



HANDBOOK

HOW COMPANIES CAN START THEIR “CIRCULAR INNOVATION JOURNEY”

Lead authors:

Elisa Casazza, CSR Europe



Raymond Slaughter, CSCP



Aleyn Smith-Gillespie, Carbon Trust



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1 Introduction to the Handbook

This Handbook will help you to organise a “Circular Economy Innovation Journey” for your company or the companies you are working with, allowing you to go on a path towards business transformation guided by the learnings and outcomes of the EU funded “[R2π – tRansition from linear 2 circular](#)” project.

By following the guidelines included in this document, you will be able to support your colleagues/members/clients in **integrating circular economy into their business models and drive the transition towards more viable, sustainable and competitive economic models**. Included you will find:

- Background info on Circular Economy and its relevance for the business sector;
- Learnings, case studies and tools from the R2Pi project;
- Guidelines on how to conduct a “Circular Innovation Journey”;
- Template agendas for your event(s);
- Tips on workshops delivery.

We hope you find this Handbook useful and wish you luck with your future Workshops on Innovating your Business Model!

2 Introduction to Circular Economy

2.1 R2π – “Transition from linear 2 circular”

R2π - “transition from linear 2 circular” is an EU Horizon 2020 project that enables organisations and their value chains to innovate towards more viable, sustainable and competitive economic models. The project examines how to transition to Circular Economy Business Models (CEBM), by focusing on the enablers and barriers of both the market and policymaking. The ultimate objective of the R2π project is to **accelerate the widespread implementation of a circular economy business models and policies** to:

- ensure sustained economic development;
- minimise environmental impact;
- maximise social welfare.

Since October 2016, the [R2π Consortium](#) - composed of experts from the business sector, public bodies, think tanks and universities and comprised 16 partners from 9 countries - has conducted in-depth [business case studies](#), surveys and stakeholder exchanges to identify the key enablers and barriers faced by organisations transitioning to a circular economy, and has collaborated with several leading companies to innovate their business models and foster circularity.

Among our cases for Circular Economy Business Models:



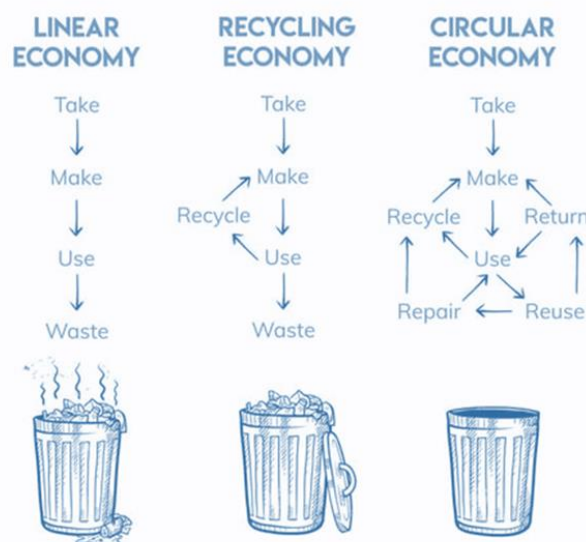
2.2 What is the Circular Economy?

The Circular Economy is a model that aims **to redefine the economic activity** from the current take-make-waste model (also known as linear model) to focus on designing **materials and products** that can be **reused** by **minimizing waste** and contribute to the **regeneration of the natural systems**.

The [European Commission](#) defines this concept under the EU Action Plan for the Circular Economy and highlights aspects such as:

- **Maintain** the value of products and materials for as long as possible;
- **Minimise** the use of waste and resources;
- **Reintegrate** back within the economy the resources of a product that reached its end of life for creating further value.

Figure 1 – The Circular Economy



To emphasize the **zero-waste** goal, which represents a core characteristic for the circular economy, the R2π Consortium has elaborated the definition further to include the following:

“The circular economy (CE) is an economy in which economic activities derive value under the conditions that an existing resource stock within the system is continuously recirculated to maintain its maximum value and utility over time, and fluctuations in that stock are in balance with the environment; enabling the viable and sustainable use of resources. All activities during product life cycle stages are designed to circulate the resources and support the preservation and regeneration of the biosphere so that hazardous outputs are eliminated, and regional resources are not degraded.”

By incorporating circularity into their business models, organisations will be able to create, deliver and capture value in a way which enables efficient and regenerative use of finite resources while, at the same time, keeping products, components and materials at their highest value and utility.

2.3 The benefits of the Circular Economy

The purpose of the Circular Economy is to generate environmental, social and economic benefits both on a macro and micro level.

In all the cases studied by the R2Pi project, **environmental benefits** result from reusing and recovering materials which would have been otherwise turned into waste. This leads to the reduction of waste and demand for new materials contributing to lower pollution.

