

Road to circularity...

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Lecture description and its focus



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This topic introduces you to the approaches underpinning the circular economy at European and national level, and provides a basic definition of circularity.

So, what does the circular economy really mean? What are the principles of the circular economy? Why should every company be interested in it? And not just businesses...

We will be looking for answers to these issues. The „stories for grab“ will help you to better understand the practical implications.

Global environmental problems...several examples...that our world is facing today...



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- Climate Change
 - Soil Degradation
 - Global Warming
 - Overpopulation
 - Natural Resource Depletion
 - Microplastic Pollution
 - Ambient (outdoor) Air Pollution
 - Generating Unsustainable Waste (The impact of textile production and waste on the environment)
 - and more...
-

Outline of the lecture

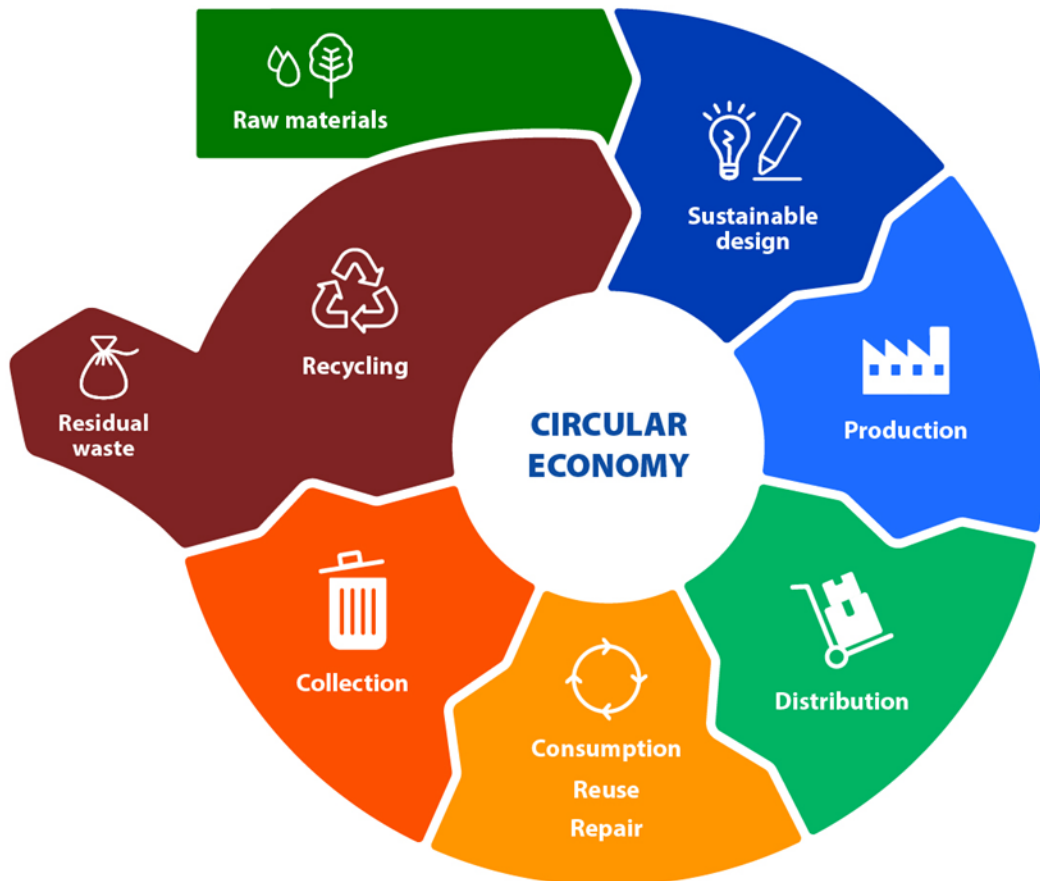


- **Circular economy – Definition, Importance, Benefits**
- **European Approach, Circular Economy Action Plan**
- **Stories for grabs**



CIRCULAR ECONOMY?

The circular economy model:
less raw material, less waste, fewer emissions



The **EU's transition to a circular economy** will reduce pressure on natural resources and will create sustainable growth and jobs. It is also a prerequisite to achieve the EU's 2050 climate neutrality target and to halt biodiversity loss.

On 11 December **2019**, the European Commission announced the **European Green Deal** to transform the European Union into the first climate neutral continent **by 2050**.

