



INSPIRING REVOLUTIONARY EDUCATIONAL CREDENTIALS

Module 9





1506
UNIVERSITÀ
DEGLI STUDI
DI URBINO
CARLO BO



The European Commission's support for the production of this publication does not constitute an endorsement of the contents, which reflect the views only of the authors, and the Commission cannot be held responsible for any use which may be made of the information contained therein.



ABOUT THE PROJECT

OBEC (2020-1-SE01-KA204-077803) is a KA2 Strategic Partnership co-funded by the Erasmus+ of the European Union. Led by Swideas in Sweden, the project gathers partners in Croatia (Regional Development Agency of Sisak-Moslavina County - SIMORA), Italy (LAI-MOMO Società Cooperativa Sociale & Università degli studi di Urbino Carlo Bo), Belgium (EURADA - Association Européenne Des Agences Développement).

OBEC is an innovative project that aims to explore the potentials of Blockchain technology to promote competency development and recognition of skills and qualifications by creating an innovative system to issue and validate learning credentials on a trial basis. Through this effort, the project's goal is to encourage the professional and academic integration of migrants, exchange students, and individuals with informal and non-formal learning backgrounds.

By contributing to the educational and economic integration of these targeted groups, OBEC envisions to benefit individuals with migrant background, students, teachers, education institutions, and employers. Focusing on the key issue of lack of uniformity and transparency in systems of validation of credentials, it is expected that this effort will result in positive effects in the working context, promoting employability, empowerment, and accessibility to the labour market.



OBEC IO2 A1 Course Module 1

– Working in a Circular Economy Context: Upskill your business and your CV –

Topic:

Working in a Circular Economy Context - Upskilling your Business and your CV

Description:

This module includes general knowledge about the Circular Economy, including why a transition towards a Circular Economy is necessary, the main obstacles to it, and the main benefits that can be expected out of it. This general introduction is followed by practical knowledge for people who wish to upskill their CVs to meet the growing demand for skills related to the transition towards a circular economy, and for entrepreneurs who wish to make their businesses more circular and profit from the benefits associated with it.

Target Audience:

- People who wish to add to their CVs with circular skills and knowledge
- Business owners or prospective entrepreneurs
- Exchange students looking for internship opportunities or first jobs

Milestones:

- Why is there a need for a Circular Economy?
- What is the Circular Economy and how can we achieve it?
- Upskilling your CV
- Upskilling your Business

Final Badge:

Circular Worker!

Duration:

12 hours



Milestone 1: Why is there a need for a Circular Economy?

Type of Exercise:	Presentation and Reflection
Time:	3 hours
Contents/Activities:	<ul style="list-style-type: none"> • The linear Economy – aspects, issues, and effects • Reflection • The main benefits of the Circular Economy • Reflection • Quiz
Objectives:	Provide introductory knowledge on the need for a Circular Economy
Assessment format:	Quiz
Material:	Word Document, PPT Suggested Reading: <ul style="list-style-type: none"> • Florin Bonciu (2014) 'The European Economy: From a Linear to a Circular Economy', Romanian Journal of European Affairs, 14(4), pp. 78–91. (Accessed: 15 October 2021). • U-Eco Modules, 2020 • U-Eco Booklet, 2020 • Ellen Macarthur foundation (2013), Toward the circular economy, pg.26, [pdf], Available at: https://www.ellenmacarthurfoundation.org/assets/downloads/publications/Ellen-MacArthur-Foundation-Towards-the-CircularEconomy-vol.1.pdf • Sariatli, F., 2017. Linear Economy versus Circular Economy: A comparative and analyzer study for Optimization of Economy for Sustainability. Visegrad Journal on Bioeconomy and Sustainable Development, 6(1), pp.31-34.

Content	Slide	Description	Annex	Duration	Facilitator's Notes	Sources / Instructions
Intro	1-4	Introduction		5min		
Get to know each other games	5-6	Your image		30min	LET USD KNOW WHO YOU ARE FORM: https://forms.gle/wnZw1tU4J4ubuXWW6 Choose one image that best describes you, drop it in the Jamboard and write your name next to it. Jamboard link: https://jamboard.google.com/d/1YYYy-UDIO6htJ6jk1xpjYonDFWn9crd2l4qO4i1f2HM/edit?usp=sharing	Ask participants to choose one image that best describes them and post it on



					Each participant explains why this image.	<p>the Jamboard with their name.</p> <p>Then, ask each participant to present him/herself, by saying: name, nationality, place residence, why this image?</p>
Why is there a need for circular economy?	7			5min		<p>Ask the question to participants and let them write their ideas in the chat. They might have previous knowledge! Then, add to their ideas with the content in next slides</p>
The linear Economy – aspects, issues, and effects	8-11	<ul style="list-style-type: none"> Main aspects of the linear economy and associated issues Main consequent negative environmental impacts 	Annex I – the Linear Economy	50min	<p>Slide 8: Born in the First Industrial Revolution and having its bases on Newtonian physics and on the global expansion and success of capitalism, the linear economy is the model that currently sets the way in which resources are exploited and used to create products that, after having met the consumers' needs, are disposed of into the environment. This model of production and consumption is described as the "take-make-dispose" model and means that resources are used without a way to be reintegrated into the system. As a consequence, resources are lost and not regenerated.</p> <p>Slide 9: For many years, the way in which the linear model operated hasn't been critical and growth could be sought without many thoughts to the consequences of it. However, the global expansion of this economic model has progressively reflected in increasing resource consumption, to a rate that in 2010 the world has reached a point in which the overall needs of our economic system exceeded by more than 50% the regenerative capacity of the Earth. This has in turn shed light into the unsustainable character of the model.</p> <p>Slide 10-11: But what are the consequences of the linear model?</p>	<p>Bonciu (2014) Ellen Macarthur foundation (2013) Sariatli, F., 2017</p> <p>On slide 10-11: Slide 10. Small research in 4 groups. Divide them in 4 groups (economy, ppl, international relations, planet). They need to research or come up with consequences of linear economy for these items. 12</p>



				<p>You might have heard of the consequences to the environment, which include as its main result, the climate change phenomenon.</p> <p>But the consequences are not only seen in nature. In fact, the model is unsustainable at its core, and this is reflected on threats to its overall instability.</p> <p>In fact, we can name increases to costs related to the extraction of resources, to environmental protection, and waste management, which can be described as palliative measures to diminish the negative effects of the linear economy. Furthermore, the volatility of prices of resources and products can also be mentioned, such as the oil shock of the 1970s. Mass production also leads to overproduction, and to accumulation of waste due to the reduced lifecycles of the products (which mean that products are often disposed of without being regenerated, with the example of the “planned obsolescence” of devices).</p> <p>For the people, increased pollution and climate change have severe consequence of the health and well-being of human beings.</p> <p>The negative consequence for people is also related to the unequal relations the model creates to the global economy, which means that developing countries offer the supply of cheap material and labour, while consumers are largely concentrated in the developed world.</p> <p>Finally, for the planet it means that Earth can no longer sustain the economic model and needs time to produce and absorb what is consumed and eliminated every year.</p>	<p>min research, 3' per group to present results, and then the trainer shows the slide 11 with the data/info. Total: 25-30min</p>
Break	12	•		10min	
The linear Economy – aspects, issues, and effects	13–14	<ul style="list-style-type: none"> Why does linear economy need to be changed? 		10min	<p>On slide 13: Read quote aloud. Ask if learners were aware of this</p> <p>Ask learners to list the reasons why there's a need for change.</p> <p>On slide 14: Discuss with learners:</p> <ul style="list-style-type: none"> Was there anything mentioned during the discussion that is not



						<p>included here?</p> <ul style="list-style-type: none"> Anything that is included there and not mentioned in the discussion? <p>Provide more information to learners if necessary</p>
Reflection	15	<ul style="list-style-type: none"> What/how do you think you can change? 	25min	Jamboard: https://jamboard.google.com/d/1YYYy-UDIO6htJ6jk1xpjYonDFWn9crd2l4qO4i1f2HM/edit?usp=sharing		<p>Encourage reflection around practices/actions each of us can change</p> <ul style="list-style-type: none"> What changes can we/you as individuals start in your daily lives to support a change in the linear model? <p>Remind learners that in the next sessions they'll be introduced to some practices they can incorporate. This is a preliminary reflection.</p>



						Do it like this: groups of 2-3, give them a whiteboard (e.g. Jam Board) and let them express their ideas and present them (however they want, drawing, pictures, writing...). 10' to think and write, and then 3' to present per group. Total of 25min aprox.
Break	16			5min		
The main benefits of the Circular Economy	17	<p>Introducing the reasons why we should change:</p> <ul style="list-style-type: none"> • The social benefits • The economic benefits • The environmental benefits 	<p>Annex II – The Benefits of a Circular Economy – the reasons why change is needed</p>	20 min	Now that you've seen what is wrong with the model we currently have in place, it is time to reflect on the positive effects that a change to more regenerative practices could lead to.	<p>Ask learners: what if we respected the planetary boundaries and found ways to keep resources in the loop?</p> <ul style="list-style-type: none"> • was anything said in the previous discussion that can be reflected upon here? • what do learners believe could be consequences of



						<p>this more regenerative practices?</p> <p>Read the benefits aloud with the learners.</p> <ul style="list-style-type: none"> Is there anything that is surprising for them?
Reflection	18	<ul style="list-style-type: none"> How can you or your business benefit from this? 		10 min	<p>Now it's time for one more reflection. After seeing the benefits that a circular economy can bring, what benefits do you believe your business or CV can benefit from this? Let's take note and come back to them in the next modules.</p>	<p>Take notes to return to during milestones 3 & 4.</p> <p>Use some concentration music for a nicer reflection.</p>
Quiz	19	<ul style="list-style-type: none"> Questions to test knowledge + feedback 		20 min	<p>Ask participants to give us feedback on the form: https://docs.google.com/forms/d/e/1FAIpQLSchVUEEaiXlzLz2JXXynF925LTKeHFNTClgTPXP3ZzDOF369Q/viewform + Complete the Assessment form M1M1: https://forms.gle/EmCuGGN7LBHF17ERA</p>	



Milestone 2: What is the Circular Economy and how can we achieve it?

Type of Exercise:	Presentation and Reflection
Time:	3 hours
Contents/Activities:	<ul style="list-style-type: none"> • What is the Circular Economy? • Incentives and Obstacles • Reflection • Circular Economy Practices • Reflection • Quiz
Objectives:	<p>Upon completion of the milestone, the participant shall:</p> <ul style="list-style-type: none"> • Understand the Circular Economy main aspects, definitions, and concepts • Be able to describe the basic challenges involved in the implementation of a Circular Economy • Understand the main incentives available for a Circular Economy in the EU and in their country • Understand the main practices of the circular economy • Be able to reflect upon how individuals, businesses, and policies can promote or impede a transition to a Circular Economy.
Assessment format:	Quiz
Material:	TBC

Content	Slide	Description	Annex	Duration	Facilitator's Notes	Notes/Sources
Icebreaker	21	Only if there are new participants who did not join the previous milestone: "fast virtual ball"		5min	<p>LET USD KNOW WHO YOU ARE FORM: https://forms.gle/wnZw1tU4J4ubuXWW6</p> <p>While waiting for participants to join the meeting, invite the ones who are already there to take a small ball they might have around, or something that can act as a ball (a ball made of paper, or whatever rounded thing they can find). <i>Note: I suggest to write the instructions down on the first slide so that participants see that they need to take a ball as soon as they join.</i></p> <p>When everyone is ready, the trainer explains that we are going to present ourselves by stating the following:</p>	

					<ul style="list-style-type: none"> - Name - Nationality <p>So, when it is our turn, we stand up, we share the information about ourselves and when we finish, we (pretend to) throw our ball to another participant saying “<i>And I pass the ball to... *Name of the participant*</i>”.</p> <p>The trainer can be the one starting to present him/herself to break the ice.</p>	
What is the circular economy ?	22-24	<ul style="list-style-type: none"> • Definitions and Aspects • The basic concepts of the Circular Economy • The levels at which Circular Economy may be implemented 	Annex III - What is the Circular Economy?	25 min	<p>Jamboard “What is CE?”: https://jamboard.google.com/d/1YYYy-UDIO6htJ6jk1xpjYonDFWn9crd2l4qO4i1f2HM/viewer?f=5</p> <p>We summarise what CE is: Redefining growth focusing on positive society-wide benefits, decoupling economic activity from the consumption of finite resources, and designing waste out of the system. CE is frequently depicted as a combination of reducing, reusing, and recycling</p> <p>There are multiple levels on which the CE is implemented: Micro, meso and macro.</p> <p>Micro: Microeconomic indicators describe the economic, environmental, or social performance of a city, product or company.</p> <p>Meso: Meso-economic indicators describe the economic, environmental, or social performance of a region, a product group or an industry.</p> <p>Macro: Macroeconomic indicators describe the characteristics of a country or larger region mostly in relation to interactions with the rest of the world through trade flows.</p>	<p>Slide 22: To make participants think before you give an answer, post the question “What is circular economy?” and then tell them to brainstorm words that they think that describe CE (in a Jam board). 5min.</p> <p>Then proceed with the explanation connecting their answers to the content.</p>
Break	25			5min		