Some of the analysed companies also showed that circularity can generate **social benefits** through job creation, alleviating unemployment and regional inequalities, and the improvement of the overall well-being of local communities where the businesses operate (e.g. health benefits which the general public can benefit from more circular business models). In certain instances, the renewed products are also donated for social causes, leading to an extended benefit to the entire society.



Finally, most of the case studies confirmed that the involved companies gained several **economic benefits** after implementing more circular practices. These manifested through lower production costs, a better retention of new talents, improved competitiveness in new markets (e.g. second-hand) and customer segments and less dependency on raw materials.

2.4 Enablers and Barriers to Circular Economy

The implementation of the Circular Economy can be a source of high economic, social and environmental value for businesses, but there are still obstacles in the way of the transition.

To facilitate this process, it is important to understand the key enablers and barriers companies can face as part of this journey. The R2Pi project has extensively looked at this topic. Some of the main conclusions are summarised below. **For a broader overview of the main enablers and barriers please refer to the [Stakeholder View Report](#) published by CSR Europe and the University of Malta in 2018.**

	ENABLERS	BARRIERS
Business factors	<p>Organisational commitment (top management) Top management support is key in facilitating circularity. Long-term economic opportunity and top-down strategic approach for planning and investment could capture their interest.</p>	<p>Resistance to change Unsupportive corporate culture, lack of high-level commitment and unwillingness to take risk prevent the transition towards circularity.</p>
	<p>Partnerships and collaboration Organisations that collaborate with others to change an industry have a strong impact on the value chain and facilitate the shift towards a circular economy.</p>	<p>Perceived lack of consumer demand Little understanding of the concept of circularity and its benefits together with the higher prices of sustainable goods can potentially limit consumer demand for circular products</p>
	<p>Enhanced competitiveness Forward-looking companies can gain competitive advantage, especially in light of growing consumer awareness on sustainability issues.</p>	<p>Financing and taxation Upfront investment or high cost of secondary materials make it difficult to implement circularity, especially given that the current taxation systems tend to reward linear models over circular ones.</p>

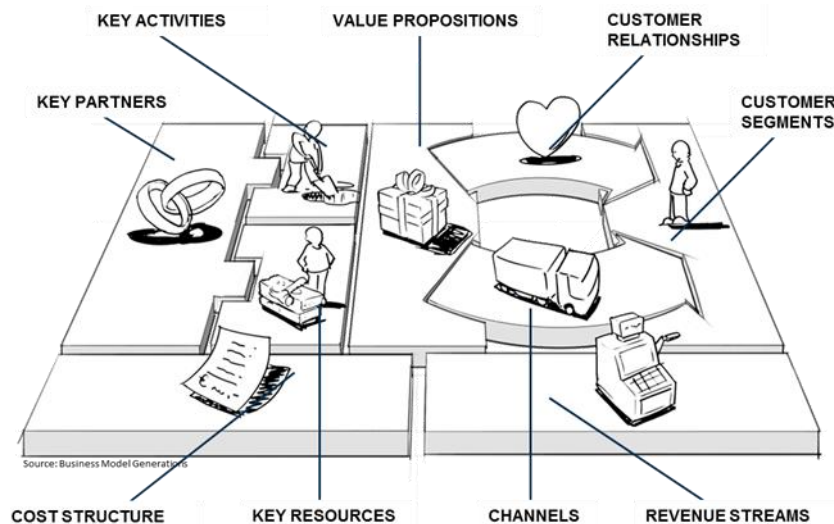
Policy factors	ENABLERS	BARRIERS
	<p>The EU Action Plan for the Circular Economy This plan pushes the economy of the EU to be in favour of sustainable production and consumption patterns, by supporting among others the transition from linear to circular business models.</p>	<p>Taxation and regulatory barriers (secondary raw materials) Due to current taxation patterns, virgin raw materials are often cheaper than secondary ones, weakening incentives to engage in business transformation.</p>
	<p>EU Funding Through programmes such as Horizon 2020, the EU provides funding to support innovation and the transition from linear to circular economy.</p>	<p>Lack of harmonization The differences in the enforcement of the EU framework creates serious challenges for companies working in several member states.</p>
	<p>Multi-stakeholder platforms The collaboration of all key stakeholders allows to view projects and policies from both private and societal perspectives, maximising value for all.</p>	<p>Poor waste management legislation The absence of strong and consistent legislation might lead to inefficient high costs associated with the recycling of mixed waste, which ultimately reduces the residual value of recycling.</p>

3 Circular Economy Business Models

3.1 What is a business model?

A business model is described as the rationale of **how an organisation creates, delivers and captures value**. To understand and discuss business models, practitioners from the business world often use the **Business Model Canvas (BMC)**, a framework made of 9 building blocks used to create a common language and visually describe how companies/organisations work.