[The European Green Deal – A commitment to future generations](#)

CIRCULAR ECONOMY

Definition...

Importance...

Benefits...

The circular economy is a model of production and consumption, which involves sharing, leasing, reusing, repairing, refurbishing and recycling existing materials and products as long as possible.

In this way, the **life cycle of products is extended.**



CIRCULAR ECONOMY

Definition...

Importance...

Benefits...



In practice reducing **waste to a minimum.**

When a product reaches the end of its life, its materials are kept within the economy wherever possible thanks to recycling.

These can be productively used again and again, thereby **creating further value.**



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CIRCULAR ECONOMY

Definition...

Importance...

Benefits...

- **To protect the environment**
 - Reusing and recycling products would slow down the use of natural resources, reduce landscape and habitat disruption and help to limit biodiversity loss.
 - A reduction in total annual greenhouse gas emissions. Industrial processes and product use are Responsible for 9 % of greenhouse gas emissions in EU.
 - Packaging is a growing issue and, on average, the average European generates nearly 180 kilos of packaging waste per year.



CIRCULAR ECONOMY

Definition...

Importance...

Benefits...

- **Reduce raw material dependence**
 - The world's population is growing and with it the demand for raw materials. However, the supply of crucial raw materials is limited.
 - Finite supplies also means some EU countries are dependent on other countries for their raw materials. According to Eurostat, the EU imports about **half of the raw materials** it consumes.
 - This especially applies to critical raw materials, needed for the production of technologies that are crucial for achieving climate goals, such as batteries and electric engines.



CIRCULAR ECONOMY

Definition...

Importance...

Benefits...

- **Create jobs and save consumers money**
 - Moving towards a more circular economy could **increase competitiveness**, stimulate innovation, boost economic growth and create jobs (700,000 jobs in the EU alone by 2030).
 - Redesigning materials and products for circular use would also **boost innovation** across different sectors of the economy.
 - Consumers will be provided with more **durable** and **innovative products** that will increase the **quality of life** and save them money in the long term.



What is the EU doing to become a circular economy?



Answer for the question could be found in 4 milestones...

- 2020, the European Commission presented the **circular economy action plan**, which aims to promote more sustainable product design, reduce waste and empower consumers, for example by creating a right to repair. There is a focus on resource intensive sectors, such as electronics and ICT, plastics, textiles and construction.
- 2021, the Parliament adopted a resolution on the new circular economy action plan demanding additional measures to achieve a carbon-neutral, environmentally sustainable, toxic-free and fully circular economy by 2050, including tighter recycling rules and binding targets for materials use and consumption by 2030.

What is the EU doing to become a circular economy?



- 2022, the Commission released the first package of measures to speed up the transition towards a circular economy, as part of the circular economy action plan.
 - The proposals include boosting sustainable products, empowering consumers for the green transition, reviewing construction product regulation, and creating a strategy on sustainable textiles.
 - 2022, the Commission proposed new EU-wide rules on packaging.
 - It aims to reduce packaging waste and improve packaging design, with for example clear labelling to promote reuse and recycling; and calls for a transition to bio-based, biodegradable and compostable plastics.
-

Circular Economy Action Plan - For a cleaner and more competitive Europe



Circular Economy Action Plan

For a cleaner and
more competitive
Europe

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What is the EU doing to become a circular economy?



The **European Institute of Technology and Innovation (EIT)** brings together EIT Climate-KIC, EIT Food, EIT Manufacturing, EIT RawMaterials and EIT Urban Mobility to develop a multifaceted approach to furthering the field of Circular Economy and supporting the European Commission to achieve its Circular Economy Action Plan.



- 31**
May 2023
The EIT Community presents: Closing the Skills Gap in Deep Tech for a Sustainable Europe
Stockholm Sweden
- 06**
Jun 2023
EIT Digital: GROW DIGITAL 23 CONFERENCE
The Egg, Brussels Belgium
- 06**
Jun 2023
Join EIT Food's 1st Northern Europe 4 per 1000 Regional Meeting on Soil Carbon Sequestration
Helsinki Finland
- 15**
Sep 2023
Park(ing) Day 2023, giving back the streets to the citizens
Barcelona Spain

Stories for grabs – start-ups awarded from European Institute of Technology



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- [kheoos](#) is the **B-to-B market place for industrial maintenance parts**, favouring the connection between manufacturers, distributors, brokers and industrialists.
- kheoos is the community platform that allows manufacturers managing maintenance parts to automatically build their customized catalogue and benefit from advanced services to lower their inventory levels, reduce their risk of breakage, find rare pieces and resell their dormant stock.