<p>Incentives and Obstacles</p>	<p>26-33</p>	<ul style="list-style-type: none"> The importance of the political framework for the transition towards a Circular Economy Main EU policies for promoting the Circular Economy Main opportunities for the Circular Economy in Sweden The obstacles to the adoption of a Circular Economy in the EU 	<p>Annex IV = Incentives and Obstacles</p>	<p>30 min</p>	<p>Here we talk about how the political framework is important to the transition to a CE, e.g., because policies can reinforce current behaviour (linear use of resources) or place incentives for people to change their behaviour (to a more circular use of resources).</p> <p>We proceed to explain about the main EU policies which impact on the transition to a CE, which are as follows:</p> <p>The European Green Deal (2019): It aims to make the EU climate neutral by 2050, with focus on necessary finance tools and investments, ways to boost the green transition and with a budget of at least €100 B between 2021 and 2027. Initiatives include the “Farm to Fork” Strategy for more sustainable food systems, a clean energy strategy, sustainable industry strategy, building and renovation strategy, and efforts to eliminate pollution.</p> <p>The Circular Economy Action Plan (2020) -Created with the active involvement of citizens - includes empowering consumers, producing more sustainably, targeting resource-demanding sectors to help them become more circular, promotion of making the entire life cycle of products more circular, and ensuring that resources circulate within the EU economy for as long as possible.</p> <p>Next, we describe the main opportunities for the CE in Sweden.</p> <p>Sweden is generally considered a leader in exploring its role in the CE, for instance, having significant budget for investments in renewable and sustainable energy sources. Sweden has implemented a national initiative called “Fossil-Free Sweden” which is working to increase the pace of the climate transition. 22 Industry Roadmaps have been created to identify opportunities that the climate transition can provide for these industries and how it can be used as a commercial advantage. With a “bottom-up approach” industries created their own vision and targets and identified obstacles and proposals for solutions towards their journey for a fossil free competitiveness delivering on Sweden’s national net zero greenhouse gas emission target by 2045. The government also appointed the Delegation for the Circular Economy in 2017 “to investigate and put forward policy recommendations” (SB Insight, 2019). The government has been allocating SEK 5 million per year since 2018, to support the delegation and stimulate the transition to a resource-efficient and circular economy. Finally, from January 1st, 2017, VAT reliefs on repairs of bicycles, clothing, textiles and leather goods were reduced from 25% to 12% (ibid).</p> <p>The transition to Circular Economy requires a fundamental change across organisations and their stakeholders. For an organisation to be able to extend this kind of proposition to its production and</p>	<p>Sources: U-Eco Project Technopolis Group, n.d. Sweden Abroad, 2021</p>
--	--------------	--	--	---------------	--	---



				<p>service systems, integration between the different functions within the company is necessary and this can only be achieved through close interdepartmental collaboration. Companies often encounter difficulties in making this transition. There are considerable barriers and challenges for businesses who want to transfer their industries to the Circular Economy model. Hereafter, we will identify and analyse the main barriers that may be encountered in its implementation. There are many these barriers most of which are connected to each other, which shows the complexity of the Circular Economy model and what is necessary for the transition towards it.</p> <p>We continue by outlining various types of obstacles to achieving a CE:</p> <ul style="list-style-type: none"> • Technological, for example concerns about the quality of circular products. • Market/Financial, such as uncertainty about how revenue can be generated and how to attract investment and about the viability of circular business models • Cultural, for example widespread risk- aversion for already existing companies. • Regulatory, for example the lack of legislation or differences between national legislations. • Integration between functions, such as claims that CE is too complex for one department of an organisation to implement and must be more universally integrated in the agency. • Value chain structure, for example how companies lose control of the final product after selling it <p>All these barriers have in common that they are, in fact, related to the transition to circularity and all tend to be related to the integration of different perspectives and domains. The small development of the system perspective is another barrier to integration, where for companies, only the service/product is considered for value creation. The fact that sustainability is seen as the sole responsibility of one department within companies illustrates that sustainability is not integrated across organisations. This is a cross-functional issue and constitutes a barrier to Circular Economy.</p> <p>Finally, there is a clear lack of integration along the value chain. Closer relationships between suppliers and producers, and between producers and consumers, will be needed. In addition to integration barriers, those connected to knowledge/culture must be addressed. A better understanding of Circular Economy could develop a more positive attitude towards it, it could fill the lack of awareness towards circular opportunities and address another cultural barrier, the aversion to risk taking.</p>		
Break	34	•		10min		
Policy-Maker Activity / World Cafe	35	<ul style="list-style-type: none"> • What should policies focus on? 		40 min	<p>After seeing the importance of the political framework as well as the obstacles and incentives, it's time for the group to pretend they are policy makers!</p> <p>The world café model of discussion works with multiple small groups of interaction prompted by specific questions or pointers provided by the facilitator. After 5-7 minutes, each small group presents highlights of their discussion to the large group. Then the small group moves to another</p>	<p>To the whole group, ask the questions on the slide.</p>



				<p>table (IRL) or to another set of prompts. The rotation continues until all the groups have covered all the prompts.</p> <ol style="list-style-type: none"> I. Facilitator provides a brief introduction to the topic in connect to the previous slides. The following instruction is given to the small groups (breakout room groups) that are formed. <ol style="list-style-type: none"> a. The participants will be divided into groups of 3 or 4 (depending on the full group's size) b. Each small group is provided with some prompts and some questions to engage in a conversation for 5 minutes. c. After the discussion, the breakout rooms are closed, and one member of each group presents the highlights of the discussion with the large group. Keep the highlights brief, not more than a minute or two. d. The small groups are formed again with new prompts. e. The activity continues for 4 rounds. II. The prompts for each group are: <p>Round 1: Warm-up and gearing up the groups for discussion with a generic topic. Prompt 1 - <i>Based on your life experiences how do you see the Political system in Europe influencing you as a consumer?</i> (Note: This round is a warm up for the discussion, the facilitator pops in to initiate or guide the discussion in the small groups)</p> <p>Round 2: EU policies for promoting circular economy Group 1 & 2: Circular economy action plan (2015 and 2020) Group 3 & 4: The European Green Deal (2019) Prompt 2 – How do you see the policy impacting you? Have you seen the effect of this policy in your community?</p> <p>Round 3: Main incentives for the circular economy Prompt 3 – What can you say about Sweden's approach towards sustainability? Do you see any advantages in shifting into a circular economy in Sweden?</p> <p>Round 4: Obstacles to the adoption of a circular economy Prompt 4 – What are some challenges you expect to come across in adopting / transitioning into a circular economy?</p> <p>Note: facilitator takes notes of the highlights that participants present in each round so that she can give a complete overview of these highlights once the activity is completed. In this way, participants can have a clear idea of all the conclusions reached. Closes the activity by summarizing the points spoken that were noted and adding any that is missed out.</p> 	<p>Here, encourage learners to direct focus to circular economy practices and to think back on the main obstacles that were discussed. Which could be addressed by better policies? How could these policies be framed?</p>
Break	3 6			10 min	

Circular Economy Practices	37-40	<p>Introduction:</p> <ul style="list-style-type: none"> Definition of Circular Economy Practices <p>10 Circular Practices:</p> <ul style="list-style-type: none"> Rethink Reduce Reuse Repair Repurpose Recycle Recover Refurbish Remanufacture Refuse 	<p>Annex V - Circular Economy Practices</p>	20 min	<p>In the next section we proceed to discuss frameworks for circular actions usually involving the letter R.</p> <p>We will have our focus on the 10R framework, organized from ones with a low circular effect to ones with a high level of circularity:</p> <ol style="list-style-type: none"> 1. Recover: Within the recovery cycle, the process focuses on the recovery of the substance from that waste. 2. Recycle: Recycling is recommended only if reducing and reusing processes are not possible, because it requires time and energy. 3. Repurpose: An entire discarded product or parts of it can be converted into new products with a different function or purpose 4. Remanufacture: the product is “disassembled to the component level and rebuilt (replacing component when necessary) to as new condition with the same warranty as a new product” 5. Refurbish: “largely a cosmetic process whereby a product is repaired as much as possible, usually without disassembly and the replacement of components”. 6. Repair: benefits include: <ol style="list-style-type: none"> a. It prolongs a product’s life. b. It reduces and avoids waste. c. It reduces premature obsolescence of objects. d. It promotes manual work. e. It creates social ties: Promotion of cooperation and solidarity. f. It raises public awareness of environmental problems. 7. Reuse: one of the most essential practices of a Circular Economy as it eliminates waste. 8. Reduce: an important concept within a Circular Economy due to our current unsustainable model 9. Rethink: Rethinking is at the core of a circular economy: A circular economy itself involves a whole rethinking and resetting of an entire system 10. Refuse: Some materials, products, or practices are simply too unsustainable to justify. In these extreme cases, small alterations to how we use them is not enough to help in the transition towards a Circular Economy 	<p>Slide 37:</p> <p>When presenting the 10Rs, ask learners to guess them! They can just write them in the chat</p>
Reflection	4 1	<ul style="list-style-type: none"> What are the Main Challenges, Opportunities and Benefits of Circular 		20 min	<p>After having had an overview of what the circular economy and what its main practices are, it’s time to reflect on the impact they can have.</p>	<p>Read the questions in the slide and encourage reference to milestone 1. Divide the group in 2.</p>



		<p>Economy Practices?</p> <ul style="list-style-type: none"> What is the Necessity and Reasoning for Circular Economy Practices? 				Give them 10min to discuss and then 3-5min per group to expose the ideas.
Quiz	4 1	<ul style="list-style-type: none"> Questions to test knowledge + feedback 		20 min	<p>Ask participants to give us feedback on the form: https://docs.google.com/forms/d/e/1FAIpQLSchVuEEaiXlzLz2JXXynF925LTKeHFNTClgTPXP3ZzD0F369Q/viewform + Complete the Assessment form M1M2: https://forms.gle/REqXfsgaVkJzcU8dDA</p>	



Milestone 3: Upskilling your CV

Type of Exercise:	Presentation and Exercise
Time:	3.1 hours
Contents/Activities:	<ul style="list-style-type: none"> • Introduction to the expected labour market changes a Circular Economy may entail • Reflection • Re-cap: circular practices and principles • Resource efficiency: the necessary skills • Research Exercise
Objectives:	<p>Upon completion of the milestone, the participant shall:</p> <ul style="list-style-type: none"> • Understand the main expected changes for the labour market associated with a transition towards a Circular Economy • Be able to identify and reflect on circular practices and principles that can be useful for them • Understand the practical skills needed in a Circular Economy context. • Be able to identify educational opportunities to upskill their CVs
Assessment format:	Quiz
Material:	<p>Word Document, PPT.</p> <p>Mandatory Reading:</p> <ol style="list-style-type: none"> 1) https://assets.website-files.com/5d26d80e8836af2d12ed1269/5e6897dfe8092a5a678a16e_202003010%20-%20J%26S%20in%20the%20circular%20economy%20report%20-%20297x210.pdf 2) https://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=ENV/WKP(2020)9&docLanguage=En 3) https://assets.website-files.com/5d26d80e8836af2d12ed1269/5dea75fcfdae7ba6798b0f4f_goldschmeding-jobs-report-20170322-lite.pdf 4) Amsterdam city: report on circular economy jobs in Amsterdam: 2017 report: "CIRCULAR JOBS Understanding Employment in the Circular Economy in the Netherlands"10 5) O-Net jobs & skills initiative 6) https://assets.website-files.com/5d26d80e8836af2d12ed1269/5dea75fcfdae7ba6798b0f4f_goldschmeding-jobs-report-20170322-lite.pdf 7) Martijn Burger, Spyridon Stavropoulos, Shyaam Ramkumar, Joke Dufourmont, Frank van Oort, The heterogeneous skill-base of circular economy employment, Research Policy, Volume 48, Issue 1, 2019, Pages 248-261, ISSN 0048-7333. DOI. Link. <p>Suggested Reading:</p> <ol style="list-style-type: none"> 1) U-Eco Job Profiles Catalogue, 2020 2) U-Eco Market Research Report, 2020



3) [UNESCO, n.d](#)

Content	Slide	Description	Annex	Duration	Facilitator's Notes	Notes/Sources
Get to know each other	43	*If there are many new participants, do a complete game of around 20-30min. If not, just a quick icebreaker of 5min*		5min	LET USD KNOW WHO YOU ARE FORM: https://forms.gle/wnZw1tU4J4ubuXWW6	
Introduction	44-50	<ul style="list-style-type: none"> What jobs, areas and career paths can be expected to emerge/grow as we transition towards a Circular Economy? What is needed to support them? What role do technologies play in this? Structural barriers to inclusive employment 		30 min	<p>Slide 44 Let's start by introducing the DISRUPT framework: a collection of strategies to improve and adapt the current labour market to future changes due to the circular economy. According to an OECD report (2020: 1) on the impact of the circular economy on employment trends, there are tensions in the implications the circular economy may have for the labour market. The transition to the circular economy is expected to initially be labour intensive. For example, for every 10,000 tonnes of resources that is recycled instead of being incinerated, 36 additional jobs are created. (OECD 2020:1/2).</p> <p>The DISRUPT framework also proposes a series of details on the jobs/professions/skills that will be needed to support this circular transition in the labour market: D - Design for the future: there is the need for a new design process to employ the right resources and materials (circular equipment engineers=design products to enable recovery & reuse after the product's use phase). I - Incorporate digital technology: information managers will be need to track & optimize resource use. S - Sustain & Preserve: repair technicians to help find practical ways to repair & upgrade products' lifetime. R - Rethink Business: demand planners will be needed to oversee demand & supply businesses and make them profitable. U-Use waste: process operators will be needed to sort waste and recover them. P-Prioritize regenerative resource: agronomic advisors will be necessary to ensure that renewable, non-toxic resources are used in a sustainable way. T-Team up: procurement professionals stimulate the demand for secondary materials and connect with new suppliers. Skills needed are: interpersonal & soft communication skills.</p> <p>Slide 45 Notes: How is the labour market expected to change due to the circular economy transition?</p>	



First key point:

1. To present facts on jobs, career paths, areas & sectors that are expected to grow because of this: after having acknowledged that jobs are expected to increase in general, these can be divided according to their expected function/role in future labour market structures:

- Core circular jobs
- Enabling circular jobs
- Indirect circular jobs

Although these are separate, they are also interconnected and need each other in order to make the labour market function in a proper and effective way.

Now let's understand what these mean:

Core circular jobs: these ensure that raw material cycles are closed and thus form the core of the circular economy. They include jobs in renewable energy, repair and waste and resource management sectors. (OECD 2020: 7).

Example of core circular jobs are: process operators; agronomic advisors, repair technicians.

Enabling Circular Jobs: These jobs enable the acceleration and upscaling of core circular activities and thus form the supporting shell of the circular economy. They include jobs in leasing, engineering and digital technology - albeit only those that actually contribute to circularity. (OECD 2020:7) Examples of these jobs are: circular equipment engineers, building information managers, demand planners, procurement professionals.