Figure 2 – Business Model Canvas



The Value Proposition is the central block of the Business Model Canvas– this is what essentially creates value to customers. The four building blocks on its left side represent the “back stage”, which describes the key elements of an organisation’s operating model and its cost structure. On the right-side, instead, there is the “front stage”, whose building blocks govern the organisation’s interaction with markets and customers, and its revenue model.

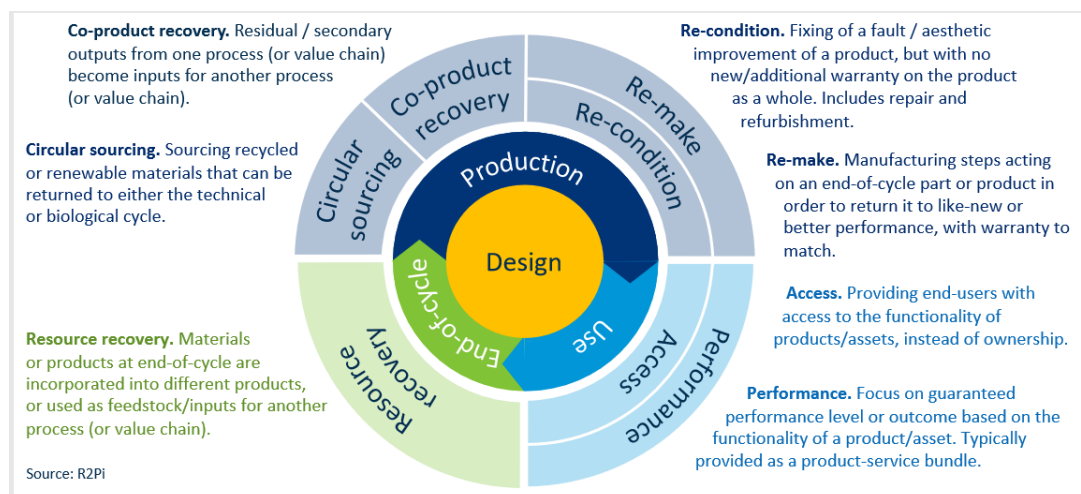
3.2 The seven Circular Economy Business Patterns

The R2Pi consortium defined ‘circular economy business model’ as a *set of dynamics which creates, delivers, and captures value in a manner that is compatible with and enables regeneration of finite natural resources, and keeps products, components and materials at their highest value and utility within a relevant system boundary.*¹ This describes the strategies employed by organisations to manage the different product’s lifecycle stages, namely:

- **Production** = the processing and assembly of the product
- **Consumption/use** = the consumption and use of product during its life
- **End of life** = the handling of the product at the end of its life

The project has identified **7 key circular economy patterns**:

Figure 3 – Circular Economy Business Model patterns



At production stage:

- **Circular sourcing:** Sourcing recycled or renewable materials which can be returned to the technical or biological cycle.
- **Co-product recovery:** When the scrap/secondary output of a process can be used as an input in another process (or value chain).
- **Re-make:** this refers to manufacturing steps happening on at the end-of-life part of a product in order to return it to its original ‘new’ form or even improve further its performance, also providing a warranty to match.
- **Re-condition:** refurbishing, repairing, fixing a fault or improve the aesthetics of a product. Under such a model no new warranty is provided.

At consumption/use stage:

- **Performance:** under this model there is a guaranteed performance level of outcome based on the functionality of the product/asset. This is typically provided as a product/service bundle.

¹ For more info, please refer to Smith-Gillespie, A., “Defining the Concept of Circular Economy Business Model”. Available at: <http://www.r2piproject.eu/wp-content/uploads/2017/04/R2Pi-CEBM.pdf>.

- **Access:** under this model you provide the end user with access to the functionality of the product/asset, yet ownership is retained by the manufacturer.

At end-of-cycle:

- **Resource recovery:** this happens at the end of a cycle of a product whereby materials and/or products are incorporated into different products or used as feedstock/inputs for another process.

These patterns are a useful tool for organisations/businesses trying to map their existing circular practices or trying to develop innovative circular thinking.

3.3 Examples from the R2π case study analysis

The R2Pi consortium conducted several case studies with leading companies to understand the success factors of each circular economy business model pattern. A short summary from a few case studies is presented below while the full list is available [here](#).