Storries for grabs – start-ups awarded from European Institute of Technology



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ethikis
— ad civis —
Ethical and civic solutions



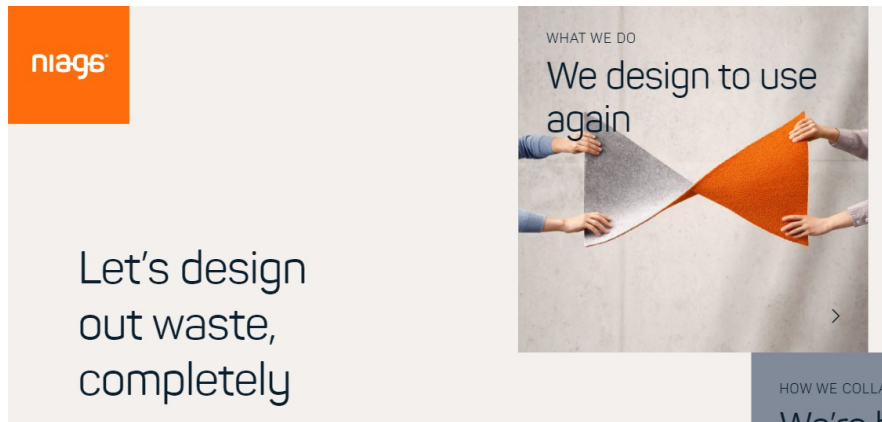
- ethikis, a social enterprise **promoting ethical consumption and use**, was awarded the prize for their LONGTIME® product label. This label, a certified stamp of approval, informs consumers that the product is durable and long-lasting. This aims to guide consumers towards more informed and responsible decision making when buying products.



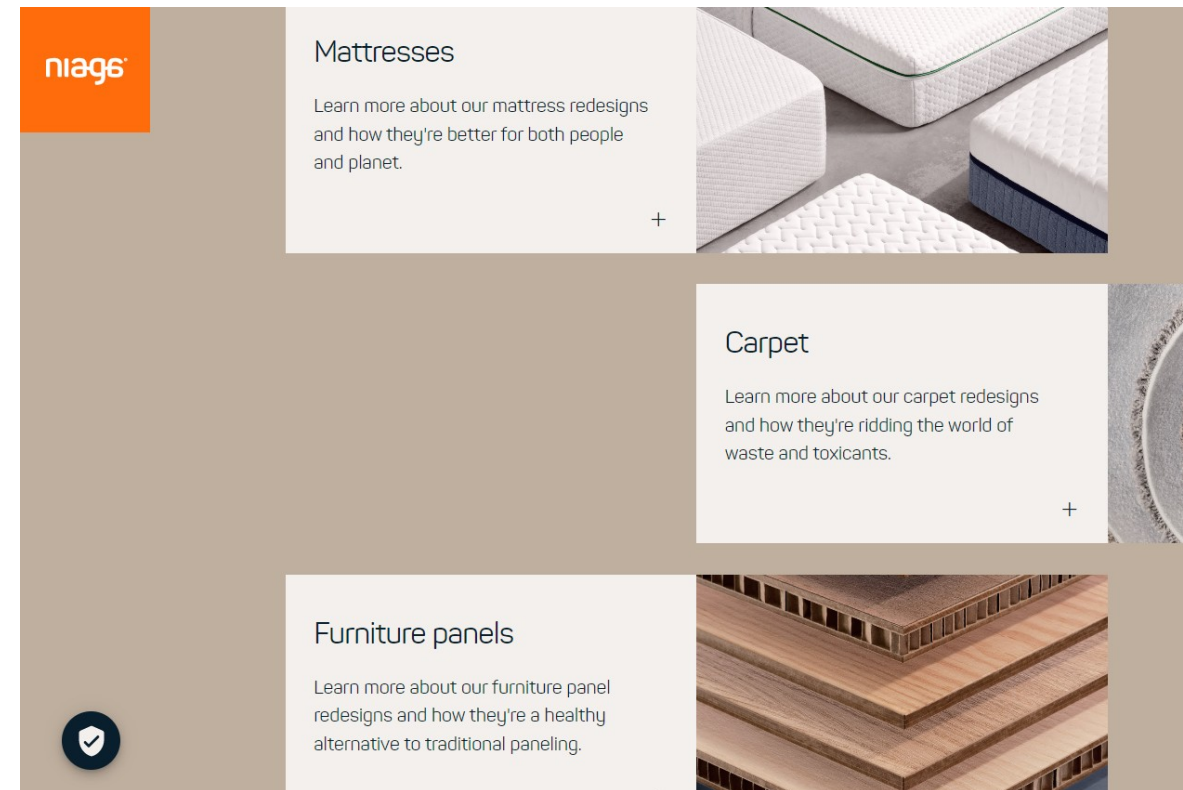
Storries for grabs – start-ups awarded from European Institute of Technology



