

Unit 7.1 The base of Circularity

In this unit you will learn:

7.1.1 Circular vs linear business models

7.1.2 Business value creation in circular economy

7.1.3 Metrics and indicators for circular economy

7.1.4 Quality management – the principles

Module 7: Business and quality management

Unit 7.1 The base of Circularity

Circular vs linear business models

► How is a circular economy different from a linear economy?

A circular economy is fundamentally different from a linear economy. To put it simply, in a linear economy we mine raw materials that we process into a product that is thrown away after use. In a circular economy, we close the cycles of all these raw materials. Closing these cycles requires much more than just recycling. It changes the way in which value is created and preserved, how production is made more sustainable and which business models are used. These aspects are explained in more detail below.

► From new raw materials to value preservation

The circular system and the linear system differ from each other in the way in which value is created or maintained. A linear economy traditionally follows the “take-make-dispose” step-by-step plan. This means that raw materials are collected, then transformed into products that are used until they are finally discarded as waste. Value is created in this economic system by producing and selling as many products as possible.

Module 7: Business and quality management

Unit 7.1 The base of Circularity

Circular vs linear business models

- ▶ What else is there in a circular economy? A circular economy follows the 3R approach: reduce, reuse and recycle. Resource use is minimized (reduce). Reuse of products and parts is maximized (reuse). And last but not least, raw materials are reused (recycled) to a high standard. This can be done by using goods with more people, such as shared cars. Products can also be converted into services, such as Spotify sells listening licences instead of CDs. In this system, value is created by focusing on value preservation.

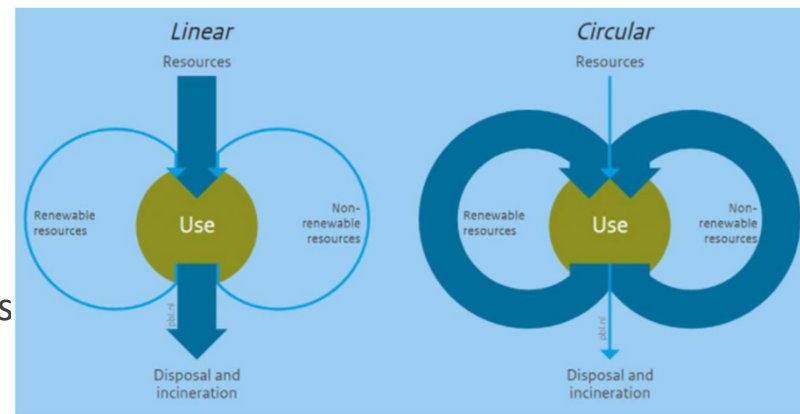


Figure 1: the large reuse of raw materials in a circular economy (PBL, 2019a).

Module 7: Business and quality management

Unit 7.1 The base of Circularity

Circular vs linear business models

► From eco-efficiency to eco-effectiveness

The perspective on sustainability is different in a circular economy than in a linear economy. When working on sustainability within a linear economy, the focus is on eco-efficiency, which means we try to minimise the ecological impact to get the same output. This will extend the period in which the system becomes overloaded (Di Maio, Rem, Baldi, and Polder, 2017). Within a circular economy, sustainability is sought in increasing the eco-effectiveness of the system. This means that not only the ecological impact is minimized, but that the ecological, economic and social impact is even positive (Kjaer, Pigosso et al., 2019). When we focus on eco-effectivity to create a positive impact, we strengthen the ecological, economical and societal systems by using them.

We can illustrate the difference between eco-efficiency and eco-effectivity with an example about the production of beef. Raising cows for beef results in emissions of methane gas, a strong greenhouse gas. In a linear economy, the production of beef is made more sustainable by changing the way cows are fed, so that they emit less methane gas for the same amount of meat. This makes production more eco-efficient.

In a circular economy, production is made more sustainable by not making beef from cows, but for example by creating a meat substitute. For the beef substitute, plants are then grown that contribute to biodiversity, employment and landscape management. In this way, the ecological, economic and social impact of the same production of 'beef' is increased.