3.3.1 R2Pi Case study 1: “Aligning interests between a company and its customers”

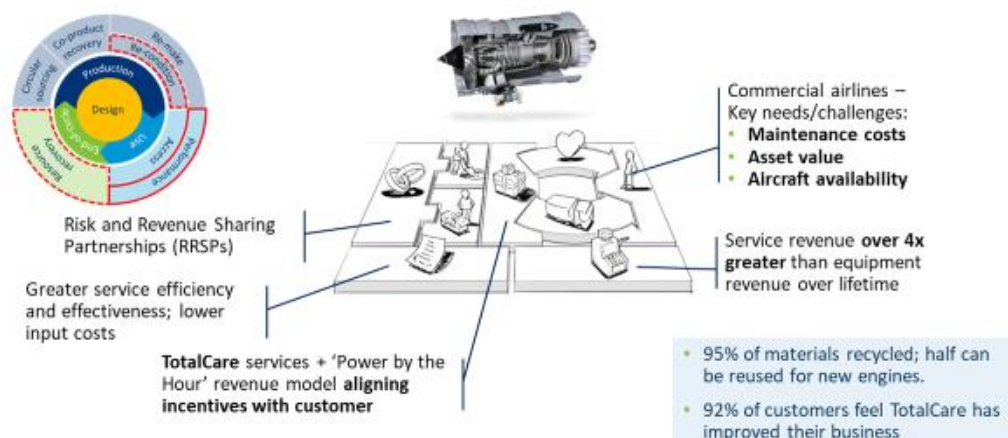
Rolls-Royce applies circularity to its aircraft aero engines division by selling the product with an attached service system: the aircraft operator becomes the owner of the engine on purchase, yet Rolls-Royce remains responsible for the ongoing maintenance of engines and component parts over the asset lifetime (referred to as the [‘TotalCare’ business model](#)).



In this way, it is in Rolls-Royce’s interest to ensure the highest performance of its engines due to the “power-by-the-hour charging” mechanism (revenues generated per engine flight hour). This keeps incentives aligned by rewarding Rolls-Royce when the product is working as needed, and penalising it when it is not. This mechanism between Rolls-Royce and its customers encourages continuous improvement and collaboration. This also drives the extension of asset lifetime while optimising/reducing repair and maintenance costs, resulting in reduced waste, increased resource efficiency, and enhances the asset’s value over its lifetime.

In addition, the TotalCare model has further enabled Rolls-Royce to buy-back the engines, recover and recondition them and their components. This allows Roll-Royce to sell the product to subsequent buyers or, if the engine or its parts are at the end-of-life, reusing them back into its supply chain.

Figure 4 – Rolls-Royce’s ‘TotalCare’



3.3.2 R2Pi Case study 2: “The impact of collaboration in the value chain”

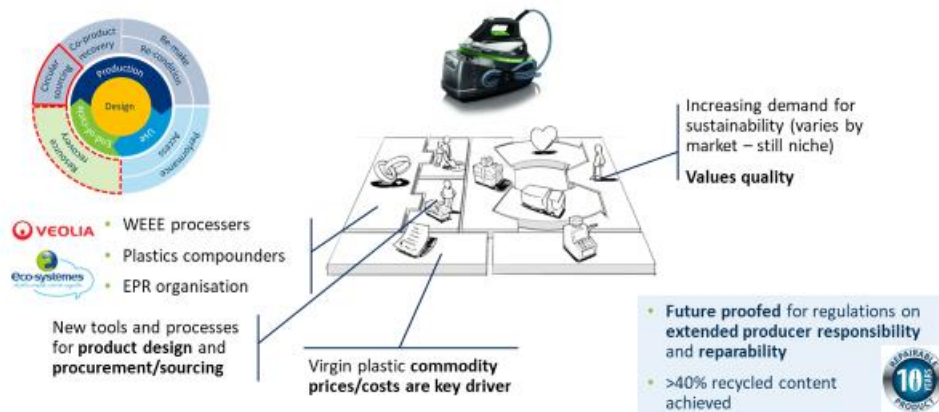
Groupe SEB is a leading global manufacturer of small domestic appliances (through brands such as Krups, Moulinex, Rowenta and Tefal, amongst others). It is headquartered in France but operates in a number of other locations in the world. Groupe SEB has strong internal sustainability goals.



This case study focuses on one particular product; namely a steam generator for linen care (for Rowenta). The group, through its product design, marketing and procurement, includes the use of recycled polypropylene (plastics) as well as other recycled materials, leading to up to 48% recycled material within the steamer, following a ‘circular sourcing’ circular business model.

This is made possible through the close contact with a supplier of recycling material. Moreover, the company also gives a 10-year guarantee, allowing for a higher inclination towards reparability and eventual re-conditioning model. Moreover, in partnership with national Producers Responsibility Organisation (PRO), the group manages a system of WEEE collection and processing from which recycled plastic is produced, hence engaging in a resource recovery model.