Indirect Circular Jobs: These jobs provide services to the primary circular activities above and thus form the activities that indirectly uphold the circular economy. They include, for example, jobs in education, logistics and the public sector. Examples of indirect circular jobs are: couriers and teachers. (OECD 2020:7)

Additionally, within the circular economy framework, the new professional roles will strive to optimize and preserve resources, minimize damages (SB Insight, 2019), and demand the use of technology.

Slide 46

When talking about the areas that are expected to grow, 5 of them have been identified within the project U-Eco after a through research of the market opportunities within a circular economy.



Firstly, the biomass and bio-based sector is expected to grow, given that ensuring sustainable food production systems and implementing resilient agricultural practices in order to increase productivity and production are vital to transitioning towards a circular economy (SB Insight, 2019). This is also connected to the fact that demand for bio-based products (agriculture, food, and energy) has kept on increasing, with consequences for the soil, biodiversity, and water resources. Therefore, shifts should emphasize local production and optimization of resources and focus on bioenergy production.

The second sector is water treatment and reuse. Growth in this area is expected given that securing access to water for both individual consumption and for industries, businesses, and energy production is crucial to enable sustainable development and guarantee the future of our societies. The circular economy priority targets focus on improving water quality (e.g., by reducing pollution), which means that demands in the water sector will focus on monitoring the quality of water resources, water treatment for reuse, and purification.

The third sector is that of plastics, secondary materials, and innovation. This is based on the fact that although it constitutes one of the key materials in our lives, plastic is often produced, used, and disposed of in ways that don't promote circularity. Therefore, it is essential to enable the wider reuse and recycling of plastic and secondary materials, as well as to innovate new ways to recapture their value and circularly reapply them, such as eco-design.

Slide 47

The fourth area is digitalization, sharing platforms, and services, or product as a service. Digitalization provides an opportunity for material optimization, local production, production process and life cycle transparency, and resource efficiency, all of which are play an important role in the transition towards the circular economy. In this sector, maximising the value of products, monitoring the production process, and securing sustainable investments have been identified as being likely to grow in importance. An example of that are opportunities that promote "product as a service" such as Netflix.

Finally, the construction and demolition area is an important sector that is likely to grow in a circular economy context. This is connected to the fact that "Construction and demolition waste make up just over one-third of total waste generation in the EU" (EEA, 2020). Therefore, waste management, sustainable design within the construction sector, and sustainable extraction of resources are likely to be highly in demand in order to promote the circular economy.



For more information on the areas, as well as to check some of the job profiles that are expected to increasingly grow in a circular economy context, please check U-Eco project's job profiles.

Slide 48

Second key point:

2. How can we support these changes?

First of all, "we" includes all actors of the labour market, from individuals to companies, SMEs, governments, local administrations, private and public sector as well.

The general answer to the question above could be: we can support these changes sustainably by doing two main macro support actions:

1. Identify, share & promote skills to power the circular economy: this has to do mainly with ensuring that both business actors and individuals/workforce have the necessary skills to support the circular economy as a new structure. Also, skills should be boosted by providing training, courses, and upskilling courses to people in the field. Creating a supportive policy environment is also a crucial step: circular businesses need public support to be able to update their technology, competencies, and access to market updates/materials.

2. Improve the quality of work in the new sector & related business opportunities:

This second key action refers to ensuring that the quality of work meet basic labour standards and complies with worker's rights. The goal is to not slip into illegality, exploitation of workers, criminality, and discriminative practices on behalf of organizations, both big corporations and small ones. Not all work is highly-skilled in the circular economy, but all workers deserve equal access to a safe and supportive working environment. There is the need to develop new legal and social frameworks on the quality of work, by strengthening the legal basis and promoting dialogue between actors.

Social value of work is the key element in this crucial action/strategy.

Slide 49

This slide connects to the previous one, particularly the point on the quality of work:

Currently, in the circular economy there are the following structural barriers for inclusive employment:

1. Global value chains produce ripple effects: Globalization causes global north businesses to take over global south workforce & increase vulnerability, criminality, illegal dumping.

2. Structural barriers to employment: social exclusion of NEET people, underemployment of youth, poverty, lack of social welfare policies in some countries, discrimination.

3. Technology as both an inclusive & exclusive vehicle: Global North vs. Global South differences in access to technology, rural vs. urban divides may affect labour market developments and equal access to job opportunities & fast market changes.



					<p>Slide 50 Summary of proposed steps and solutions for the future: this refers to the previous 5 slides presented.</p> <p>Ask the participants if they have further suggestions? Is there any other general action that could be done?</p>	
Reflection	51	<ul style="list-style-type: none"> How do you see yourself fitting into all this? How do you believe the transition towards a Circular Economy can promote inclusion? 	15 min	<p>Now it's time for some reflection questions on the content presented so far in this milestone. After looking at the expected changes in the labour market that a circular economy transition might entail, there is the need to reflect on how this impacts our lives in practice. Do you think that the new jobs, career profiles and paths that are transitioning, might fit into your life/work situation? How do you believe that this transition towards a circular economy promote greater inclusion within the labour market? (Get the students to think about the great potential that new markets bring to organizations and individual actors, but also how can this be an opportunity to improve labour market inclusion?)</p> <p>Put participants in pairs. Encourage participants to take notes on this matter and share their insights if they wish to do so.</p>	<p>Reflection moment in pairs. Participants reflect in pairs, and take notes for 7min. Then, bring them back and ask them to share their insights if they wish to do so.</p> <p>You can put some nice concentration music on the background to enhance the reflection</p>	
Break	52		10 min			
Re-Cap	53	<ul style="list-style-type: none"> Upskilling your CV with knowledge of circular economy practices and principles 	10 min	<p><i>Go through the previous points presented before the break, and ask if there are questions from the participants. This is the time to clarify some points if necessary.</i></p> <p>Now introduce what comes next: The concept of a circular economy has been developed along with the “urgent need for a new paradigm that integrates the continued development of human societies and the maintenance of the Earth system (ES) in a resilient and accommodating state” (Steffen et al., 2015). Therefore, it provides an innovative economic system that minimizes environmental impacts without compromising economic</p>	<p>Sources: 1. U-Eco report</p>	



				<p>development. Its innovation lies in the fact that it is “based on business models which replace the ‘end-of-life’ concept with reducing, alternatively reusing, recycling and recovering materials in production/distribution and consumption processes” (Kirchherr, Reike and Hekkert, 2017). Therefore, this new system demands new specialized professional personals, with a whole set of new skills. As a matter of fact, the circular economy is expected to create around 700,000 new jobs by 2030 (Cambridge Econometrics, Directorate-General for Environment (European Commission), ICF and Trinomics, 2018). Source: U-Eco report.</p> <p>In the last sessions, you were introduced to the circular economy practices and principles. Now, it is time to reflect on how you can take this knowledge to develop your skills to put these practices/principles into practice and be inserted in the areas previously discussed.</p>	
Resource Efficiency: The Skills Need	54-63	The skills gap and skills requirements for a resource-efficient and circular economic transition.	40 min	<p>Slide 54 First of all, let's understand what a circular economy job is. (Read the quote aloud)</p> <p>Slide 55 Now, we'll go back to the basics, to the reason why a circular economy is necessary: the level to which resources are currently being explored, used, and dispose of, has exceeded the capacity of the planet to regenerate itself.</p> <p>Therefore, in a transition towards a circular economy, resource efficiency is at the center of it all.</p> <p>The circular economy is about a re-design of the whole economy. It means re-designing products to tackle planned obsolescence; moving from product to service thinking (the leasing or sharing economy); and re-designing supply chains, business models and organisations.</p> <p>For this reason, within the circular economy framework, the new professional roles will strive to optimize and preserve resources, minimize damages (SB Insight, 2019). It will also demand the use of technology, not only in order to reduce the number of resources used and disposed of, but also especially in connection the goal of optimizing resource efficiency and extending their life cycles.</p> <p>In fact, digital manufacturing and online marketplaces are already growing and gaining importance, representing innovative virtual alternatives (SB Insight, 2019). Not only that, but emerging technologies such as robotics and artificial intelligence (AI) will play pivotal roles in accelerating “innovation, across sectors, for example, in materials science” (ibid).</p> <p>Slide 56</p>	<p>Sources:</p> <ol style="list-style-type: none"> 1. U-Eco report 2. Amsterdam city: report on circular economy jobs in Amsterdam: 2017 report: “CIRCULAR JOBS Understanding Employment in the Circular Economy in the Netherlands” 10 3. UNESCO, n.d 4. O-Net jobs & skills initiative



			<p>In order to understand which skills are necessary or will be demanded in a circular economy context, we should go back to the idea of "core circular jobs" and "enabling circular jobs", as the set of demanded skills embrace these notions.</p> <p>Core circular activities include those surrounding the following:</p> <ul style="list-style-type: none"> - 'Prioritization of regenerative resources': To ensure that renewable, reusable, non-toxic resources are utilized as materials and energy in an efficient way - 'Preservation and extension of what is already made': To utilizes waste streams as a source of secondary resources and recover waste for reuse and recycling - 'Use of waste as a resource': This involves reuse, repair, refurbish, remanufacture, and repurpose of products - and 'Rethinking of business models': One should consider opportunities to create greater value and align incentives through business models that build on the interaction between products and services (e.g., leasing, rental, and sharing systems) <p>These include jobs in the recycling and waste management, recycling and maintenance, renewable energy, and rental services sectors.</p> <p>Now, enabling circular activities are those that directly support the core jobs. These include:</p> <ul style="list-style-type: none"> - Collaborate to create joint value: this increases transparency, creates joint value, and brings together different stakeholders - Design for the future: This concerns accounting for the systems perspective during the design process to use the right materials, to design for appropriate lifetimes and to design for extended future use - and Incorporate digital technology. The latter is especially important, as it highlights the need to expand means to track and optimize resource use and strengthen connections between supply chain actors through digital online platforms and other technologies. <p>Slide 57 Now, let's see what skills are needed in a circular economy context. We'll go more deeper into them along this session, but to introduce them, they can be both broad skills and deep skills. General skills to power the circular economy can be divided into general management & soft skills and industry-specific technical knowledge. Skills relate to the ability to perform a task well. As such, employment in the circular economy requires different skill-sets than is currently demanded in a linear economy.</p> <p>However, it is important to note that circular jobs emphasize resource efficiency</p> <p>Slide 58 In the O*NET database*, 35 skills are identified, varying from active</p>	<p>5. Martijn Burger, Spyridon Stavropoulos, Shyaam Ramkumar, Joke Dufourmont, Frank van Oort, The heterogeneous skill-base of circular economy employment, Research Policy, Volume 48, Issue 1, 2019, Pages 248-261, ISSN 0048-7333. DOI. Link.</p> <p>Most of the notes & information are direct quotes from the 2017 Amsterdam report on circular jobs & skills (2017: pp.5-8).</p>
--	--	--	--	--



learning and listening, to mathematics and programming. These skills are divided into six groups based on the type of activities in which they are used.

1. Basic skills: developed capacities that facilitate learning or the more rapid acquisition of knowledge.
2. Complex problem-solving skills: developed capacities used to solve novel, ill-defined problems in complex, real-world settings.
3. Resource management skills: developed capacities to allocate resources efficiently.

Slide 59

4. Social skills: developed capacities to work with people to achieve goals.
5. system skills: developed capacities to understand, monitor and improve sociotechnical systems.
6. technical skills: developed capacities used to design, set-up, operate, and correct malfunctions involving application of machines or technological systems.

Slide 60

Circular skills can be very general, and the diversity of specific jobs and sectors/industries in which they can apply varies greatly. So, let's make some practical examples of the skills required for specific professions/profiles named earlier in a circular economy sector!

Tell participants that they will be asked to try to guess the skills needed for each example. Ask them to go to the Jamboard (<https://jamboard.google.com/d/1YYYy-UDIO6htJ6jk1xpjYonDFWn9crd2l4qO4i1f2HM/edit?usp=sharing>) and to add post-its of the corresponding colour with the corresponding skill number for each example. (Example: "Jobs in design for the future" is in green, and I believe that for this case I need social and technical skills. Then I will put a green post-it next to "Jobs in design for the future" with numbers 4 & 6, which correspond to social and technical skills)

Once they are done, come back to the presentation and check the answers on the next slides, adding the explanation for each example as it follows:

Slide 61 - Slide 62

Show the answers in this slide and give the explanation:

1. Jobs in "Prioritise Rgenerative Resources": these enable to the creation of renewable energy and operation of new decentralised energy systems. The three most important professions are in the repair and maintenance, architecture and engineering, and administration sectors. Skills needed are: problem solving, resource management, systems, technical knowledge. Knowledge



level: Prioritise regenerative resources requires a higher educated workforce than the rest of the economy. A degree in university is more important than practical work experience. Knowledge fields: The three most Important disciplines are engineering, IT and management.

2. Jobs in Preserve and extend relate to the repair and lifetime extension of products and materials. Most jobs are located in the maintenance and respiration, transportation, and manufacturing sectors. Skills needed are: resource management & systems. Knowledge level: Preserve and extend what’s already made requires a higher level of practically skilled labour compared to the rest of the economy. Thus, practical work experience is relatively more important than a university degree. Knowledge fields: The three most Important disciplines are engineering, design and Psychics.

3. Jobs in Use waste as a resource relate to the valuation of residual and waste streams for new purposes. Most jobs are located in the construction, transportation and management sectors. Skills needed are mostly related to technical knowledge. Knowledge level: Use waste as a resource requires a higher level of practically skilled labour compared to the rest of the economy. Thus practical work experience is relatively more important than a university degree. Knowledge fields: The three most Important disciplines are engineering and construction, logistics, and production and process control.

Slide 63 - Slide 64

Show the answers in this slide and give the explanation:

4. Jobs in Rethink the business model relates to new revenue models to accelerate the circular economy through, for example, sharing platforms and product-service systems. Most jobs are located in the retail, logistics, and management. Knowledge level: Rethink the business model requires many new types of knowledge. Yet, jobs in this strategy are no more knowledge intensive than the rest of the economy. A university education is more important than practical experience. Knowledge fields: The three most important disciplines are sales and marketing, computers and electronics, and process management.

