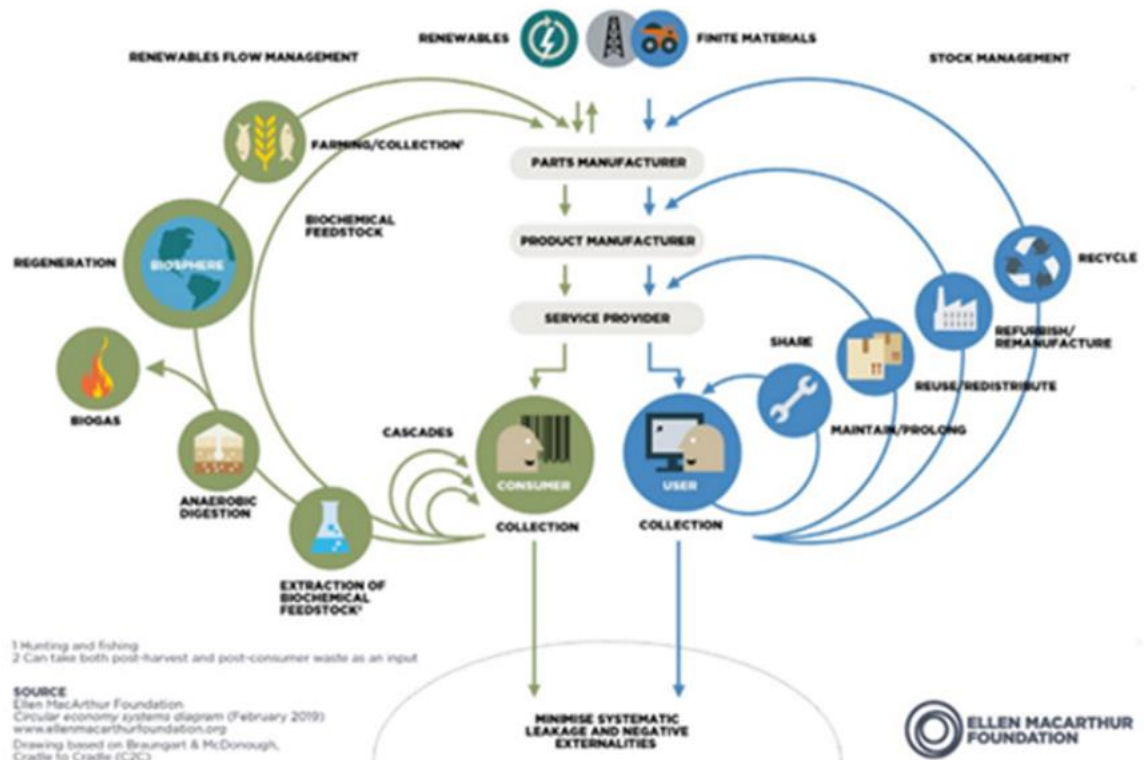
MY NOTES



Question

Question 1: Preparation before filling in the assessment on Circular Maturity Tool:

As a preparation before performing the assessment, it is wise to have clear, as a company, with the Butterfly model from Ellen MacArthur Foundation as a starting point:



FILL IN THE TABLE

Do I use materials from the biological cycle or from the technical cycle? Which biobased materials can I use?	
What is my motivation to learn more about the circular economy? Is it useful or necessary for me?	
Which R-strategies can I use in my organization? Refuse? Re-use? Repair?	

Question 2: Identifying Strengths and Gaps, defining your objective(s)

What is (are) the objective(s) for the organization on circularity?

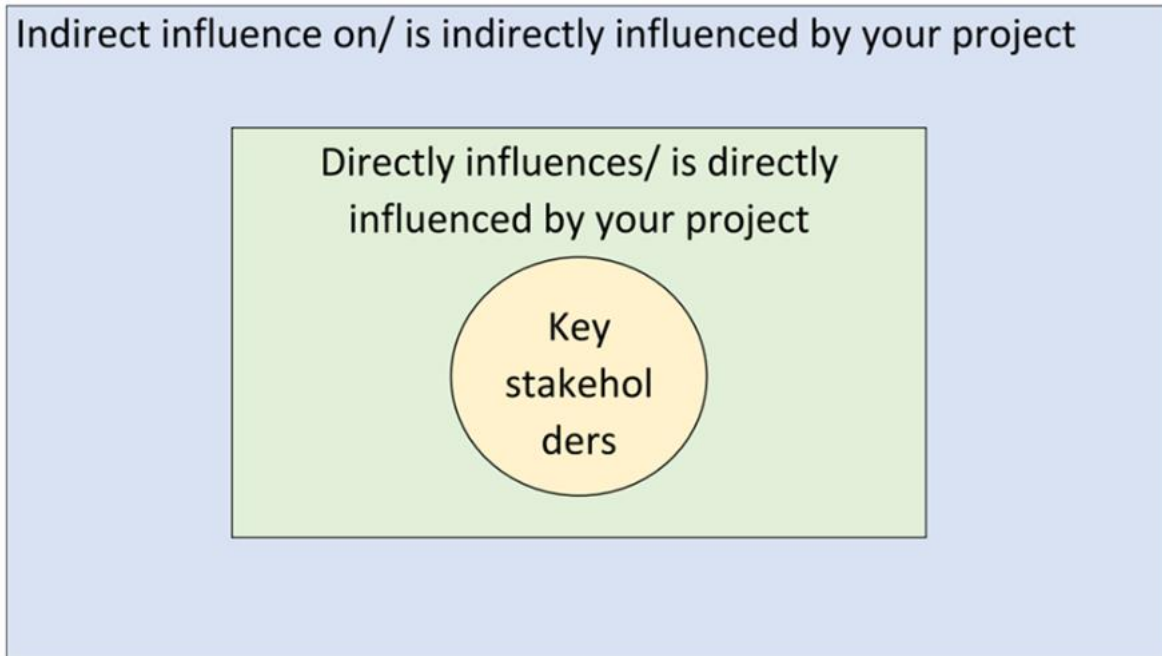
After answering that question, you can set up a framework for yourself and discuss this afterwards together. Use the OGSM model; OGSM means: Objective, Goals, Strategies and Measures.

FILL IN THE TABLE

Objective; we want to ... (indicate a definition of ambition)			
Goals	Strategy Approach	Measures Results:	Measures Consequents

Question 3: Who are your key stakeholders and how to communicate with them

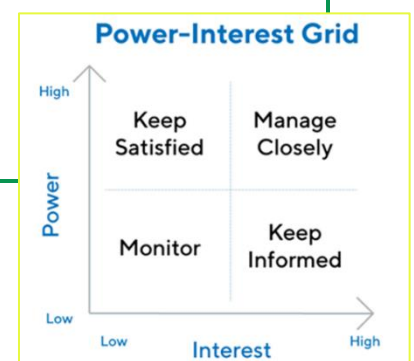
You have Identified key stakeholders for your company, organization or team. Please place them on a Stakeholder map and consider how to communicate with them.



The communication strategy with my stakeholders should be about:

FILL IN THE TABLE

Keeping satisfied	
Managing closely	
Monitoring	
Keeping informed	



Question 4: From the ambition on circularity; you have defined an objective; what is the definition of the KPI that belongs to that?



ANSWER

[illegible]

Reflection check

After filling in the Circular Maturity Tool; a Reflection Check:

- ✓ What surprised you most about your maturity level?
- ✓ How aligned is your current state with your circular ambitions?
- ✓ What internal support do you need to progress?



REFLECTION CHECK

[illegible]