Figure 5 – Groupe Seb’s Rowenta steam generator



3.3.3 R2Pi Case study 3: “A lifecycle and service-centric approach to serving customers”

Philips, the international technology company, also operates in the magnetic resonance imaging (MRI) sector and provides hospitals with MRI equipment as well as their maintenance.

Through its [SmartPath portfolio](#), Philips focuses on enabling customers to enhance their investment in MRI equipment throughout its lifetime. This is done by keeping equipment functionality updated; extending the lifetime of equipment; and enabling customers to easily

upgrade to the latest technology. This includes several different circular business model patterns:

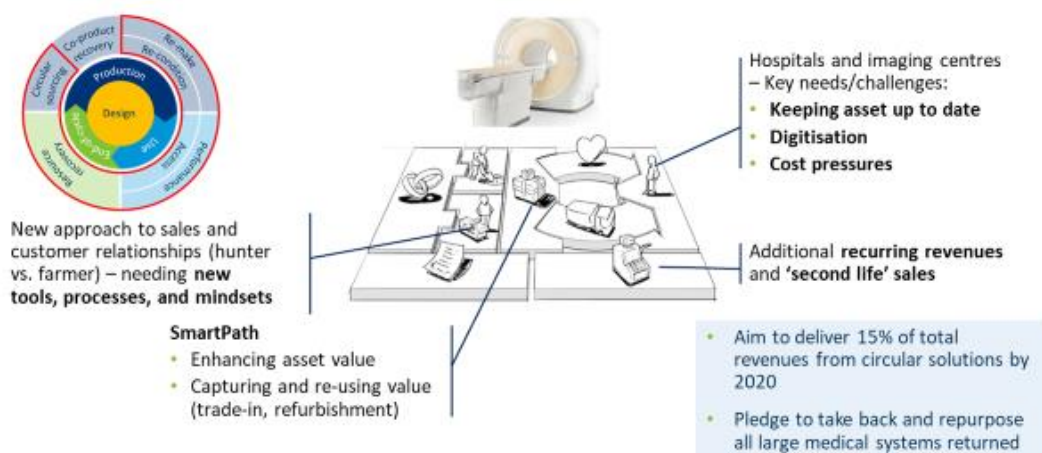
First of all, they have a service of optimising the machines by allowing for software and hardware updates leading to improved performance. They also enhance the MRI machines in time so as to improve the capacity and functionality of the product, hence acting as re-conditioning.

After many years in usage, they re-make the machine entirely (leaving only the main magnet) allowing it to remain up to date. This also allows for circular sourcing when components and parts are harvested and re-used.

In addition, they offer a service of trade-in whereby the customer can trade in their old MRI machine. Such machines are then refurbished and sold on a secondary market, as a re-make process is undertaken. Any extra components are also used in other processes leading to resource recovery.

Finally, Philips also allows a leasing agreement, whereby the users are given access to the machine but ownership remains in the manufacturer's hand.

Figure 6 – Philips' SmartPath business model for MRI scanners.



4 What is a “Circular innovation journey” and how to run it?

4.1 The circular innovation journey

The “circular innovation journey” was developed by the R2Pi Consortium and successfully implemented by Bridgestone, Balfour Beatty and Van Der Hotels. The aim of this journey is to guide companies in their transition to the circular economy and facilitate the implementation of new circular business models.

The circular innovation journey can be summarised in 6 main steps:

1. **Design:** to define the mandate, the team to be involved and the scope of the activities. This phase can normally take place through a phone call between the company and the organising team.
2. **Understand:** to establish a clear picture of how the current business model creates, delivers and captures value; examine key trends, external risks and opportunities; define a common vision & challenge and decide on ‘design criteria’ for future business models.
3. **Innovate:** to develop new circular business models options and review them against design criteria.
4. **Validate:** to test the new circular business models options against signification assumptions and validate the learnings.
5. **Deliver:** to develop an action-oriented roadmap for the implementation of the new circular business model.
6. **Evaluate:** to test the implementation readiness of the new circular business model.