5. Jobs in Collaborate to create joint value promote cooperation within value chains, within organizations and with the public sector. Most jobs are located in business and financial services, personal services, and management sector. Knowledge level: Jobs in this sector require a number of highly skilled workers, with most jobs requiring a university degree. Knowledge fields: The three most important disciplines are communication and media, management, computers and electronics.

6. Jobs in Design for the future ensure that materials and assembly techniques that



				<p>extend the life of products and enable the repair and dismantling of products are adopted. These jobs are mainly found in art, design and media, and manufacturing sectors. Knowledge level: Jobs in circular design demand a higher level of practical skills than the rest of the economy. Thus, trainings, work experience and apprenticeships are important to develop these skills. Knowledge fields: The three most important disciplines are in computers and electronics, architecture and management.</p> <p>Slide 65 Here are some practical examples of circular economy occupations. Based on what you've seen so far, let's reflect together on what skills could be necessary for them. Keep them in mind for the following exercise.</p>	
Break	66		10 min		
Research Exercise	67	<ul style="list-style-type: none"> • Find educational opportunities! <ul style="list-style-type: none"> ○ Method: participants are instructed to take 20 minutes to look for courses, trainings, or educational programs that they believe would be beneficial for them to take in order to 	45 min	<p>This exercise is meant to encourage participants to exchange information and knowledge surrounding educational opportunities within the circular economy context. It is mainly to promote active research and sharing of relevant trainings, courses, educational programs, etc...</p>	<p>Explain to participants the purpose of the exercise: This exercise is meant to encourage exchange of inspiration among participants and pro-activeness.</p>



		<p>be able to add to their CVs. Then, all participants share with the whole group one of the opportunities they have identified.</p>			
Quiz	68	<ul style="list-style-type: none"> Questions to test knowledge + feedback 		20 min	<p>Now it's time to test the participants' knowledge so far! Ask participants to give us feedback on the form: https://docs.google.com/forms/d/e/1FAIpQLSchVuEEaiXizLz2JXXynF925LTkeHFNTClgTPXP3ZzD0F369Q/viewform + Complete the Assessment form M1M3: https://forms.gle/7xNq6WPMPzhZuP32A</p>



Milestone 4: Upskilling your Business

Type of Exercise:	Presentation, Case Discussion
Time:	2.67 hours
Contents/Activities:	<ul style="list-style-type: none"> • Circular Economy Principles • Circular Economy Business Models • Group Exercise • Quiz
Objectives:	<p>Upon completion of the milestone, the participant shall:</p> <ul style="list-style-type: none"> • Understand the main principles according to which a Circular Economy operates • Be able to reflect on how to incorporate circular principles and practices to increase profit • Be able to describe basic concepts, strategies and technologies that can enable the Circular Economy • Be able to identify and reflect on circular business aspects and models
Assessment format:	Quiz
Material:	TBC

Content	Slide	Description	Annex	Duration	Facilitator's Notes	Notes/Sources
Icebreaker	70	"fast virtual ball" or another one (only if there are new participants who did not join the previous milestone)		5min	<p>LET USD KNOW WHO YOU ARE FORM: https://forms.gle/wnZw1tU4J4ubuXWW6</p> <p>While waiting for participants to join the meeting, invite the ones who are already there to take a small ball they might have around, or something that can act as a ball (a ball made of paper, or whatever rounded thing they can find). <i>Note: I suggest to write the instructions down on the first slide so that participants see that they need to take a ball as soon as they join.</i></p> <p>When everyone is ready, the trainer explains that we are going to present ourselves by stating the following:</p> <ul style="list-style-type: none"> - Name - Favourite place 	

					<p>So, when it is our turn, we stand up, we share the information about ourselves and when we finish, we (pretend to) throw our ball to another participant saying “And I pass the ball to... *Name of the participant*”.</p> <p>The trainer can be the one starting to present him/herself to break the ice.</p>	
The Circular Economy Principles	71-74	<ul style="list-style-type: none"> The R framework Sustainable Design Strategies (SDSs) Circular Economy Principles 	Annex VI - Circular Economy Principle 5	10 min	<p>The fourth milestone will look into the opportunities to upskill businesses based on circular economy models, principles, practices, and approaches.</p> <p>We begin with a reminder about the 10Rs, the main practices of the circular economy.</p> <p>Sustainable Design Strategies (SDSs) are our next topic. These are ways to “enable sustainable development challenges to be tackled in a coherent and dynamic way”, so essentially trying to think about how to be sustainable from the very early stages of product design and development, rather than later. For example, carrying out a life cycle assessment (LCA) on a product which is a technique for assessing the environmental aspects associated with a product over its life cycle.</p> <p>Now, some of the CE principles are the following:</p> <ul style="list-style-type: none"> Designing in waste prevention: It is all about how to give the object a second life from design, with new added values, to drastically reduce further material and energy inputs. One of the most important activities in this principle is eco-design, as a business model focused on the first stages of companies' value chains. Building resilience through diversity: Adapting products and services to different utilities throughout their life cycle. Products will have to be simpler, more modular, and versatile, all while maintaining their efficiency. Using of renewable energies Viewing waste as a resource: This principle radically changes the way of understanding waste, which is no longer rejected, but can be transformed into a very important resource of the biological and technical cycles, it is the basis for production in the links of the value chain. System thinking and local thinking: a very clear example is what some local companies do: reusing old clothes such as curtains, sheets, tablecloths, etc., to transform them into objects like bags, backpacks, purses, etc, giving them a new use and revaluing them so that they can re-enter the market. Cascade thinking Focusing on performance 	

<p>Using the Circular Economy to Profit</p>	<p>75-83</p>	<ul style="list-style-type: none"> Consumer behaviour - Patterns and levels of consumption The appeal of green products The role of entrepreneurship in the transition towards a Circular Economy 	<p>Annex VII – Using the Circular Economy to Profit</p>	<p>30 min</p>	<p>Next we go into ways to profit from CE, beginning with understanding consumer behaviour. This includes carrying out consumer behaviour analysis, which should reveal: what consumers think and feel about brands/products, what influences their choices, and how they are influenced by their environment.</p> <p>Here we also discuss types of consumer behaviour, of which there are four:</p> <ul style="list-style-type: none"> Complex buying behaviour (for expensive items requiring lots of thoughts). Dissonance-reducing buying behaviour (when consumers worry, they will regret their choice). Habitual buying behaviour (buying same product out of habit) Variety seeking behaviour (out of curiosity). <p>Slide 77</p> <p>Here we'll introduce what affects consumer behaviour:</p> <ol style="list-style-type: none"> Marketing campaigns: If done right and regularly, with the right marketing message, they can even persuade consumers to change brands or opt for more expensive alternatives. Economic conditions: For expensive products especially (like houses or cars), economic conditions play a big part. A positive economic environment is known to make consumers more confident and willing to indulge in purchases irrespective of their financial liabilities. Personal preferences: Consumers' choices are greatly influenced by their preferences, such as likes, dislikes, priorities, morals, and values. In industries like fashion or food, personal opinions are especially powerful. E.g: If you're vegan, it doesn't matter how many burger ads you see, you're not going to start eating meat because of that. Group influence: Peer pressure also influences consumer behaviour. What our family members, classmates, immediate relatives, neighbours, and acquaintances think or do can play a significant role in our decisions. Purchasing power: Considering your budget before making a purchase decision. The product might be excellent, the marketing could be on point, but if you don't have the money for it, you won't buy it. <p>Then, move slides to read about the consumer behaviour patterns:</p> <ol style="list-style-type: none"> Place of purchase Items purchased. Time and frequency of purchase. Method of purchase. <p>Slide 79</p>	<p>Zhang, X.; Dong, F. Why Do Consumers Make Green Purchase Decisions? Insights from a Systematic Review. <i>Int. J. Environ. Res. Public Health</i> 2020, 17, 6607. https://doi.org/10.3390/ijerph17186607</p> <p>https://tontoton.com/consumers-are-willing-to-pay-more-for-sustainable-products-heres-why/</p> <p>Edinger-Schons et al., 2018.</p> <p>Katherine White, David J. Hardisty, and Rishad Habib, 2019. "The Elusive Green Consumer" https://hbr.org/2019/07/the-elusive-green-consumer</p>
--	--------------	--	---	---------------	---	---



We move on by teaching about the appeal of green products.

Ask participants: Why do people buy eco-friendly products?

Let them share their answers in the Jamboard <https://jamboard.google.com/d/1YYYy-UDIO6htJ6jk1xpjYonDFWn9crd2l4qO4i1f2HM/edit?usp=sharing>

Slide 80

First, we'll discuss why people buy green. There are three dimensions: individual, product attribute and values, and social influence.

Slide 81

These reasons can also be divided into two types of appeal: Intrinsic appeal (appealing to consumers' sense of altruism) and extrinsic appeal (appealing to personal benefits the consumer may enjoy).

Thus, many people say they'd like to buy green products and expect the companies to support efforts to stop climate change. However, these reasons are not alone in driving people to buy green. Marketing, price, and the context also play a role in it – sometimes having a green product is not enough to attract consumers.

Companies can thus use 5 actions to support consumers in buying their sustainable products:

- *use social influence*: influence behavior using “social norms”—informal understandings within a social group about what constitutes acceptable behavior – and using the fact that humans have a strong desire to fit in and will conform to the behavior of those around them
- *shape good habits*: Often the key to spreading sustainable consumer behaviors is to first break bad habits and then encourage good ones.
- *leverage the domino effect*: People like to be consistent, so if they adopt one sustainable behavior, they are often apt to make other positive changes in the future.
- *decide whether to talk to the heart or the brain*: use the emotional appeal (guilt or the potential of feeling good about oneself) or the rational facts
- *favor experiences over ownership*: buying a romantic dinner, instead of a physical product.

To finalise this section we talk about the role of entrepreneurship in the transition towards a CE.

Five main areas with entrepreneurship potential have been identified, highlighting the roles and skills that are likely to be demanded.



Break	8 4			10 min		
Circular Economy Business Models	85-89	<p>Explanation and Examples</p> <ul style="list-style-type: none"> Dematerialisation Circular inputs Resource recovery Product life extension Product-as-a-service or product service system 	Annex VIII - Circular Economy Business Models	10 min	<p>Then we start discussing business models. First comes an explanation of what a business model is.</p> <p>Many companies employ quite fundamentally similar business models which can be grouped together according to aspects of them which are circular. Grouped together like this, common circular themes within business models include the following.</p> <p>This is followed by examples of common themes within business models:</p> <ul style="list-style-type: none"> Dematerialisation Circular inputs Resource recovery Product life extension Product-as-a-service or product service system. 	
Other important aspects of businesses	90-94	<ul style="list-style-type: none"> The product life cycle The supply chain Packaging 	Annex IX – Other important aspects of business	30 min	<p>Finally we conclude with some diverse but important matter to be kept in mind when setting up a business:</p> <ul style="list-style-type: none"> The product life cycle (Introduction phase, growth phase, maturity phase, decline phase). The supply chain. Packaging. 	Refer to the circular economy principles
Break	9 5			10 min		
Case Discussion	96	<ul style="list-style-type: none"> Identify the circular aspect in each of the business models in the case studies 	Case studies to be distributed separately on different documents.	35 min	<ul style="list-style-type: none"> Method: The students are put into pairs or groups of 3. Provide each group with one case study to read from the documents you have (https://swideas-my.sharepoint.com/:f/g/personal/julia_moreira_swideas_se/EpKwY-AzeOhArFFgJ8I3O1QB_wj_4T5qL2mXC8S4qeBXmg?e=Cct71B). Then, they will reflect on the circular aspects of the businesses on the case studies. (12min) Consider giving the same case study to two different pairs/groups so that they can compare their reflections and discover different points of view on the same case study. Hence, the number of case studies may vary according to the number of learners. 	Encourage connection with the types of Circular Economy business models of the case studies.

					<ul style="list-style-type: none"> Once the 12min are gone, bring participants back to the whole group and give each pair/group of 3 4min to present their ideas. The whole class discusses and can add to what has already been said about the case studies. 	
Quiz	9 6	<ul style="list-style-type: none"> Questions to test knowledge + feedback 		20 min	Ask participants to give us feedback on the form: https://docs.google.com/forms/d/e/1FAIpQLSchVUEEaiXizLz2JXXynF925LTKeHFNTClgTPXP3ZzD0F369Q/viewform + Complete the Assessment form M1M4: https://forms.gle/H7PPkva6mjoCgcL6	

Annexes

Annex I – the Linear Economy

The linear economy model has “its solid base and growth in the Newtonian physics, in the first industrial revolution and in the global expansion and success of capitalism” (Bonciu, 2014). According to the linear approach, “everything had a rational explanation and in order to obtain economic results it was only necessary to properly allocate certain resources” (ibid), which justified the unlimited exploitation of raw material which has been at the core of this model. Consequently, we have reached a point in which the continuation of the increased resource extraction accompanied by increased production and, as a result, waste generation and elimination into the environment, has become a physical impossibility. Indeed, in 2010 the point was reached when the overall human needs “exceeded by more than 50% the regenerative capacity of the Earth” (Ibid). This means that, by 2010,

“The global economy used the equivalent of 1.5 Earths to provide the resources needed and to absorb or reintegrate the waste that is generated as result of human activity. In other words, Planet Earth needs one year and a half to produce and absorb what is consumed as raw materials and eliminated as waste in one year” – Bonciu, 2014.

The consequences of this model which follows a “take-make-dispose” approach are not only negative for the natural environment, but as it heavily relies on an abundance of natural resources, it has also led to diverse effects in the economy itself, such as the volatility of prices of raw material (e.g., the oil shocks of the 1970s) and of products. This is a consequence of the fact that “the growth rate of demand is higher than the growth rate of supply” (Troester, 2012). For the environment, the linear model has led to increased pollution of water and ecosystems, loss of biodiversity, erosion, and high emissions of greenhouse gases (GHGs). These consequences also have severe effects over the health of human beings’ health (World Economic Forum, 2019). Moreover, seeing that raw material has limited availability, the model is both unsustainable for the planet and for economic growth and stability. Moreover, this model relies on



the inequalities among national economies in the world, which is reflected in the large concentration of consumers in the developed regions of the world and in the supply of cheap material, resources, and labour by the developing countries Sariatli (2017).