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- [Niaga's](#) solution is a **scannable tag** for products like mattresses and carpets that enables consumers to see exactly what they are made of and, crucially, how to recycle them. In this way, the Niaga® tag helps to keep valuable materials in the loop for future generations and significantly reduce waste.



Stories for grabs – start-ups awarded from European Institute of Technology



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An Alpine mission to decarbonise construction

- Technicians and scientists witnessing the effects of climate change in the Alpine region came together to form the start-up [ParaStruct](#). Their mission is to **decarbonise the construction industry** and reduce resource inefficiencies with an advanced 3D power-printing technology that enables the recycling of construction waste into high-quality materials for re-use.



- British start-up [Winnow](#) has developed **smart meters that analyse trash**. They are used in commercial kitchens to measure what food gets thrown away, and then identify ways to reduce waste.
 - Up to a fifth of food purchased can be wasted in some kitchens, and Winnow has managed to cut that in half in hundreds of kitchens across 40 countries, saving its customers over \$25 million each year in the process. That is the equivalent of preventing one meal from going to waste every seven seconds. This innovation earned Winnow the Circular Economy Tech Disruptor Award.
-

Storries for grabs



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- DyeCoo, based in Weesp, the Netherlands. Company has developed a process of dyeing cloth that uses no water at all, and no chemicals other than the dyes themselves. It uses highly pressurised “supercritical” carbon dioxide, halfway between a liquid and a gas, that dissolves the dye and carries it deep into the fabric.
 - The carbon dioxide then evaporates, and is in turn recycled and used again. 98% of the dye is absorbed by the cloth, giving vibrant colours. And because the cloth doesn’t need to dry, the process takes half the time, uses less energy, and even costs less. The company already has partnerships with major brands like Nike and IKEA.

Stories for grabs



AB InBev

- ABI takes responsibility for delivering measurable results and lasting change. Their operational and commercial teams develop and deliver **circular goals**, working across their **full value chain** to embed circular decision-making across operations, within our product portfolio, and with their ecosystem of partners.
 - ABI focus continuously on innovation for circular impact. They are upcycling spent grains into protein-rich drinks, like Canvas, and identifying circular solutions with innovators through their 100+ Accelerator program. In packaging, ABI lead in light-weighting one-way glass and finding new ways to make returnables easy for consumers. They work collaboratively with suppliers and partners to bring infrastructure to local markets, and to recover and recycle material.
 - **43% of their volume globally is packaged in returnable glass bottles**, which are 8 times less carbon-intensive than one-way glass. ABI are also investing in returnable and recycling infrastructure across 6 continents where we operate and have **committed to 100% returnable packaging for all products by 2025**. ABI know the impact they can have and they challenge themselves to go further.

Stories for grabs

ABInBev

2025 Sustainability Goals

Our 2025 Sustainability Goals are our most ambitious public commitments yet. Introduced in March 2018, the goals aim for holistic environmental and social impact and drive transformational change across our entire value chain. Our company's leadership and a cross-functional team of nearly 100+ colleagues designed these goals with the next 100 years in mind, understanding that bold action built on measurable results is the key to resilience and lasting positive impact.

Smart Agriculture

Our Goal: By 2025, 100% of our direct farmers will be skilled, connected, and financially empowered.

Water Stewardship

Our Goal: By 2025, 100% of our communities in high-stress areas will have measurably improved water availability and quality.

Circular Packaging

Our Goal: 100% of our product will be in packaging that is returnable or made from majority recycled content.