Figure 7 – R2Pi Circular Innovation Journey



4.2 Tools and methods

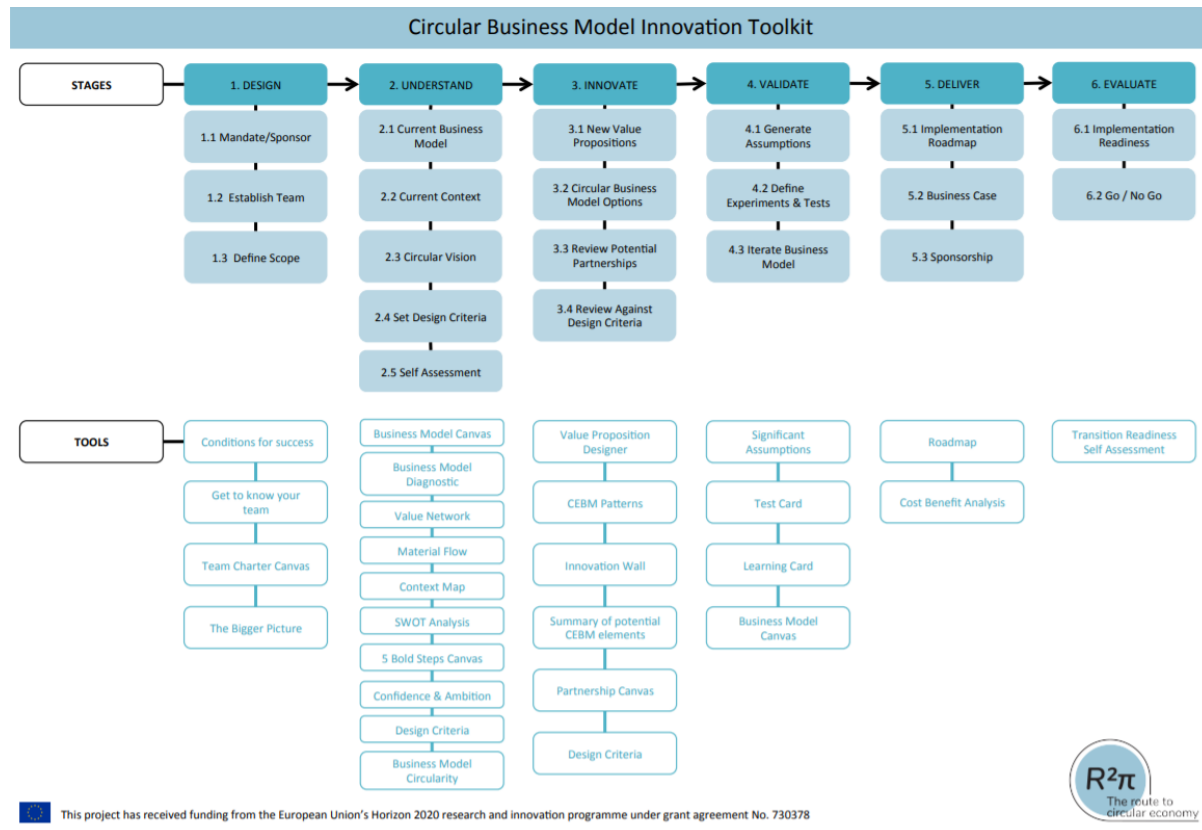
The R2Pi Consortium developed a toolkit to help companies transform their business model and become more circular by conducting a series of **interactive workshops**.

A limited number of tools and methods will be presented in this section only as an example while the full list, together with detailed step-by-step instructions on how to use each of them, can be downloaded at the following link:

- <https://www.csreurope.org/sites/default/files/Business%20Model%20Innovation%20Toolkit.pdf>
- Additional resources can also be found here: <http://www.r2piproject.eu/circular-economy-business-models-toolkit/> and here: <http://www.r2piproject.eu/circularguidelines/>

We warmly encourage you to download this material and use it freely to organise your own “Circular Transformation Journey”!

Figure 8 – R2Pi Circular Business Model Innovation Toolkit

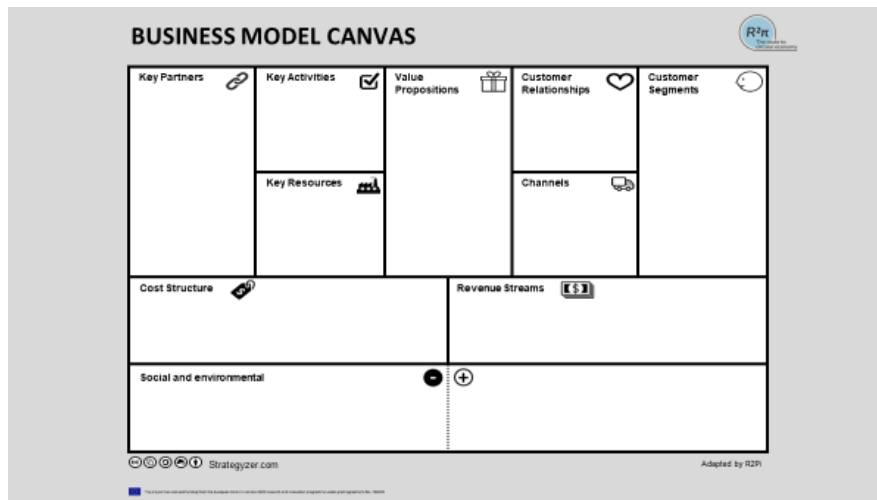


4.3 A few examples from the toolkit

4.3.1 The Business Model Canvas

The classical business model canvas (Figure 9) provides a clear understanding about how an organisation creates, delivers and captures value. However, the R2Pi Consortium added extra two elements below the “cost structure” and the “revenue stream”, **social and environmental costs and benefits** to highlight the importance of sustainability and circularity in providing value also, to people and the environment.