The negative effects of the unsustainable character of the linear economy are described below:

- **Overproduction:** Products are largely distributed on the market, but not all products end up being sold. This excess stock leads to companies losing money.
- **Reduced Life Cycles:** The accelerated production and consumption rates lead to a proportional generation of waste. Likewise, introducing new models of devices or so-called “planned obsolescence”, in reference to technological products, means that before long the old versions will become outdated and undesirable. While this may generate short-term revenues for a company, it negatively impacts the users’ economy.
- **Accumulation of waste:** These accelerated life cycles provoke the unbridled accumulation of waste, which in many cases, are harmful to the environment. A poignant example of this is Plastics, which is not always part of a product itself, but it is often part of its packaging. This waste contributes to global warming and the onset of climate change.
- **Volatility of prices:** This is due to the depletion and over-exploitation of natural resources. This applies to raw materials such as minerals and fossil fuels, which are limitedly available.

Consequently, the linear model leads to unnecessary resource losses, listed below (The Ellen MacArthur Foundation, 2013):

- “Production Chain Waste”: A report by the Sustainable Europe Research Institute (SERI) states that 21 billion tons of materials used in production are not incorporated into the final product. For instance, “to produce one shirt, around 700 gallons of water is used, while to produce a pair of jeans, 2000 gallons of water are needed. Although water is not included in the final output of clothes’ production, several hundreds if not thousands of gallons are needed to produce a single garment”. (U-Eco Project Booklet of 12 Modules, 2019).
- “End of Life Waste”: This is related to the large amount of waste generated, as “for most materials, rates of conventional recovery after the end of their (first) functional life are quite low compared with primary manufacturing rates.” (Ellen MacArthur Foundation, 2013).
- “Energy Use”: “In the linear system, disposal of a product in landfill means that all its residual energy is lost. The incineration or recycling of discarded products recoups a small share of this energy, whereas reuse saves significantly more energy. The use of energy resources in a linear production model is typically most intensive in the upstream parts of the supply chain—i.e., the steps involved in extracting materials from the earth and converting them into a commercially usable form” (Ellen MacArthur Foundation, 2013).
- “Erosion of Ecosystem Services”: This is related to the overconsumption of natural resources, which are not being restored at the necessary speed to keep up with the demand. In other words, humanity now consumes more than the productivity of Earth’s ecosystems can provide sustainably and is thus reducing the earth’s natural capital, not just living off its productivity” (Ellen MacArthur Foundation, 2013).

Annex II – The Benefits of a Circular Economy – the reasons why change is needed

The reason why change is needed is simple – “because the Earth can no longer keep up with our extraction, production, and consumption rates we are currently exploiting natural resources to the extent that we are depleting them” (U-Eco Project, Booklet of 12 Modules, 2019). The system we have been



leading until now has led to the destruction of forests, significant biodiversity lost, decreased availability of water reserves, excessive production and consumption, and high levels of pollution and waste. Moreover, the system has inequality at its core and within it, resources are also unequally extracted and utilized in different countries, which creates major imbalances in environmental footprint and economic flow (Sustainable Europe Research Institute-SERI) Austria, and GLOBAL 2000 (Friends of the Earth Austria, 2009). All of these effects are worsened by the prospective of population growth, which is likely to increase the demand for natural resources. There is therefore a need to fit our economic system into the planetary boundaries without compromising growth.

Moreover, a more regenerative system is essential to achieving several of the 17 sustainable development goals (SDGs), set in 2015 by the UN to be achieved by 2030. To mention a few, a circular economy can positively contribute, both directly and indirectly, to the following SDGs: the SDG 2 Zero Hunger (through sustainable food production), the SDG 3 A Good Health and Well-Being, the SDG 6 Clean Water and Sanitation, the SDG 7 Affordable and Clean Energy, the SDG 8 Decent Work and Economic Growth, the SDG 11 Sustainable Cities and Communities, the SDG 12 Responsible Consumption and Production, the SDG 13 Climate Action, the SDG 14 Life Below Water, and the SDG 15 Life on land (Triodos Research, 2017; UN General Assembly and ECOSOC, 2018; WHO Regional Office for Europe, 2018). In addition, a circular economy can address the goals towards achieving No Poverty (SDG 1), Quality (SDG 4), Industry, Innovation, and Infrastructure (SDG 9), as well as Reduced Inequalities (SDG4) (Schroeder, Anggraeni, and Weber, 2018).

The positive effects of this model can be defined as economic, social, and environmental, each of which is interconnected.

The benefits listed below are included in the U-Eco Project Modules, available [here](#).

Economic Benefits

A circular economy is expected to increase productivity while simultaneously saving costs and creating a significantly increasing the number of jobs. A few of the expected impacts are listed below:

- Gross Domestic Product (GDP) is the primary indicator of economic growth. It is “the standard measure of the value-added through the production of goods and services in a country during a certain period” (OECD, 2020). An Ellen MacArthur Foundation, SUN, and McKinsey Center for Business and Environment study (2015) show that a circular economy “would allow Europe to grow resource productivity by up to 3 percent annually. This would generate a primary-resource benefit of as much as €0.6 trillion per year by 2030 ... In addition, it would generate €1.2 trillion in non-resource and externality benefits, bringing the annual total benefits to around €1.8 trillion compared with today.” This all would translate into a 7% GDP increase (ibid).
- A circular economy is expected to increase resource productivity, namely “a measure of the total amount of materials directly used by an economy (measured as domestic material consumption (DMC)) in relation to GDP” (Glossary: Resource productivity, 2016).
- A circular economy is entwined with innovation and research, which are key to facilitate this transition. Hence, a circular economy will contribute and lead to progressive technological innovations (The Circular Economy In Detail, n.d.).
- A circular economy is expected to create new jobs and to reintroduce old jobs that have disappeared in recent times (Circular economy a source of job creation and re-creation, 2018). According to the European Commission (n.d.), “new jobs will be created in innovative design and business



models, research, recycling, remanufacturing and product development”, for a total of approximately 700,000 new jobs (Cambridge Econometrics, Directorate-General for Environment (European Commission), ICF and Trinomics, 2018).

Environmental Benefits

These are highlighted by a study by the Ellen MacArthur Foundation and Material Economics (2019):

- Reducing the GHGs emissions, allowing us to meet the UN Paris Agreement set target. The goal is to keep “ [...] a global temperature rise this century well below 2 degrees Celsius above pre-industrial levels and to pursue efforts to limit the temperature increase even further to 1.5 degrees Celsius” (The Paris Agreement, n.d.).
- Decreased GHGs emissions and use of resources
- Supported land productivity and soil health (Sustainable Europe Research Institute (SERI), Austria, and GLOBAL 2000 (Friends of the Earth Austria), 2009; The Circular Economy In Detail, n.d.
- Improved conservation of biodiversity and landscapes that have been subjected to loss and depletion in recent years, given the increased soil health
- Decreased dependency on supplementary nutrients such as chemical fertilizers, given the return of natural nutrients to the soil (The Circular Economy In Detail, n.d.).

Social Benefits

- An increase of net employment accounting for approximately 700,000 new jobs (Cambridge Econometrics, Directorate-General for Environment (European Commission), ICF and Trinomics, 2018)
- Job creation in fields where unemployment rates are high (Rizos, Tuokko, and Behrens, 2017)
- An increase in high-skilled employment for new jobs will demand new skills (ibid)
- Distributed impacts among various income groups (ibid).

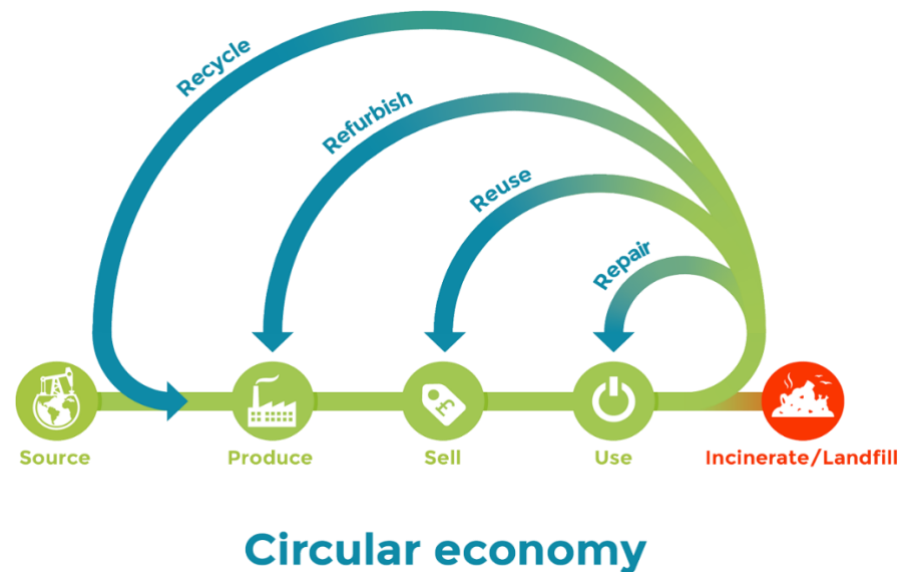
Annex III – What is the Circular Economy?

The concept of Circular Economy appears as an alternative economic model to the linear model. The Ellen MacArthur Foundation (2015) defines the Circular Economy as "one that is purposefully restorative and regenerative. It seeks to ensure that products, components and raw materials, maintain their maximum utility and values at all times, distinguishing between technical and biological cycles". A Circular Economy aims to redefine growth, focusing on positive society-wide benefits. It entails gradually decoupling economic activity from the consumption of finite resources and designing waste out of the system.



The Circular Economy model "is proposed as a radical and alternative innovation of our production system, which aims to maintain and strengthen socio-economic development, without compromising ecosystemic functionalities while preserving natural resources, for present and future generations" (Morató, J., Tollin, N., Jiménez, L., 2017, p. 21). This conception "offers new opportunities to ensure sustainability, improving efficiency in the use of resources, given that it advocates to minimizing waste generation and seeks to reintroduce them back into the productive cycle thanks to a regenerative vision" (Forética, 2018, p. 9).

Figure 1: Circular Economy



Source: "What is the Circular Economy?" Circular Tayside Website.

The presented outline of the Circular Economy model is most frequently depicted as a combination of reduce, reuse and recycle activities. This concept is often linked to sustainable development. The main aim of the Circular Economy is considered to be economic prosperity, followed by environmental quality, and its impact on social equity and future generations. The Circular Economy model is based on the management of the flow of renewable energies intimately linked to the management of goods and products. Consumers have basic needs that are extracted from the biosphere. The biosphere allows us to extract the raw materials that are essential for the creation of countless objects. From renewable energies and environmentally friendly extraction methods, parts are manufactured, and from these, products are made and are sold wholesale and retail and reach consumers and users. (Morató, J. et al., 2017, p. 24).

For several years now, in the European Union countries, government policies have been formulated, they seek to generate an enabling environment for the circular scheme to be implemented. The European Commission, in 2014, in Communication to Parliament “Towards a Circular Economy: a zero-waste agenda for Europe”, explains that a Circular Economy maintains the added value of products, materials and resources for as long as possible and reduces waste by retaining resources in the economy when a product has reached the end of its life to continue to be used again and again creating more value.

The levels at which Circular Economy may be implemented.

The CE is implemented on different levels:

Miso Level:

Microeconomic indicators describe the economic, environmental or social performance of a city, product or company. It refers to indicators occurring in a single product and consumers (Kristensen and Mosgaard, 2020).

It supports decisions concerning the implementation of policies and decisions in areas such as product policies, energy efficiency, and integrated waste management.



It sets emphasis on the local level, businesses and individual products.

Meso level:

Mesoeconomic indicators describe the economic, environmental or social performance of a region, a product group or an industry. It concerns companies belonging to an industrial symbiosis, namely eco-industrial parks, whose actions benefit regional economies and natural environments (Kirchherr, Reike and Hekkert, 2017).

It supports decisions concerning material flows within the economy, distinguishing not only categories of materials, but also industries or branches of production and categories of consumption.

It sets emphasis on industry, consumption activity, detection of waste materials, pollution sources and opportunities for efficiency gains in specific sectors.

Macro level:

Macroeconomic indicators describe the characteristics of a country or larger region mostly in relation to interactions with the rest of the world through trade flows. It compiles indicators related to the political and regulatory framework within the overall economy, overreaching from a global to a municipal sphere (Prieto-Sandoval, Jaca and Ormazabal, 2018);

It supports decisions concerning economic, trade and environmental policy integration, sustainable development strategies, action plans, national waste management and resource conservation policies.

It sets emphasis on material exchanges between the economy and the environment rather than on flows within the economy.



Annex IV - Incentives and Obstacles

The importance of the political framework for the transition towards a Circular Economy -

The political sphere is fundamental in enabling a sustainable transition towards a circular economy. It is extremely important since it supports changes of mindsets and the disruption of unsustainable practices that people have become accustomed to; it has the power to place incentives in the necessary places.

Current policies may reinforce behaviours that are at the core of the linear economy and make it difficult to transition to a circular economy. For example, policies that, through tax reduction or subsidy, make it easier and profitable to produce in large scale, or to dispose of excess food rather than distributing for re-use. It is also important because the transition requires collaboration between governments and businesses, especially in the first stages.

And because it is vital to drive innovation through the creation of market for new products and services and focusing on circular sustainability (Vinnova, 2019). Thus, the political sphere is a vital player in the shaping of new behaviours, attitudes and production and consumption patterns.

In the transition towards a CE, what should policies focus on?

- The creation of conditions by addressing barriers and enabling the development of new markets and business models, bringing in economic, social, and environmental benefits resulting from optimized use of resources in particular, the creation of jobs and economic value and to slow down resource depletion.”