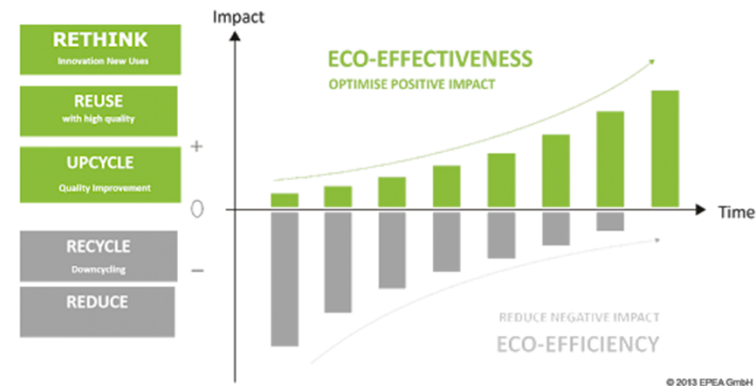


Figure 2: the difference between eco-effectiveness and eco-efficiency (EPEA GmbH, 2013).

In order to achieve eco-effectiveness, residual flows must be reused for a function that is the same (functional recycling) or even higher (upcycling) than the original function of the material. As a result, the value is fully retained or even increased.

This is different in a linear economy. An eco-efficient system typically works on downcycling: a (part of a) product is reused for a low-grade application that reduces the value of the material and makes it difficult to reuse the material flow again (Bocken, Bakker & De Pauw, 2015; Ellen MacArthur Foundation, 2014).

Module 7: Business and quality management

Unit 7.1 The base of Circularity

Circular vs linear business models

► *Other business models*

A linear model deals with raw materials in an inefficient way, because the emphasis is not on their conservation. In a circular economy, this is the focus. This means that other business models are also used in a circular economy, with more emphasis on services rather than products. An example of a model that facilitates the transition to the circular economy is a product-service combination (Product-As-A-Service System), which is seen as a model to integrate products and services (Michelini, Moraes & Cunha et al., 2017). A widespread example of a product-service combination is the Xerox printer system, in which companies receive a printer free of charge and pay per copy. This system fits well within the circular economy, because as a manufacturer, Xerox has an interest in ensuring that the printer will last a long time, by being able to repair and update it. In the linear sales system, the manufacturer often benefits if the product breaks down quickly so that it can sell a new product

The difference between a linear and a circular economy

	Linear	Circular
Step plan	Take-make-dispose	Reduce-reuse-recycle
Focus	Eco-Efficiency	Eco-Effectivity
System boundaries	Short term, from purchase to sales	Long term, multiple life cycles
Reuse	Downcycling,	Upcycling, cascading and high grade recycling.
Business model	Focuses on products	Focuses on services