Climate Action

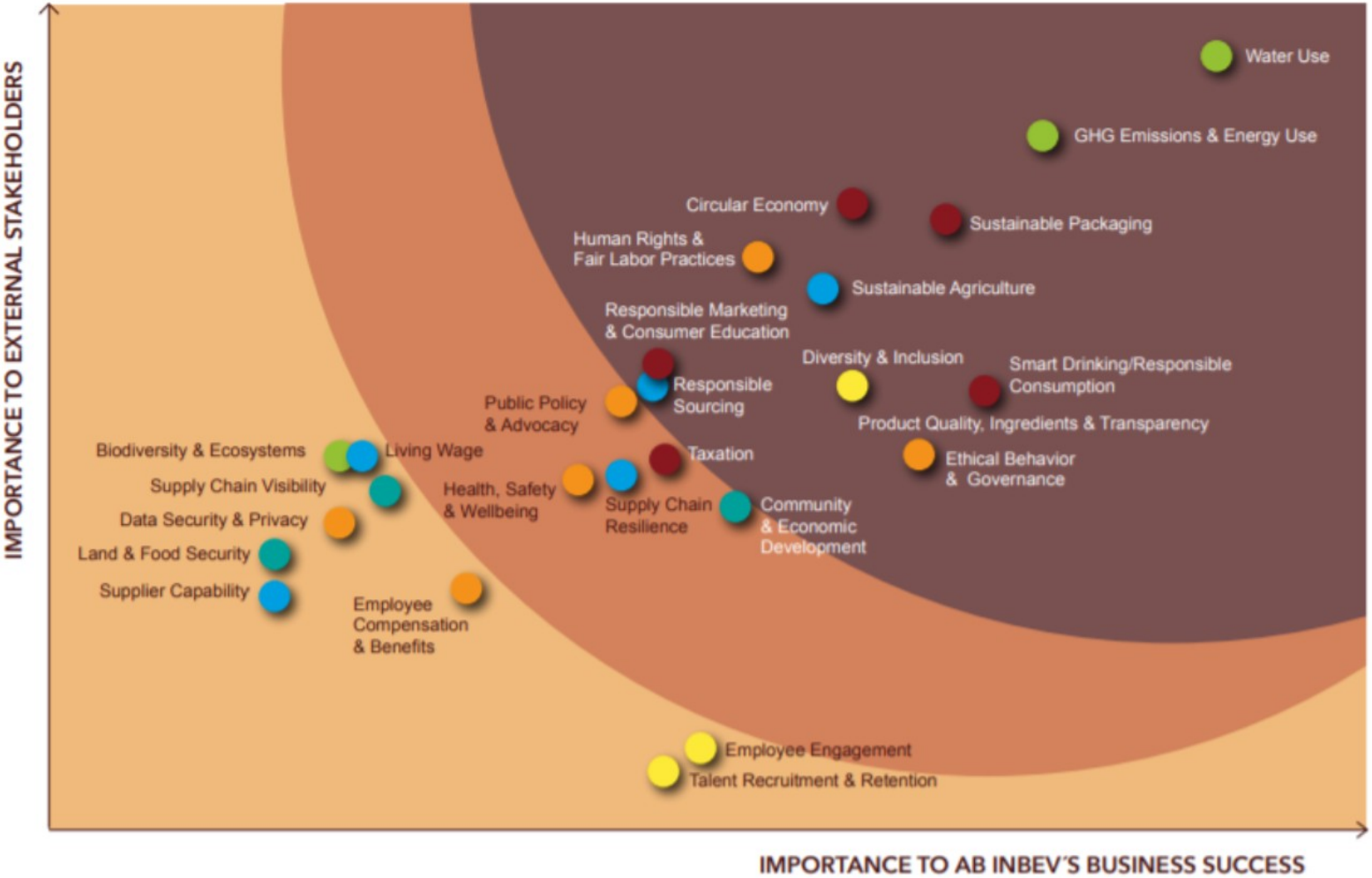
Our Goal: By 2025, 100% of our purchased electricity will be from renewable sources and we will have a 25% reduction in CO2 emissions across our value chain.

HOW WE ARE SUPPORTING THE UN GLOBAL GOALS



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Stories for grabs



- Employee
- Environment
- Governance
- Product & Services
- Society
- Supply Chain

Source: <https://www.ab-inbev.com/sustainability/>

Stories for grabs



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- [Essity](#) is a global leader in sustainable solutions for hygiene and health, dedicated to improving well-being through products and services, essential for everyday life. Sustainability is an integral part of their business focusing on value creation for people, nature and society, critical to success and profitability.
- They engage customer channels through our brands using three sustainability platforms:
 - Well-being
 - More from less
 - Circularity
 - At least 1/3 of all their innovations should improve society or the environment each year. Materials and energy will be recovered from all waste from all production sites by 2030. In 2017, 62% of all production waste was recovered in materials or energy. All these achievements contribute to a lower environmental footprint for their products.