(SB Insight, 2019)



- A tax shift towards decreasing taxation on resources such as labor (renewable) while increasing on finite resources (SB Insight, 2019).

The EU circular economy package targets:

- Transform waste into a valuable resource;
- Job creation;
- Reduction of carbon emissions.

Member states have been encouraged to establish laws to facilitate more circularity, such as:

- VAT taxes drop on repair activities;
- Ban of single-use plastics;
- Ban of toxic chemicals in agriculture (SB Insight, 2019).

Valorizing natural resources is another essential component to rebuild economies.

Initiatives and policies that encourage a transition towards a circular economy:

- Seventh Environment Action Program (VII WFP) to convert the EU into a low carbon economy, with efficient use of resources, ecological as well as competitive;
- Paris Agreement on Climate Change (COP 21. 2015);
- The 2030 Agenda for Sustainable Development (2015) - the 17 Sustainable Development Goals (SDGs);
- The New World Urban Agenda (UN-Habitat 2016).



Main EU policies for promoting the Circular Economy

The Circular Economy Action Plan (2015)

It was a “first step to a long-term commitment to establish a European circular economy” (European Commission’s “Circular Economy Action Plan” - United Nations Partnerships for SDGs platform, 2020). It was defined as a “political instrument with high replicability”, and “its focus on cooperation and comprehensive action, covering the entire product’s cycle, makes it suitable for different political and economic contexts.”

The European Green Deal (2019)

- Its main goal is to make the EU climate neutral by 2050;
- It focuses on the financing tools which are available, and on what investments are needed for this transition to happen (European Commission, 2020c);
- It provides a roadmap with actions “to boost the efficient use of resources by moving to a clean, circular economy and stop climate change, revert biodiversity loss and cut pollution” (European Commission, 2020d);
- It has an overall budget of at least €100 billion over the period 2021-2027.

It has key policy areas topics, such as:

- “From farm to fork”, which seeks to ensure more sustainable food systems;
- “Clean energy”, which envisions opportunities for alternative, cleaner and renewable sources of energy;
- “Sustainable industry”, which targets more sustainable, environmentally-respectful production cycles;
- “Building and renovation”, which acknowledges the need for a cleaner construction sector;
- “Eliminating pollution”, which seeks to efficiently cut pollution (European Commission, 2020c).



The Circular Economy Action Plan (2020)

- Based on the Eurobarometer survey published on March 2020 (European Commission 2020e);
- Active involvement of citizens;
- Empowers consumers while producing more sustainably;
- Targets resource-demanding sectors such as electronics, packaging, plastics, construction, textiles, construction, food and water and nutrients;
- Promotes the circularity of the entire life cycle of products (European Commission, 2020b);
- Seeks to ensure that “the resources used are kept in the EU economy for as long as possible”

Main opportunities for the Circular Economy in (Sweden/Belgium)

SWEDEN:

People in the Nordic countries seem to be generally receptive to increasing the taxation on physical goods and decreasing it on services and labour (SB Insight, 2019). Sweden is one of the countries that is particularly exploring its role as a consistent green leadership. For instance, budget for investments in renewable and sustainable energy sources, particularly solar energy has increased.

Over 99% of the Swedish household waste is recycled (Nederlandwereldwijd.nl, 2018).

Large Swedish companies are investing in ambitious and innovative initiatives (SB Insight, 2019): H&M, that aims to achieve 100% circularity in 2030, IKEA has committed to phase out all single-use plastics from stores and restaurants by 2020;



BELGIUM:

The three regions of Belgium (Flanders, Wallonia and Brussels Capital Region) have authority regarding socio-economic matters, such as zoning and planning, housing, agriculture, employment, and energy. Most environmental issues are a regional competence.

The Federal Government and the regions share competences on the environment—so while the Federal Government oversees the protection and management of coastal waters, the regions define policies for waste, green areas, forests, continental waters, and waterways in their respective regions.

Initiatives in the 3 regions.

Brussels Capital region: Regional Programme for Circular Economy (GPCE), also known as BeCircular, launched in 2016. It has three general objectives:

- Transforming environmental objectives into economic opportunities;
- Anchoring the economy in Brussels to, when possible, produce locally;
- Contributing to job creation.

Flemish region:

- Vlaanderen Circulair (2017). It focuses on three pillars of action:
 - Circular procurement,
 - Circular cities and
 - Circular businesses and entrepreneurship.



This is done through five themes: materials, biomass, water, environment and energy (Vlaanderen Circulair, 2020);

- Green Deal on Buildings and Construction (2019).
- Food Supply Chain Roadmap on Food Loss (2015).

Walloon region:

- CE already present in several areas in Wallonia. It is mainly developed in terms of waste prevention and management, in particular with the adoption of the Walloon waste-resource plan (2018);
- Green Deal Circular Procurement (2019);
- Initiatives for eco-design;
- Food waste reduction objective.

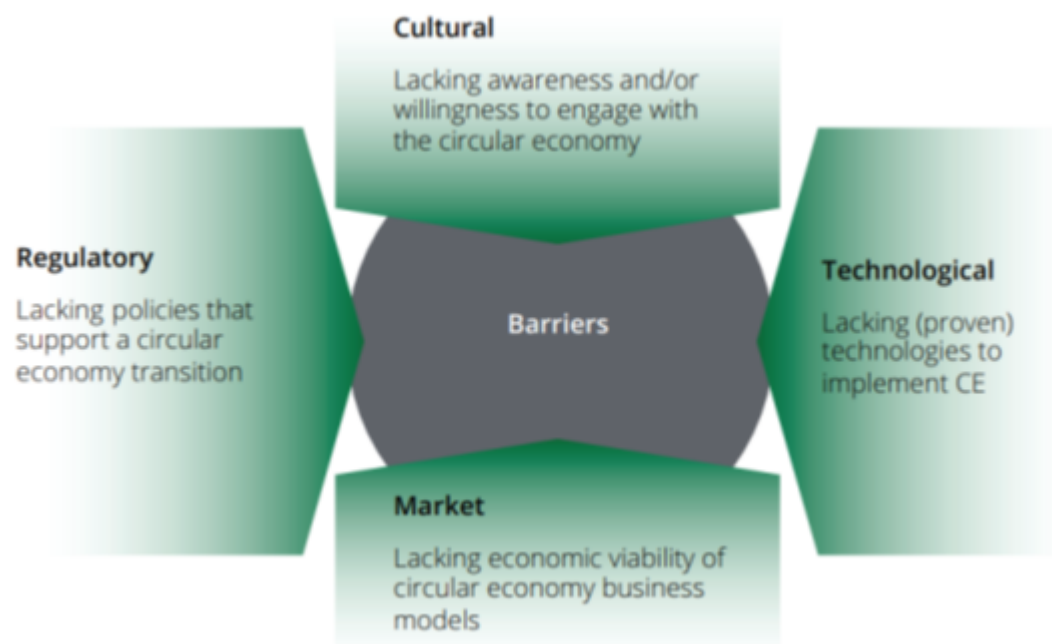
Obstacles to the adoption of a Circular Economy in the EU

Sustainable development requires radical changes and innovation. The integration between sustainability and sustainable development is necessary and Circular Economy models offer it. However, Circular Economy is rarely implemented in practice. It suggests keeping materials available instead of discarding them and thus closing the circle within the product's life, to reduce consumption and energy demand. Economic development within a circular logic will no longer be achieved through mass production of products but by keeping them available for a longer period of time. (Amui, L.B.L., Jabbour, C.J.C., Kannan, D., 2017).



The transition to Circular Economy, therefore, requires a fundamental change across organizations and their stakeholders. For an organization to be able to extend this kind of proposition to its production and service systems, integration between the different functions within the company is necessary and this can only be achieved through close interdepartmental collaboration. Companies often encounter difficulties in making this transition. There are considerable barriers and challenges for businesses who want to transfer their industries to the Circular Economy model. Hereafter, we will identify and analyze the main barriers that Circular Economy encounters in its implementation. There are a large number of barriers and most of them are connected to each other, which shows the complexity of the Circular Economy model and what is necessary for the transition to it.

Figure 2: Barriers to Circular Economy transition



Source: Types of Circular Economy Barriers (van Eijk, 2015).

Technological:

Technological barriers are related to the need for major changes in products and production and to the doubts as to whether they would work and what their cost would be. There is also a concern about quality, whether redesign for better circularity or recycled material content would affect the perceived quality of the product.

Financial:

There is uncertainty about how, through innovation and development work, revenue can be generated. In addition, other more concrete financial barriers are related to the perception that a transition towards a Circular Economy would imply changes throughout the organization and would influence all departments from the business model to technical aspects, relationship with customers, distributors, suppliers, production systems, etc. These changes take time and investment from the financial logic, usually focused on quick return on investment and cost reduction, which makes it difficult to convince owners in long-term strategies.

Integration between functions:

There is a conception in which, sustainability issues are a matter for a specific department within the company. There are also those who claim that Circular Economy is too complex to be addressed by a single department and that it is still uncertain how this responsibility is to be managed within organizations. Furthermore, it can be observed that the degree of integration between the different areas of the company is low. This lack of integration coupled up with hierarchical integration is another clear barrier to the transition to a Circular Economy.



Cultural:

As the Circular Economy is not yet established as a model in the industry, we can find that for a large majority, this concept is not familiar, and they have a limited understanding of its meaning. In general, there is a positive predisposition towards Circular Economy, although greater knowledge could give different perceptions and attitudes. Clearly, the lack of understanding of a Circular Economy and its opportunities imply a cultural and organizational barrier to an evolutionary change towards circularity (Kirchherr, J., et al., 2018). Another attitude-related barrier, possibly the most prominent, is the widespread aversion to risk and to taking small steps for organizational development. An inertia can be identified in considering new business models or sustainability as strategic issues as well as a dominant product/service orientation.

All these barriers have in common that they are, in fact, related to the transition to circularity and all tend to be related to the integration of different perspectives and domains. The small development of the system perspective is another barrier to integration, where for companies, only the service/product is considered for value creation. The fact that sustainability is seen as the sole responsibility of one department within companies illustrates that sustainability is not integrated across organizations. This is a cross-functional issue and definitely constitutes a barrier to Circular Economy.

Finally, there is a clear lack of integration along the value chain. Closer relationships between suppliers and producers, and between producers and consumers, will be needed. In addition to integration barriers, those connected to knowledge/culture must be addressed. A better understanding of Circular Economy could develop a more positive attitude towards it, it could fill the lack of awareness towards circular opportunities and address another cultural barrier, the aversion to risk taking.



Annex V – Circular Economy Practices

Definition of Circular Economy practices

Circular practices are actions that contribute to rethinking the economy and building other ways of doing and making. They are simple actions that become powerful strategies to break the dynamics of "buy-use-throw away" (linear economy).

The R Framework

Various frameworks consisting of collections of Circular Economy practices have been developed. These aim "to achieve less resource and material consumption in product chains and make the economy more circular" (Potting, Hekkert, Worrell and Hanemaaijer, 2017).

Different R frameworks exist: 3R, 4R, 6R, and 10R.

The 10R framework has practices ranging from ones with a low circular effect to ones with a high level of circularity, as follows:

'Recover, recycle, repurpose, remanufacture, refurbish, repair, reuse, reduce, rethink and refuse' (Kirchherr, Reike and Hekkert, 2017; Potting, Hekkert, Worrell and Hanemaaijer, 2017).

10 Circular Practices:

Recovery

Recovery converts waste into resources and transforms them into new products/substances (such as compost or energy, heat, fuel) (Rgang, n.d).

Waste is the final stage in the life cycle and supply chain of a substance/product. The goal is to recover the substance from that waste.



Recycling

Recycling allows materials and resources to return back to the economy and to be used again.

Recycling is composed by the following activities: Collection, separation, and processing (mechanical and chemical) of waste. Those are ensured and stipulated by European laws.

Before recycling any individual/company/manufacture should consider to:

- Reduce the amount of waste created;
- Reuse a product again, instead of throwing it away.

Recycling is recommended only if reducing and reusing processes are not possible, because it requires time and energy.

Repurpose

Repurposing is the use of a product or material for a different function than it was originally produced for (Ceguide, 2018). An entire discarded product or parts of it can be converted into new products with a different function or purpose.

Repurpose can also be referred to as both downcycling and upcycling (Circle Economy and MVO Nederland, 2015).

Benefits of repurposing:

- It reduces waste;
- It saves energy;



- It extends the life of a product;
- It preserves the value of a product.

Repurposing examples:

- Clothes: Creation of new items from old clothes: handbags from T-shirts, pillows from sweaters.
- Cars and Trucks: Car sharing, or less efficient cars and trucks can be sold to other individuals or companies.

Remanufacture And Refurbish

Remanufacturing and Refurbishing promote waste limitation and resource conservation through the re-use of products and materials that are recovered. “The products’ ‘core’ parts are restored so as to maintain the value added of the materials” (Rizos, Tuokko and Behrens, 2017).

These processes are similar but different:

Within remanufacturing, the product is “disassembled to the component level and rebuilt (replacing component when necessary) to as new condition with the same warranty as a new product”

Refurbishment is “largely a cosmetic process whereby a product is repaired as much as possible, usually without disassembly and the replacement of components”.

Benefits of remanufacturing:

- Lower prices for consumers;
- Lower use of energy, higher resource efficiency and lower CO2 emissions.
- Longer product’s life and waste reduction;
- Better customer relationship.



Benefits of refurbishing:

- It improves the environmental credibility of the manufacturer in the eyes of its customers;
- Increased market share;
- It “helps a manufacturer achieve higher profit margins, by giving products and parts a second or third life” (DIIgroup, 2018);
- It triggers a change of mindsets among consumers;
- Lower maintenance costs by giving a longer building lifecycle.

Repair

Repair is the first and most preferred method in a circular economy (Circular Repair, n.d.). The ultimate purpose of this practice is to maintain the utility of the products for as long as possible while only replacing the worn and broken components.

Benefits of repairing:

- It prolongs a product’s life.
- It reduces and avoids waste.
- It reduces premature obsolescence of objects.
- It promotes manual work.
- It creates social ties: Promotion of cooperation and solidarity.
- It raises public awareness of environmental problems.