Module 7: Business and quality management

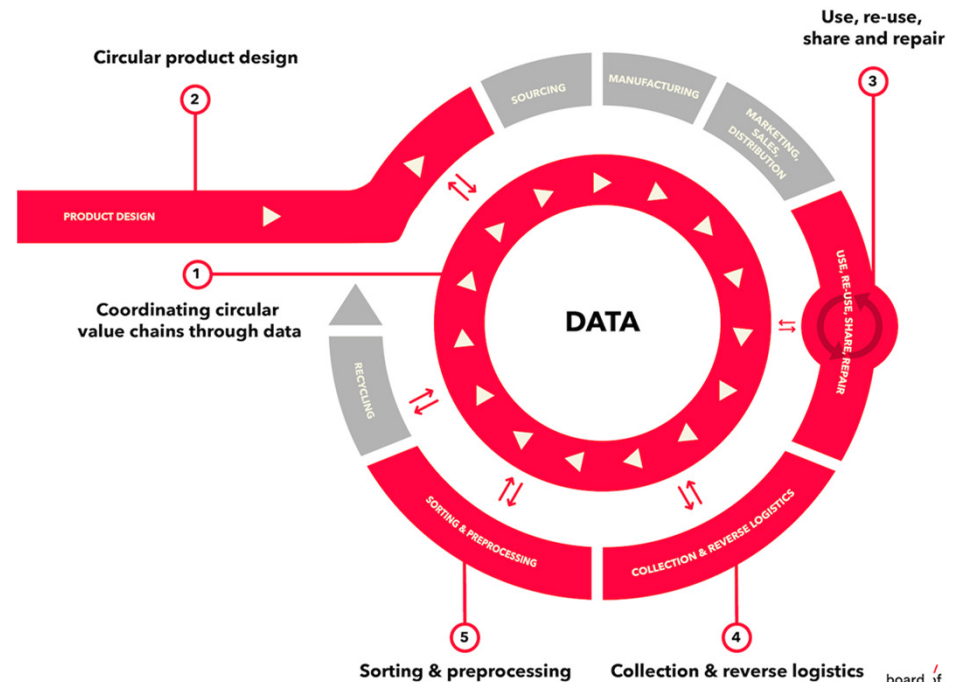
Unit 7.1 The base of Circularity

Circular vs linear business models

What kind of circular business models are there?

DIFFERENT TYPES OF CIRCULAR BUSINESS MODELS

1. Coordinating circular value chains through data
Creating products, from recycle to reuse.
2. Circular product design
Creating products, from recycle to reuse.
3. Use, reuse, share, and repair
Creating durable goods from recycled and reused parts can be inputs for downstream circular business models.
4. Collection & reverse logistics
Close the the material life-cycle loop by creating products that can be upcycled, repurposed, and re-sold.
5. Sorting & preprocessing
Finding alternative value in the parts that make a product whole.

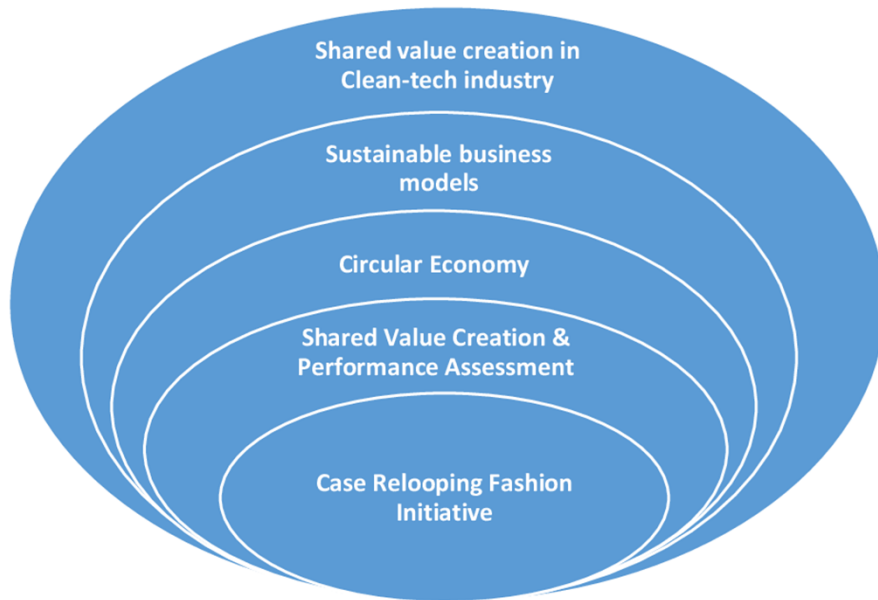


Source: Figure adapted from World Economic Forum (2019) and Accenture (2018).

Module 7: Business and quality management

Unit 7.1 The base of Circularity

Business value creation in circular economy



The circular economy represents a new way of thinking about resource use and sustainability, focused on minimizing waste along the consumption–production value chain. As the global population continues to grow, and as critical natural resources become constrained in various ways, we — as citizens of the earth — will need to structure economic systems to optimally use these resources. Moving from a linear economy based on “take-make-waste” systems to a circular economy where every resource is looped into multiple and regenerative uses can be the way forward. Adopting circular economy principles can create significant value for companies and communities by taking a long-term perspective; investing a little money and resources today can lead to enormous savings in the future as resource constraints lead to price volatility and critical outages. Getting to a circular economy will not be easy or costly: it will require significant planning, design, and innovation to create regenerative products and processes. But it will be worth it, as the value that it creates — whether in terms of financial value or social value — can be substantial.