Figure 9 – R2Pi Business Model Canvas



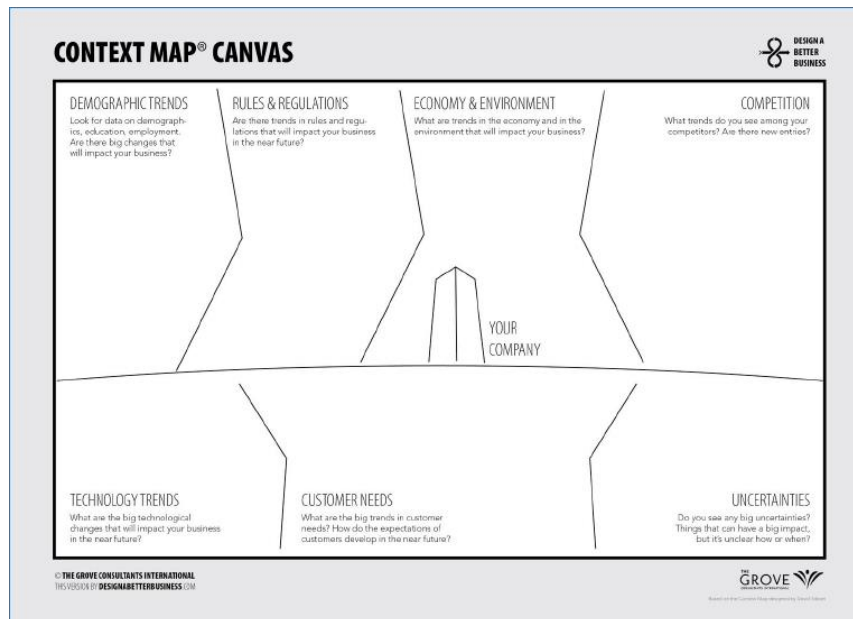
To develop a clear and common understanding of the current business model, it is important that the canvas is completed, one section at a time as follows:

- **Step 1: Customer Segments:** Who are your customers? List at least your top three segments. Look for the segments that provide the most revenue.
- **Step 2: Value Propositions:** What re your products and services? What is the job you get done for your customer?
- **Step 3: Revenue Streams:** List your top three revenue streams. If you do things for free, add them here too.
- **Step 4: Channels:** How do you communicate with your customers? How do you deliver the value proposition?
- **Step 5: Customer Relationships:** How does this show up and how do you maintain the relationship?
- **Step 6: Key Activities:** What do you do every day to run your business model?
- **Step 7: Key Resources:** The people, knowledge, means, and money you need to run your business.
- **Step 8: Key Partners:** List the partners that you can't do business without (not suppliers).
- **Step 9: Cost Structure:** List your top costs by looking at activities and resources.
- **Step 10: Social and Environmental Positives:** What are the key positive impacts that you have on people and planet?
- **Step 11: Social and Environmental Negatives:** What are the key negative impacts that you have on people and planet?

4.3.2 Contextual factor analysis

The Context Canvas is meant to help you and your team expand your thinking beyond the boundaries of your product and organisation, to have a deeper conversation about what is going on in the world and what changes will affect your business in the future. This will give you a good understanding of the existing context in which you operate (e.g. broader market, value networks, industry or economy).