Reuse

Reuse is a generic term covering operations where end-of-life products are put back into service, essentially in the same form, with or without repair or remediation.” (Cole, Gnanapragasam and Cooper, 2017).

Reuse is one of the most essential practices of a Circular Economy as it eliminates waste.

Benefits of reusing:

- General cut down of costs (Ellen MacArthur Foundation, 2019);
- Lower environmental footprint;
- Preservation of the product’s value (Circle Economy and MVO Nederland, 2015).
- Reuse can be implemented through formal routes (e.g. some businesses and charity shops), as well as informal ones, including giving items to friends or relatives, and other informal selling platforms;
- Reuse is not to be mistaken with recycling.

Reduce

Reducing is an important concept within a circular economy due to our current unsustainable model. Reducing, therefore, implies a direct and concrete decrease of all those practices and activities that are unsustainable at its core, negatively impacting the environmental and social sphere.



The EU alone produces more than 2.5 billion tons of waste every year. The EU legislation is aimed at reducing waste whilst promoting and transitioning towards a CE (Circular economy: definition, importance and benefits, 2018).

Benefits of reducing:

- Less waste going to landfill;
- Less use of natural resources;
- Lower CO2 emissions
- Lower risk of pollution incidents;
- Economic savings;
- Anyone can contribute: from the singular individuals to businesses and institutions.

Rethink

Rethinking is at the core of a circular economy: A circular economy itself involves a whole rethinking and resetting of an entire system. Rethinking can be applied to any sector and practice; it involves a change in how practices are executed in such a way that they are more circular.

Good rethinking practice:

Water is an extremely valuable and precious resource that needs to be used consciously and, therefore, needs to be protected. This requires a whole rethinking of the use of water:

Example: In a household, grey water, the water that is used for washing clothes, can be collected and used in the toilet, where it will be discharged into the biological treatment plant, a sewage that allows its treatment; once treated, it will end up in a tank and used for watering the garden.



Refuse

Refuse in a circular economy can be applied both to different manufacturing industries as well as to households. Household refuse accounts for a significant percentage of its total amount. Different legal acts in the EU regulate refuse management.

Types of refuse

- Municipal refuse:

This type of refuse can be prevented in many ways; e.g. environmentally friendly packaging. Two directives address this refuse:

Refuse Framework Directive (75/442/EEC), the act establishing the general framework for conducting refuse management.

The Landfill Directive (99/31/EC) has extremely significant effects on the organization of the municipal refuse management system. It sets strict operational and technical requirements for refuse landfills in order to reduce their negative environmental impact.

- Agricultural refuse:

Agricultural production generates various types of refuse, which depend on different variables (e.g. the kind of production in the farm, their quantity within the volume of production etc.)

Most refuse produced on a farm has a high content of valuable nutrients: improving soil fertility and increasing crop yield.

Various biological and chemical processes are used to process organic refuse from agriculture

Reflection



- What are the Main Challenges, Opportunities and Benefits of Circular Economy Practices?
- What is the Necessity and Reasoning for Circular Economy Practices?
 - Why are Circular Economy Practices necessary and how would you explain this to someone who does not know so much about their importance?

Annex VI – Circular Economy Principles

The R Framework



As studied in Milestone 2. Remind students of the 10 Rs discussed by going through these examples.

01. RECOVER

"Incineration of materials with energy recovery".

02. RECYCLE

"Process materials to obtain the same (high grade) or lower (low grade) quality".

03. REPURPOSE

"Use discarded product or its parts in a new product with a different function".

04. REMANUFACTURE

"Use parts of discarded product in a new product with the same function".

05. REFURBISH

"Restore an old product and bring it up to date".

06. REPAIR

"Repair and maintenance of defective product so it can be used with its original function".

07. RE-USE

"Re-use by another consumer of discarded product which is still in good condition and fulfils its original function".

08. REDUCE

"Increase efficiency in product manufacture or use by consuming fewer natural resources and materials".

09. RETHINK

"Make product use more intensive (.e.g through sharing products, or by putting multi-functional products on the market)".

10. REFUSE

"Make product redundant by abandoning its function or by offering the same function with a radically different product".

Sustainable Design Strategies (SDSs)

Sustainable Design Strategies are ways to "enable sustainable development challenges to be tackled in a coherent and dynamic way" (OECD, 2001). The principle behind these is that, instead of dealing with the environmental impacts of our actions as they become apparent, we try to anticipate our effect on



the environment whilst designing products and services. In that way, they can be more sustainable from their very conception, also in the process saving us time later.

Examples of SDSs:

The Life Cycle Assessment (LCA) of a product is “a technique for assessing the environmental aspects associated with a product over its life cycle” (Muralikrishna and Manickam, 2017);

The practice of eco-design “explores opportunities to reduce environmental impacts throughout entire product life cycles by improved product design (whether these products are goods, services, or processes)” (Andrae, Xia, Zhang and Tang, 2016).

The principles of a Circular Economy

The Circular Economy and the global adoption of its principles are more important than ever to sustain the rate of production of goods and services to meet the ever-increasing consumer demand that is burdening the environment and society. The Circular Economy is based on three key pillars, each of which addresses several of the resource and system challenges facing industrial economies. We cannot explain the principles of the Circular Economy without first mentioning the pillars on which they are based:

Pillar 1 seeks to preserve and enhance natural capital, controlling limited resources and balancing renewable resource flows. It attempts to make sure that products are designed and optimised through a cycle of disassembly and reuse. It chooses technologies and processes that use renewable or more efficient resources. This pillar means, on one hand: Eco-design which considers the environmental impact during product design and, on the other hand, functional economy, to which the reduction of waste is considered. All goods or services have some impact on the environment at some or all stages of their life cycle, but the Circular Economy is an alternative, regenerative way of manufacturing and using products already discarded for use ³. Unlike the traditional linear



economy, toxic chemicals are eliminated from material flows, they run on renewable energy, and the value of products and material flows is maintained in long-lasting cycles.

Once the good is produced and designed ecologically, we move on to the second pillar, which implies to make it last as long as possible.

Pillar 2: To optimize resource efficiency by distributing products, components and materials with their maximum utility at all times, in both technical and biological cycles: this involves designing for remanufacturing, reconditioning and recycling (the three R's) to keep technical components and materials circulating.

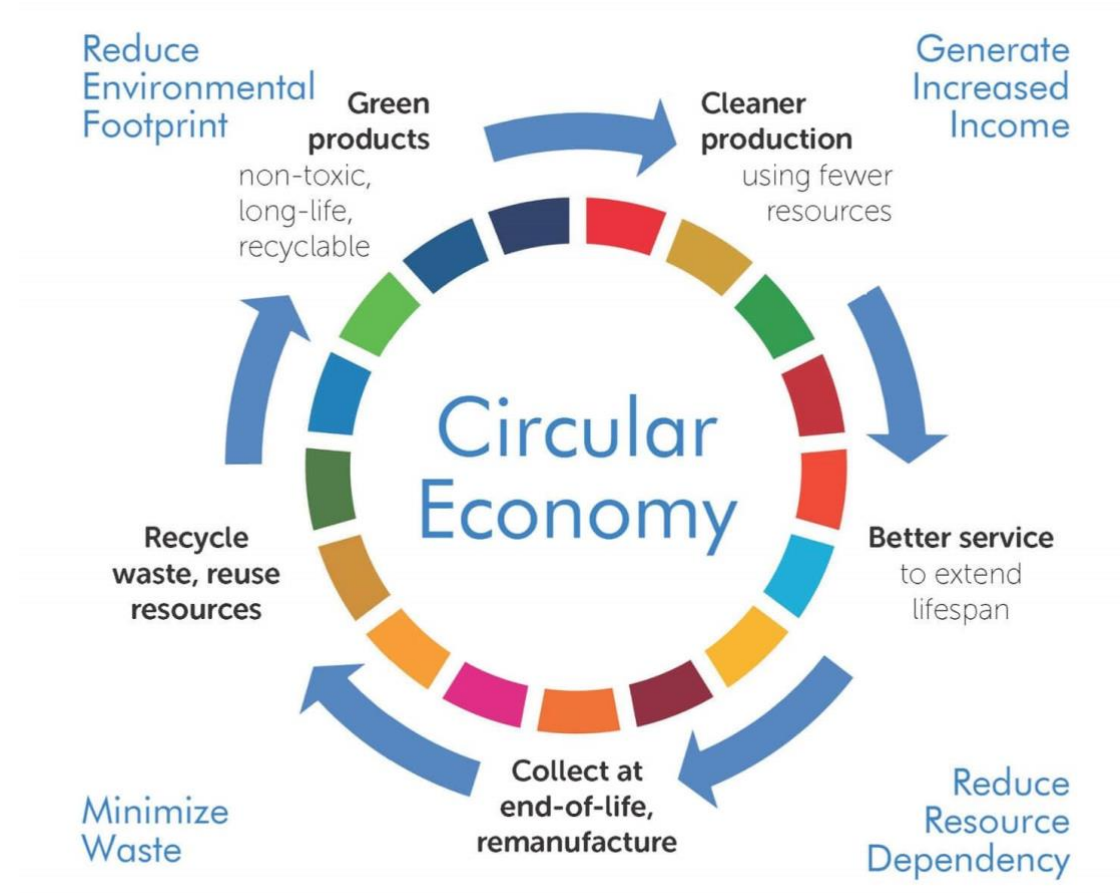
The first step is to reuse (recovering a product to be used without changing its form or function). Sometimes it may be necessary to repair it, nonetheless, when it cannot be used in its entirety, it is sometimes possible to use part of it to create another object, this is remanufacturing. Later on, we have up-cycling, which is when the value of the newly created object is much higher than the value of the original object.

Finally, at the end of a product's useful life, recycling is necessary in order to make the best use of all the materials that make up the product.

Pillar 3: To promote the effectiveness of systems by detecting and eliminating negative externalities from the design. It includes reducing damages to human use, such as those related to food, mobility, housing, education, health and leisure. In addition, the energy required for this cycle should be renewable to reduce resource dependence and increase the resilience of the system (e.g., in the event of an oil crisis).

Figure 3: Circular Economy principles





Source: bee smart city website. "The Circular Economy: Vision, problems and smart city solutions" article.

According to the aforementioned pillars and according to (Morató, J., et al., 2017, p. 23), the principles of the Circular Economy model are as follows:

Designing in waste prevention

Products and services can be conceived and designed in a way that radically reduces waste creation through better integration with biological and technological material cycles. It is all about how to give the object a second life from design, with new added values, to drastically reduce further material and energy inputs. One of the most important activities in this principle is eco-design, as a business model focused on the first stages of companies' value chains.

Building resilience through diversity

Products and services have to adapt to different utilities throughout their life cycle. Products will have to be simpler, more modular and versatile, all while maintaining their efficiency. Product resilience proposes to reduce obsolescence and drastically increase functionality and usability.

Use of renewable energy

The production, consumption and use of a product requires energy resources. The Circular Economy proposes to use only renewable resources, because of their virtually unlimited availability, to drastically reduce the negative impact on the environment (greenhouse gas emissions, toxic discharges into rivers and seas, etc.) and human health.

Waste is food

This principle radically changes the way of understanding waste, which is no longer rejected, but can be transformed into a very important resource of the biological and technical cycles, it is the basis for production in the links of the value chain.

System thinking and local thinking



Where the different parts relate to each other and to the system, at different spatio-temporal scales and in relationships with multiple variables. A very clear example is what some local companies do: reusing old clothes such as curtains, sheets, tablecloths, etc., to transform them into objects like bags, backpacks, purses, etc, giving them a new use and revaluing them so that they can re-enter the market.

Local thinking means that organizations and communities are influenced by their context and therefore have a dynamic relationship of proximity. This can provide the guidelines for groups of people to make the best use of resources and, at the same time, to foster and strengthen local creative and innovative capacity. System thinking, in the same way, implies the participation of different stakeholders to materialize the Circular Economy model.

Cascade thinking

It is based on the possibility of increasing the value of a raw or secondary material through the definition of its specific functions and trying to reintroduce it in a part of the life cycle of its same use or in that of other different uses.

Focusing on performance

Performance has to be synergistic and based on the creation of multiple benefits, including the creation of added values, jobs and the reduction of resource consumption. This would entail the reduction of negative impacts from natural and socio-economic systems.



Annex VII – Using the Circular Economy to Profit

Consumer Behaviour - Patterns and Levels of Consumption

Source: <https://www.omniconvert.com/blog/consumer-behavior-in-marketing-patterns-types-segmentation/>

Consumer behaviour is the study of consumers and the processes they use to choose, consume, and dispose of products and services, including consumers' emotional, mental, and behavioural responses.

Studying consumer behaviour is important because it helps marketers understand what influences consumers' buying decisions. By understanding how consumers decide on a product, they can identify the products that are needed and the products that are obsolete. Studying consumer behaviour also helps marketers decide how to present their products in a way that generates a maximum impact on consumers. Understanding consumer buying behavior is the key secret to reaching and engaging your clients and converting them to purchase from you.

A consumer behavior analysis should reveal:

- What consumers think and how they feel about various brands, products, etc;
- What influences consumers to choose between various options;
- How consumers' environment influences their behavior.

Types of consumer behavior

There are four main types of consumer behavior:

1. Complex buying behavior

This type of behavior is encountered when consumers are buying an expensive, infrequently bought product. They are highly involved in the purchase process and consumers' research before committing to a high-value investment. E.g: Buying a house or a car.

2. Dissonance-reducing buying behavior



The consumer is highly involved in the purchase process but has difficulties determining the differences between brands. 'Dissonance' can occur when the consumer worries that they will regret their choice. E.g: Buying a lawnmower, you will choose one based on price and convenience, but after the purchase, you will seek confirmation that you've made the right choice.

3. Habitual buying behavior

Habitual purchases are characterized by the fact that the consumer has very little involvement in the product or brand category. E.g: Grocery shopping, you go to the store and buy your preferred type of bread. You are exhibiting an habitual pattern, not strong brand loyalty.