Module 7: Business and quality management

Unit 7.1 The base of Circularity

Business value creation in circular economy

The stakeholder relationship perspective on value creation in a CE

TABLE 1. Comparison of company-centric and stakeholder relationship perspectives on value creation in a CE

Dimension	Company-centric perspective on value creation	Stakeholder relationship perspective on value creation
Focus of value creation	Value creation, transfer and capture within the business model, the supply chain and the value network	Value creation with and for stakeholders within all stakeholder relationships
Stakeholders	Suppliers, customers and partners	All stakeholders related to a company's CE business
Stakeholder view	Stakeholders as entities	Value-creating stakeholder relationships
Managerial activity	Stakeholder management to create value	Stakeholder collaboration and joint activities to create value
Defined value proposition	Customer value proposition	Stakeholder value propositions
Value	Business and sustainability value	Business, sustainability and/or stakeholder value and multidimensional value

In stakeholder theory, business operations are conceptualised as stakeholder relationships that serve as platforms for value creation (Freeman et al., 2020; Freudenreich et al., 2020; Myllykangas et al., 2010; Tapaninaho & Kujala, 2019). The focal argument is that value creation can be improved over time by considering the interests of stakeholders and what they consider valuable (Garriga, 2014; Harrison et al., 2010; Harrison & Wicks, 2013). Tantalo and Priem (2016) noted that stakeholders have multi-attribute utility functions that offer managers opportunities achieve synergy by simultaneously creating value for multiple stakeholders. While the focus is often on increasing value, managerial decisions might destroy value for some stakeholders while creating it for others (Haksever et al., 2004).

Stakeholder research has increasingly explored company–stakeholder relations in order to create value for sustainability (Hörisch et al., 2014; Tapaninaho & Kujala, 2019). To address sustainability, stakeholders' sustainability interests must be identified and used to create mutual interests (Hörisch et al., 2014). Recently, Freudenreich et al. (2020) presented a stakeholder value creation framework for sustainability that pays attention to value creation activities and different value types created with and for stakeholders. Stakeholders are considered recipients, creators and co-creators of value (Freudenreich et al., 2020; Schaltegger & Figge, 2000). The present study draws on Freudenreich et al.'s (2020) framework to explicate value creation in a CE business with a focus on stakeholder relationships and value creation activities. It also utilises Tantalo and Priem's (2016) concept of stakeholder synergy to demonstrate its usefulness in the context of a CE.

Module 7: Business and quality management

Unit 7.1 The base of Circularity

Business value creation in circular economy some examples:

Different business model ideas:

DEFAULT PRICING: PRODUCT WITH A MARK-UP



You can create a new product with a sustainability focus and pitch this to your clients. Take Pluumo as an example: this product developed by Aeropowder takes waste (feathers) from the poultry industry and turns them into a new material - a durable insulation product used in packaging. Items are sold in bulk to B2B clients, and Aeropowder make a mark-up on each shipment. This is a straightforward business model, but other monetization techniques exist:



While both examples above are specific to the fashion industry, similar business models are being explored in many other verticals. Take Grover, a platform to rent out consumer electronics. As a benchmark, a Playstation 4 can be rented for €24 per month. Bluemovement, by Bosch, focuses on household appliances. Rental fees start at €10/month. The company has also introduced a one-time warranty fee to be paid with this service, starting at €20.

SUBSCRIPTION/ RENTAL REVENUE MODEL



The Cyclon is ON-brand's latest sustainability-focused shoe. This running shoe is made from castor beans instead of regular plastics. Every other month, users can swap their pair for a new one if they wish. The rental service is available for \$29,99/month.



Finding the right price for a circular business model is always a challenge. Decathlon, the sports equipment retail store, has also launched a rental service. Customers must first sign up for a membership at €5 per month. All items available with this service can then be rented at a monthly cost of one sixth of the regular retail price. This simple pricing formula will be tested in early 2021.



A bottleneck in these all-you-can-eat subscription-based services is that every item exchange or swap involves real delivery costs. Some businesses therefore cap the number of times a customer can request another item. Other businesses, like Reflower, apply a fixed swapping fee. Every time a customer requests a new set of realistic plastic flowers, they must pay €15 to cover these costs, in addition to the standard €20/month membership fee.