Stories for grabs



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Products ▾

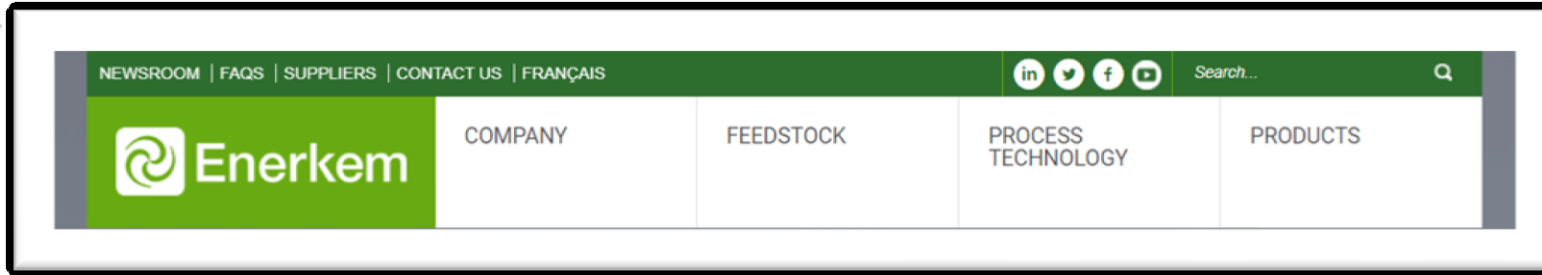
Sustainability ▾

TonerPlas

- [This Australian company](#) has spent more than a decade **recovering value from old printer cartridges and soft plastics**. Their new innovation **turns these materials into roads**.
- The products are mixed in with asphalt and recycled glass to produce a higher-quality road surface that lasts up to 65% longer than traditional asphalt.
- In every kilometre of road laid, the equivalent of 530,000 plastic bags, 168,000 glass bottles and the waste toner from 12,500 printer cartridges is used in the mix.
- So instead of ending up in landfill, all that waste is given a new life, getting us where we need to go.



Stories for grabs



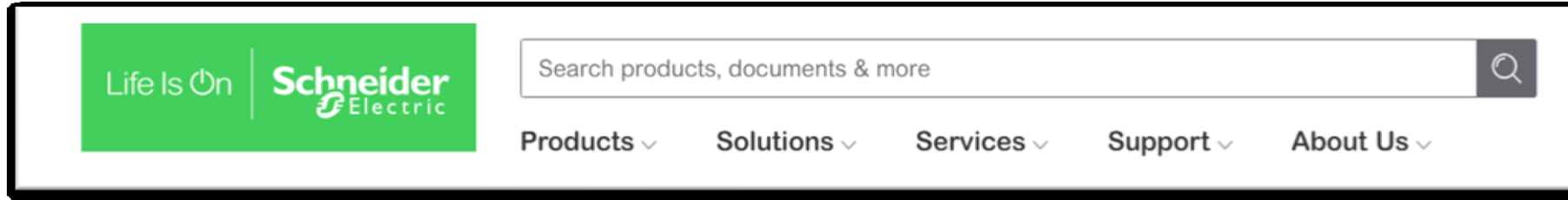
- Canadian firm [Enerkem](#) is the first company in the world to **produce renewable methanol and ethanol from non-recyclable, non-compostable municipal solid waste** at full commercial scale.
- Technology extracts the carbon from trash that can't be recycled. It then takes five minutes to turn the carbon into a gas that can be used to make biofuels like methanol and ethanol, as well as chemicals which can be used in thousands of everyday products. The city of Edmonton, for example, now reuses 90% of its waste, saving more than 100,000 metric tons of landfill every year.