4. Variety seeking behavior

In this situation, a consumer purchases a different product not because they weren't satisfied with the previous one, but because they seek variety. E.g: Trying out new shower gel scents.

What affects consumer behavior?

1. Marketing campaigns

If done right and regularly, with the right marketing message, they can even persuade consumers to change brands or opt for more expensive alternatives.

2. Economic conditions

For expensive products especially (like houses or cars), economic conditions play a big part. A positive economic environment is known to make consumers more confident and willing to indulge in purchases irrespective of their financial liabilities.

3. Personal preferences

Consumers' choices are greatly influenced by their preferences, such as likes, dislikes, priorities, morals, and values. In industries like fashion or food, personal opinions are especially powerful. E.g: If you're vegan, it doesn't matter how many burger ads you see, you're not going to start eating meat because of that.

4. Group influence

Peer pressure also influences consumer behavior. What our family members, classmates, immediate relatives, neighbors, and acquaintances think or do can play a significant role in our decisions.



5. Purchasing power

Considering your budget before making a purchase decision. The product might be excellent, the marketing could be on point, but if you don't have the money for it, you won't buy it.

Customer behavior patterns

Buying behaviour patterns are not synonymous with buying habits. Habits are developed as tendencies towards an action and they become spontaneous over time, while patterns show a predictable mental design.

Buying behaviour patterns are collective and offer marketers a unique characterization. Customer behaviour patterns can be grouped into:

1. Place of purchase

Most of the time, customers will divide their purchases between several stores even if all items are available in the same store. Although you can find clothes and shoes in one place (hypermarket), you're probably buying those from actual clothing brands.

When a customer has the capability and the access to purchase the same products in different stores, they are not permanently loyal to any store, unless that's the only store they have access to. Studying customer behaviour in terms of choice of place will help marketers identify key store locations.

2. Items purchased

Here we talk about the items that were purchased and how much of each item was purchased. Necessity items can be bought in bulk while luxury items are more likely to be purchased less frequently and in small quantities.

3. Time and frequency of purchase

Customers will go shopping according to their feasibility and will expect service even during the oddest hours; especially now in the era of e-commerce where everything is only a few clicks away.

It's the shop's responsibility to meet these demands by identifying a purchase pattern and match its service according to the time and frequency of purchases.

Seasonal variations and regional differences must also be accounted for.



4. Method of purchase

A customer can either walk into a store and buy an item there or order online and pay online via credit card or on delivery. The method of purchase can also induce more spending from the customer (for online shopping, you might also be charged a shipping fee for example).

The Appeal of Green Products

Why do people buy green? (Zhang & Dong, 2020)

There are many factors which can be divided into three dimensions: individual factors, product attributes and marketing, and social influence. Individual factors are divided into three aspects: psychological factors, habits and lifestyle, and socio-demographics. Psychological factors are mainly composed of attitude, environmental consciousness, and beliefs and values. Habits and lifestyle are subdivided into face/status consciousness, health status, healthy lifestyle, and so on. Socio-demographics are mainly reflected in education level, age, gender, occupation, and family structure. Product attributes mainly involve product quality, price, perceived risks, and trust, while marketing is composed of eco-label, advertisement, and green word-to-mouth. As for social influence, it is divided into social norm and social capital. Social norms are measured from the perspective of peer, culture, and organization. Social capital mainly measures social norms from social media and place identity. First, as for the personal factors of consumers, on the one hand, the differences in gender, age, education, and work make consumers have different levels of demand for green products. On the other hand, the psychological variables have a profound and lasting guiding effect on consumer behavior, which leads to significant differences in consumers' purchase intention or behavior due to their different attitudes and expectations in respect of environmentally friendly products. Second, the attributes of green products are also key factors that consumers should consider when purchasing goods. Products should not only meet the practical and price needs of consumers but should also provide the environmental benefits expected by consumers. The marketing strategies also play an important role in guiding consumers' purchase intention. The biggest difference between green products and traditional products lies in their green attributes. Businesses should not only highlight the sustainable impact of green products on the environment and on social development but they should also pay attention to the authenticity of the information in their publicity to avoid false publicity such as "greenwashing", which would reduce consumers' trust in green products.



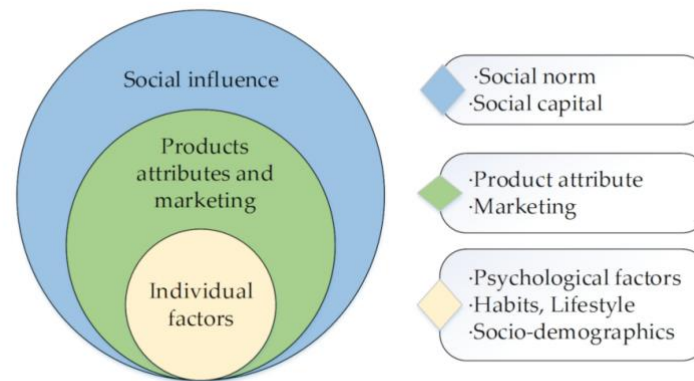


Figure 5. Classification of determinants of green purchase.

Recent years have seen a steady increase in the number of consumers willing to buy sustainably produced products. When trying to persuade customers to buy a product, two main types of appeal to the customers can be made: intrinsic appeal and extrinsic appeal. Put simply, intrinsic appeal tries to persuade consumers based on their sense of altruism and wanting to make the world a better place for everyone, making them feel warm and a good person upon purchasing. Extrinsic appeal on the other hand emphasises the personal benefit the consumer might enjoy from buying the product, for example the product being cheaper, saving them time, or making their life easier (Edinger-Schons et al., 2018). Different researchers are divided on whether using both intrinsic and extrinsic appeals is effective. Ultimately, it is up to each company to decide to what degree it should appeal to consumers' altruism and to their self-interest. Speaking directly to consumers and collecting information on why they choose to buy sustainable products (only altruism or also self-interest) can help in deciding to what degree these types of appeal should be used.

The Role of Entrepreneurship in the transition towards a Circular Economy

Source: <https://www.omniconvert.com/blog/consumer-behavior-in-marketing-patterns-types-segmentation/>

Entrepreneurship has considerable potential within a circular economy. Entrepreneurship plays a significant role in our societies as one of the “major drivers of economic growth, of breakthrough innovations and job creation” (Heshmati, 2015).

Circular economy business models are rapidly growing. It is important to highlight that the transition to a Circular Economy will entail unprecedented changes in businesses at very different levels and new opportunities will appear. It will therefore be necessary for employers and employees to adopt new perspectives and skills. Five main areas with entrepreneurship potential have been identified, highlighting the roles and skills that are likely to be demanded:

Recycling, repair and waste management.

Processes such as reverse logistics, resource and waste sorting, the cleaning of components, and the refurbishment of products; Repairing; Drivers; Managerial roles.

The jobs in this area require hard skills such as organisation and understanding the use of machinery, which come from practical experience and training; technical skills, soft skills; organisational skills; management and leadership skills; and interpersonal skills.

Design, engineering, and architecture.

This includes some of the Key Product Value Chains (European Commission, 2020a): packaging, plastics, textiles, and buildings. It also includes jobs such as environmentally conscious designers or “green” engineers and architects.

It mostly requires hard skills. However, creativity also plays an essential role, as well as communication skills.



Resources, food, and water management.

It entails: Circular and sustainable management of water as a resource, and food production (as well as for food for livestock); agronomic advisors: support healthy soil nourishment with organic fertiliser from composted manure and crop remnants. They combine strong interpersonal skills with ecological knowledge.

It mostly requires hard skills such as specific technical knowledge. It also requires, soft skills to interact with the involved entities/individuals.

IT and digitalisation.

Building information managers: integration and interpretation of virtual information management systems; data analysts. Software developers: software for the tracking, supervision, and support; Repairing roles for electronic devices.

Hard skills are primarily needed, such as mechanical skills, cloud computing, scientific computing, database management. Soft skills are also fundamental for good communication and organisation.

Management and public sector.

Decision-making roles: negotiations and organisation of the CE transition; public workers who must negotiate, bring dialogue with the citizens, and organise calls to find opportunities, e.g. managers, public procurers, civil servants, regional and national practitioners, advisors, and demand planners.

Soft skills are important, such as communication skills; leadership and managerial skills; ability to work in teams; interpersonal skills.

Annex VIII – Circular Economy Business Models

What is a business model?

A business model is a strategy “for running a business, identifying where the money will come from, who the customers are, how they will be reached, etc” (business-model noun, Oxford University Press, 2021). Not to be confused with a business plan, which is similar but goes into much more detail, a business



plan broadly sketches the way you plan to make money, including: what your company plans to offer, what value it will bring to its costumers, and what advantage it will enjoy over its competitors.

Not every company is unique in every way, meaning that many companies' employ quite fundamentally similar business models which can be grouped together according to aspects of them which are circular. Grouped together like this, common circular themes within business models include:

Dematerialisation

Dematerialisation refers to cases where the amount of resources used in producing a product or providing a service is reduced. This could include replacing one material used in making a product with another one which works more efficiently and is more easily found: for example, replacing old (incandescent) lamps with energy-saving ones which create electricity more efficiently using much less electricity. It could also include providing a product digitally which previously was sold physically: for example, selling e-books instead of printed paper books.

Circular inputs

Inputs are, quite literally, what you need to put in in order to get a product out at the end of the day. One way that companies can make their business model more circular is by including circular inputs: for example, materials which can be recycled rather than materials which can only be used once.

Resource recovery

Resource recovery means that you avoid waste of resources in what your company does by making sure that you recover that waste and use it. An example of this was brought up earlier in the course with the example of companies capturing grey water and reusing it for flushing the toilets. In that way the companies reduce the amount of water they use by using a lot of it twice.



Product life extension

As the name says, this circular aspect of business models involves extending the life of your products. A product that is used for longer before needing to be disposed of is appealing to consumers because it will cost them less money over time. It is also circular because buying things less often means less resources are used. A good example of this is the way many clothes shops are now offering cheap or free repair services for their clothes. The clothes can then be worn for longer.

Product-as-a-service or product service system

Staying with the example of clothes shops, another circular business model aspect that is becoming increasingly popular in the clothing industry is providing a product as a service. In this case, companies can allow their customers to pay a regular subscription fee for a number of items of clothes. The customer then does not buy the clothes but the right to wear them. If this includes the ability to swap that product for another one (for example swapping a thin blue jumper for a warmer green one), then customers may do that instead of repeatedly buying and amassing more and more clothes.

Annex IX – Other important aspects of business

The product life cycle

Products, like living creatures, can be said to go through their own life cycle. In talking about products in this context, we are talking about a product in general (for example electric nose-hair trimmers), not about a specific instance of that product belonging to one person (Matthew's electric nose-hair trimmer). All products are at one point new, and eventually become older and are superseded by newer and more improved products.



The product life cycle is normally split up into 4 parts:

- 1) **Introduction phase.** When a product is new. In this stage it is new and faces a number of challenges: it is not well-known to the public, it needs a lot of marketing, it cannot be produced in large numbers, production costs more money due to this smaller volume. In this stage consumers have to be convinced to buy the product.
- 2) **Growth phase.** In this phase the product, if successful, begins to become established, widely used, and well known among the public. It also becomes cheaper to manufacture it in large numbers as there is a much bigger market willing to buy it. At this stage it becomes more attractive for different companies to start making and selling it, and the problem becomes one of convincing consumers to buy your company's version of the product.
- 3) **Maturity phase.** After becoming established, the market will become mostly saturated with the product. Many companies producing that same product will here start trying to change it slightly to make it more attractive, or to tailor it more specifically to certain groups in society.
- 4) **Decline phase.** At some point, a product will lose favour with consumers and its sales will shrink. This may be because it is no longer necessary as it has been replaced by something better: for example, fax machines passed their peak long ago and have been mostly replaced by scanners and email. In other cases, a product will never succeed in its introduction phase and will progress straight into decline, such as electric nose-hair trimmers.

Circular business models can be especially attractive when applied to products which are already in the growth or maturity stage of the product life cycle, as being able to market a product as being more green and sustainable than its competitors may offer the chance to eat up the market share of your less sustainable competitors.

The supply chain

We do not harvest smartphones out of the ground like potatoes. They are built from many hundreds of components. Each component ultimately comes from a natural resource which has to be extracted then processed. They all have to be transported from place to place, in this case across the world. They



must be stored sometimes as well. Finally they are assembled into a ready-to-use smartphone. This is the incredibly complex supply chain of the smartphone.

A supply chain is everything that is involved in getting your product to your customer.

Even the simple potatoes for sale in the shop have a supply chain. In many cases they will be harvested by the farmer, sold on to a middle-man, washed in a vegetable-washing facility, packed in a packing facility, stored until ready for sale to a supermarket chain, sent to the chain's own warehouse, and finally sent on to a particular shop of theirs which needs to stock up on potatoes. The environmental impact of that potato includes not just what the farmer and the supermarket do, but what everyone in between does.

Managing your company's supply chain well can have major positive impacts on the environment. For example, simply making sure that your product sits nicely into its packaging without lots of unnecessary extra space decreases the amount of space it will take up in a truck or ship. Over a longer period, this means less trucks and ships need to drive to deliver the same amount of product. So our decisions on our supply chains also have a huge impact on how sustainable we are.

Packaging

With the continuing rise of e-commerce, the amount of materials used for packaging is growing all the time. Packaging for transporting and delivering products also requires resources, often cardboard and plastic, sometimes polystyrene. Making the packaging used more circular can drastically reduce the environmental impact of a company. One example of this is companies taking circular inputs into use by sourcing already-recycled cardboard for their packaging. Others in turn are replacing plastic with more sustainable alternatives. For example, for delicate packages which require shock absorption inside, instead of using plastic bubble wrap or polystyrene, shock absorbers made from cardboard can be used.



Three focus areas of the European Commission in reviewing its own directives, such as the Directive on Packaging and Packaging Waste are:

- reducing (over)packaging and packaging waste;
- driving design for re-use and recyclability of packaging;
- considering reducing the complexity of packaging materials.