Module 7: Business and quality management

Unit 7.1 The base of Circularity

Business value creation in circular economy some examples:

PLATFORM-BASED BUSINESS MODELS

The circular economy is also seeing a significant rise in marketplaces, broker models, and similar platform-based business models. But the way they get monetized varies significantly.



TooGoodtoGo endeavours to reduce food waste by selling off food items that retailers or restaurants couldn't sell via their normal channels. Items that are put on the platform are offered at a discounted rate. TooGoodtoGo charges a flat service fee of €1.09 per transaction. Another revenue stream is based on an annual fee of €39 that businesses have to pay in order to access their platform. This fee is only to be paid by new businesses once they have sold enough items and the platform has proven its worth.



A similar player, but with a focus on B2B sales, is Phenix. This platform also collects food waste from other businesses, charging a fixed commission based on the waste-management gains achieved by the distributors: the better Phenix work, the higher their profit can be.

Module 7: Business and quality management

Unit 7.1 The base of Circularity

Metrics and indicators for circular economy

Which indicators are used to monitor the progress towards a circular economy?

The monitoring framework on the circular economy as set up by the European Commission consists of ten indicators, some of which are broken down in sub-indicators.



Production and consumption

This area comprises four indicators:
Self-sufficiency of raw materials for production in the EU;
Green public procurement (as an indicator for financing aspects);
Waste generation (as an indicator for consumption aspects);
Food waste



Secondary raw materials

This area comprises two indicators:
Contribution of recycled materials to raw materials demand;
Trade of recyclable raw materials between the EU Member States and with the rest of the world.



Waste management

This area comprises two indicators:
Recycling rates (the share of waste which is recycled);
Specific waste streams (packaging waste, biowaste, e-waste, etc.).



Competitiveness and innovation

This area comprises two indicators:
Private investments, jobs and gross value added;
Patents related to recycling and secondary raw materials as a proxy for innovation.

Module 7: Business and quality management

Unit 7.1 The base of Circularity

Metrics and indicators for circular economy

The basic concept of a circular economy depicts a production and consumption system that relies on the recycling, re-use, repair, remanufacturing, sharing of products, changing the consumption patterns and new business models and systems.

There is no indicator that can be a single measurement for the Circular Economy. However a number of existing indicators can help to measure performance in several areas that directly or indirectly contribute to the Circular Economy development. They can be grouped into the following groups:

SUSTAINABLE RESOURCE MANAGEMENT

This set of indicators examines the performance of the EU Member States in transforming their economies toward circularity by lowering resource demands, thereby increasing resource security and lowering pressures on the environment domestically and abroad.

SOCIETAL BEHAVIOUR

This set of indicators reflect citizen awareness, engagement and participation in the circular economy. Citizen engagement, behaviour change and social norms are integral to the success of a circular economy transition. This means that people participate in new forms of consumption (e.g. sharing, product-service systems, willingness to pay more for durability), re-use (requiring changed mindsets regarding repair and refurbishment), and disposal (separating waste streams and bringing "waste" to remanufacturing/recycling/sorting sites).

BUSINESS OPERATIONS

This set of indicators depicts eco-innovation activities toward changing and adapting business models according to the principles of a circular economy. Businesses are the engine behind the circular economy transition. They foster circularity across the life-cycle of material use, beginning with how and what materials are sourced (quality, environmental and health standards). The design stage is particularly crucial to enabling re-use / re-manufacturing / recycling and raising the durability of goods for keeping within the economy longer. Remanufacturing and recycling are key business operations critical to scaling up the circular economy.

Module 7: Business and quality management

Unit 7.1 The base of Circularity

Quality management – the principles

THE SEVEN PRINCIPLES OF QUALITY MANAGEMENT

As the international Standard for quality management, ISO 9001 has been developed by experts from around the world to help you put quality at the heart of your organisation.

To help you do this, ISO 9001 builds upon seven key principles. By following these principles, you will be able to reap the rewards of greater consistency, better customer satisfaction and stronger performance.