Stories for grabs



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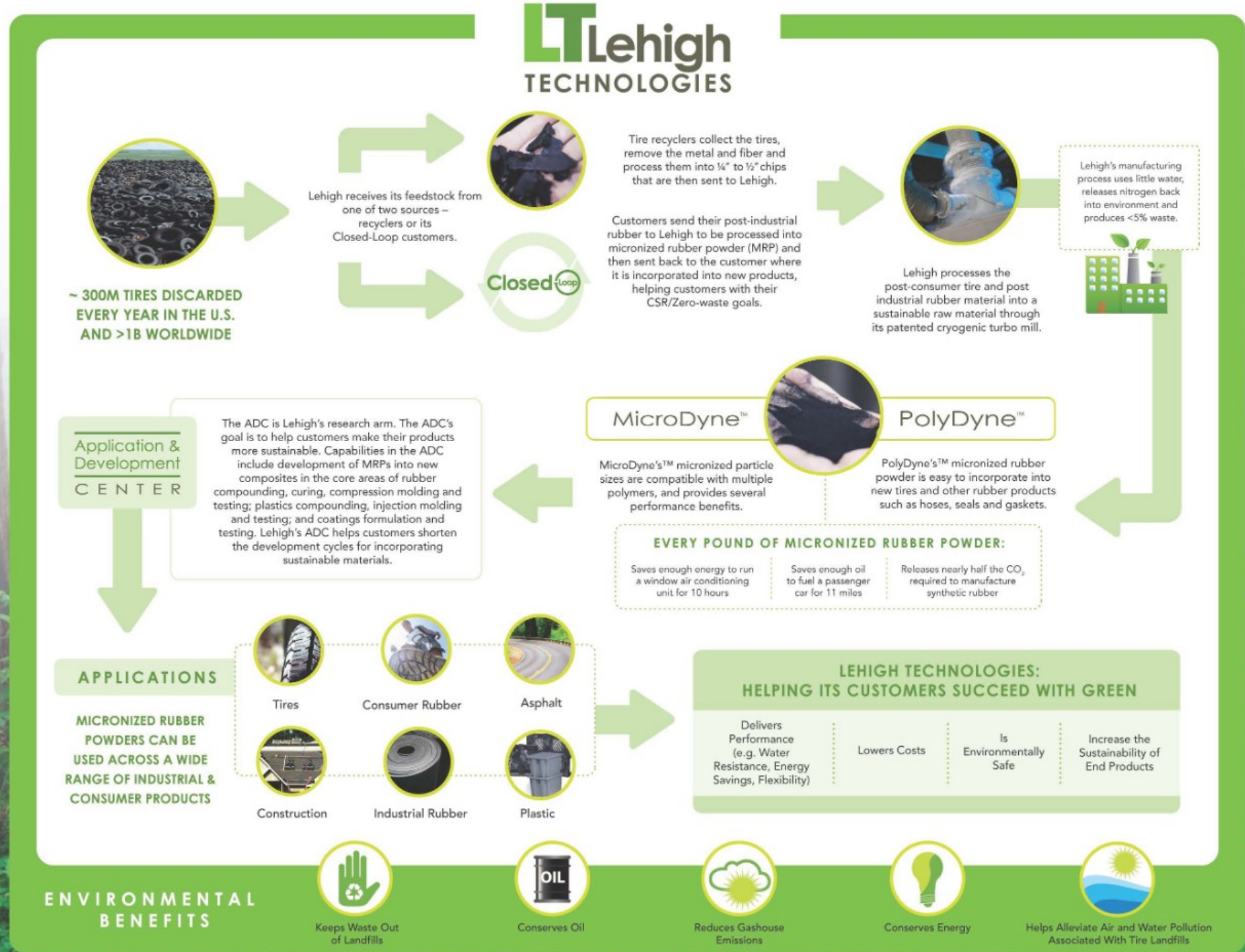


- French-based [Schneider Electric](#), which specialises in energy management and automation, won the Award for the Circular Economy Multinational.
- Employing 142,000 people in more than 100 countries, it uses recycled content and recyclable materials in its products, prolongs product lifespan through leasing and pay-per-use, and has introduced take-back schemes into its supply chain.
- Circular activities now account for 12% of its revenues, and will save 100,000 metric tons of primary resources from 2018-2020.

Stories for grabs



This Atlanta firm turns old tyres and other rubber waste into something called **micronized rubber powder**, which can then be used in a wide variety of applications from tyres to plastics, asphalt and construction material. Five hundred million new tyres have been made using its products, earning it the Award for Circular Economy SME.