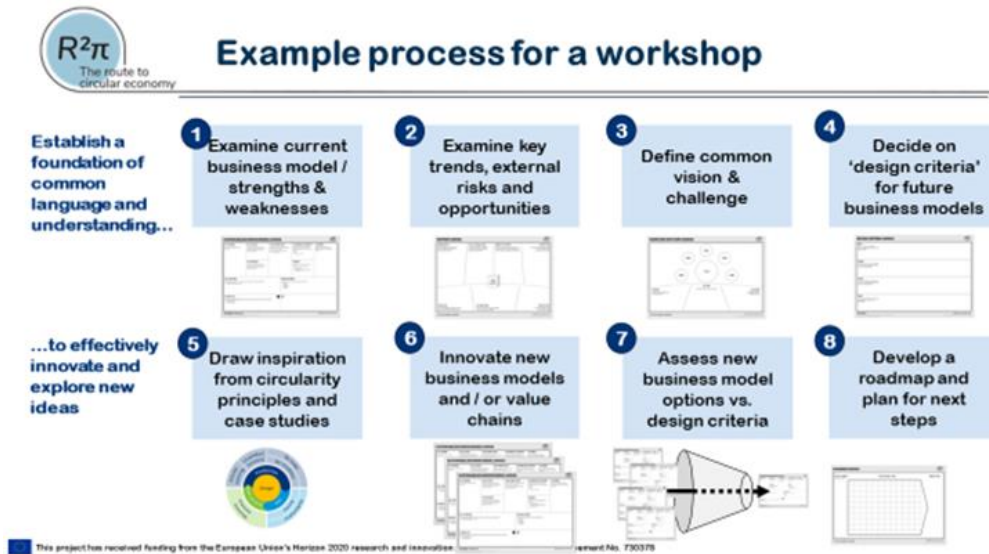
Figure 10 – Context Canvas



- **Step 1: Your Company:** Your own company or organisation stands in the centre of the image.
- **Step 2: Demographic Trends:** Look for data on the demographics, education level, employment situation. What are the big changes in these areas?
- **Step 3: Rules & Regulations:** What policies, rules, and regulations do you think will be applied in the (near) future? What is the government up to? Any new taxes?
- **Step 4: Economy & Environment:** What is happening in the economy? And what is going on in the larger environment? Are there economic trends that will impact your business? Do you think climate change will have an impact?
- **Step 5: Competition:** What about the competition? Take the time to find the unexpected competition. Are there new entries? Competition coming from unexpected sources?
- **Step 6: Technology Trends:** What new technological trends do you see emerging that will impact your business?
- **Step 7: Customer Needs:** How will the customer needs change in the future? Do you see new trends? Do you see any big shifts in customer behaviour? Are there new trends going mainstream?
- **Step 8: Uncertainties:** Do you see any important uncertainties? Things that potentially have a huge impact, but it is unclear how or when?
- **Step 9: Opportunities & Threats:** Reviewing the completed canvas, individually identify (1 idea per post-it) what you believe to be the top 2 opportunities and top 2 threats within the canvas.

4.4 Proposed agendas

It is advisable to organise the circular innovation journey over **2-3 days of interactive workshops** to allow for enough depth. A standard template programme is presented below, even though the format and content should always be tailored to the needs and time availability of the participating company:



4.4.1 Day 1

Time	Agenda item	Tools
30 min	Setting the scene – what’s the vision of this company?	
20 min	Introductions and expectation	<ul style="list-style-type: none"> • Condition for Success Canvas • Get to know your team • Team Charter Canvas
30 min	Introduction to the circular economy	See R2Pi slides
30 min	Vision, Confidence and Ambition	<ul style="list-style-type: none"> • Starting the innovation journey • Confidence vs Ambition
15 min	BREAK	
90 min	Business Modelling	<ul style="list-style-type: none"> • R2Pi Business Model Canvas • Material Flow Perspective • Swot Analysis
60 min	BREAK	
90 min	Context and Design Criteria	<ul style="list-style-type: none"> • Context Map Canvas • Circular business model elements to consider • Design Criteria Canvas
15 min	BREAK	
90 min	Innovation Options	<ul style="list-style-type: none"> • Value Proposition Canvas • Circular Business Model Patterns • Partnership Canvas
20 min	Wrap up and conclusions	

4.4.2 Day 2

Time	Agenda item	Tools
30 min	Recap Day 1	
60 min	Black Hat/Yellow Hat feedback	
60 min	Significant assumptions	Significant Assumptions Matrix Test cards
15 min	BREAK	
90 min	5 bold steps/Barriers & Enablers	5 Bold Steps Vision Canvas
60 min	BREAK	
90 min	Roadmap	Roadmap Cost/Benefits Analysis Transition Readiness Self-Assessment
30 min	Final Reflections, Next Steps and Q&A	

4.5 Preparation & setting up

Set-up of the room



To facilitate interactive discussions the participants should ideally be placed in small groups of 4-8 people max (e.g. roundtables). If possible, it is also good to have a very varied audience, including different departments within the same company (e.g. sustainably, R&D, Legal, Sales) and representatives of the whole value chain (e.g. suppliers, customers, etc.).

Material needed



To facilitate the discussion, you will need some materials:

- One flipchart per group
- A pack of mini post-it for each person
- Markers, pens and optionally notebooks or paper to write on
- Project & laptop to show the PowerPoint slides
- Printed hand-outs for the exercises
- Name badges for all participants

Useful tips



Don't assume participants are experts about the Circular Economy. In fact, you should assume they don't know much about it at all. Make sure you **clearly explain the objectives of the session and introduce every concept (e.g. circular economy business models patterns, canvases, etc.)** to ensure everyone understands what they are.