In short, the seven principles of quality management are:

- 1.Engagement of people
- 2.Customer focus
- 3.Leadership
- 4.Process approach
- 5.Improvement
- 6.Evidence-based decision making
- 7.Relationship management
- 8.These principles are the basis of the ISO 9000 suite of quality standards, including ISO 9001:2015.

Module 7: Business and quality management

Unit 7.1 The base of Circularity

Quality management – the principles

ENGAGEMENT OF PEOPLE

Getting your team involved in the management system

Management systems such as ISO 9001 are not just for senior management – everyone within your organisation contributes towards its processes. Openly discussing issues and sharing knowledge and experience with your team is therefore key if you want to fully benefit from your quality management ISO. It is essential that everyone in your company understands their role and feels valued for their contribution to its success. This will not only help you to achieve certification but will also demonstrate your organisation's commitment to improving quality.

To help raise awareness of ISO 9001 and its benefits, you may want to consider some awareness training. Our online training platform, [QMS eLearning](#), has a useful ISO 9001 awareness course that you may like to consider.



CUSTOMER FOCUS

Focus on your customers and their needs

Developing a strong customer focus is an excellent way of demonstrating your commitment to quality. Gathering customer feedback is key – whether good or bad – as this can help you to spot non-conformities and improve your processes so that your business can strengthen its performance even further.

As well as satisfying customers, your business should also consider the interests of other stakeholders, whether owners, employees, suppliers, investors or the wider community.

Module 7: Business and quality management

Unit 7.1 The base of Circularity



Quality management – the principles

LEADERSHIP

Develop a strong management team

Strong leadership means you have a clear vision of your company's future.

Communicating this vision effectively will ensure your whole team works towards the same objectives, giving your organisation a shared sense of purpose. This can then help to increase employee motivation and productivity.



PROCESS APPROACH

Create a process culture

The Plan Do Check Act (PDCA) principle of the ISO 9001 Standard will help you promote a process-driven culture across your organisation. This is a proven way of ensuring you plan, resource and manage your processes and their interactions effectively.

By managing the different areas in your business together as a whole, you will be able to align operations for greater efficiency, making it even easier to achieve your objectives.

Measuring and evaluating these interrelated processes will also help you to identify areas for improvement.



IMPROVEMENT

Drive continual improvement

Continual improvement is essential to the ISO 9001 quality management system and should be your organisation's core objective. Implementing processes for identifying risks and opportunities, spotting and solving non-conformities, and measuring and monitoring your efforts means that you will be able to find ways to improve and make your business even stronger.

Module 7: Business and quality management

Unit 7.1 The base of Circularity

Quality management – the principles

EVIDENCE-BASED DECISION MAKING

Base your decisions on facts

Accurate and reliable data is essential for making informed decisions. For instance, to solve the root cause of a non-conformity you need the right evidence. Make sure information is available to those who need it and keep communication channels open.



RELATIONSHIP MANAGEMENT

Develop mutually beneficial relationships with suppliers

Your suppliers can be a source of competitive advantage but this requires a relationship built on trust. Creating such lasting relationships with suppliers and other interested parties means balancing short-term financial gains with long-term, mutually beneficial strategies

Module 7: Business and quality management

Unit 7.1 The base of Circularity

References:

<https://kenniskaarten.hetgroenebrein.nl/en/knowledge-map-circular-economy/how-is-a-circular-economy-different-from-a-linear-economy/>

<https://www.boardofinnovation.com/circular-economy-business-models-explained/>

Transition from linear to circular business models with service design methodology to drive innovation and growth

URN: http://un.ri.urn:nbn:nl:62021101451012

<https://www.boardofinnovation.com/blog/examples-to-create-value-in-the-circular-economy/#:~:text=In%20the%20circular%20economy%2C%20a,many%20%E2%80%9Cloops%E2%80%9D%20as%20possible.>

<https://ec.europa.eu/eurostat/web/circular-economy/indicators>

https://ec.europa.eu/environment/ecoap/indicators/circular-economy-indicators_en

<https://www.qmsuk.com/iso-standards/iso-9001/iso-9001-principles>