Stories for grabs



For the founder of [Miniwiz](#), Arthur Huang, there is no such thing as trash. He is for upcycling - turning old materials into something new. As he admits, this isn't a new idea - until the 20th century reusing whatever was lying around was the norm. But he is taking this principle to new levels, with the scientists and engineers in his [Miniwiz Trash Lab](#) inventing over 1,000 new sustainable [materials](#) and applications.

The Trashpresso machine is the ultimate expression of sustainable upcycling. It is a mobile upcycling plant that can be transported in two shipping containers to its customers. Once there, it turns 50kg of plastic bottles an hour into a low-cost building material, using no water, and only solar power.

The screenshot shows the 'Upcycling Database by MINIWIZ' interface. It features a search bar at the top with the text 'Type a keyword...'. Below the search bar, there are several filter categories: 'MATERIAL SEARCH', 'TEXTILES FEATURES', 'ENGINEERING FEATURES', 'GENERAL FEATURES', and 'ARCHITECTURE & DESIGN'. The 'Recycled from' section lists various waste types with their counts: Disposable items (119), Durable consumer goods (47), Architecture waste (16), Textile waste (28), Electronic waste (10), and Agricultural waste (13). The 'Used for' section lists various applications with their counts: Furniture (71), Packaging (47), Ceiling (18), Wall Decoration (66), Floor (6), Structure (32), Building Materials (45), Accessories (23), and Clothes (19). The 'Potential for' section also lists these same categories with their counts. On the right side, there is a list of results with columns for 'Name' and 'Page: 1'. The results include: 'rPP + Kenaf - Sheet 4mm - Natural Col...', 'rPP Polli-Ber™ - Sh Extrusion Grade - I...', 'PU Re grind™ - Bo: White and Color M', 'rPET - Sheet - SRP) White and Black', and 'rPET - Sheet - PlyFi Grey'. The interface also shows 'Filter mode: [icon] 215 results' and a 'Page: 1' indicator.

Stories for grabs

Thousand Fell is already making a name for itself as an environmentally-conscious manufacturer with shoes made from sustainable materials such as coconut husk and sugar cane, and even recycled plastic bottles,

Now, in partnership with TerraCycle and UPS, the maker has launched a special recycling incentive. Customers can return old pairs of Thousand Fell shoes back to the manufacturer. Thousand Fell will then recycle the returned footwear and send customers \$20 that can be used toward a new pair of shoes.

THE FUTURE IS FULL CIRCLE

97% of sneakers currently end up in landfill – we are changing that.

Our supply chain and products were designed over 3 years by industry leaders, incorporating tech from 4 countries.

We turn coconut husk, sugar cane & recycled bottles into sneakers to create a new type of product that can be recycled. Our supply chain allows us to take your old TFs back, recycle them here in the US, and put them into future TFs.

This is the future of footwear.



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WOMEN'S MEN'S THOUSAND FELL

BEYOND SUSTAINABLE

THE FIRST RECYCLABLE SNEAKER

ZERO WASTE. CLOSED LOOP.

SHOP WOMEN'S SHOP MEN'S



Men's Court | White-White
\$135 + \$20 recycling deposit

Size Add To Bag



Women's Court | Black-White-Black
\$135 + \$20 recycling deposit

Size Add To Bag

Stories for grabs

NILMORE



_circular clothing

The production of raw materials and the generation of waste are the two phases of the life of clothing that have the greatest negative impact on our planet. We have developed circular clothing, which the impact of these two phases eliminates. How?

You will return the clothes to us after wearing them, we will fully recycle them and make new ones. That eliminates waste and saves raw materials. As a result, our clothing has the lowest impact of all commonly available textile materials.

[More about circularity](#)



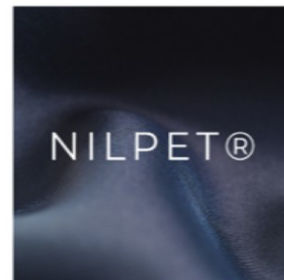
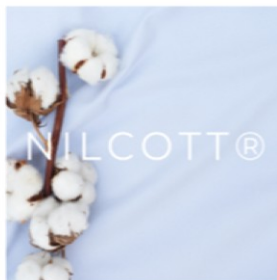
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Czech company [NILMORE](#) _returning clothes for recycling

Do you no longer want our clothes? Is it worn or did it just go out of fashion? You can return it to us through our network of Nilmore® Circular Points. For each returned piece you will receive a 100 CZK discount, which you can use for the next purchase! If you have purchased a product from one of our partners

Timeline

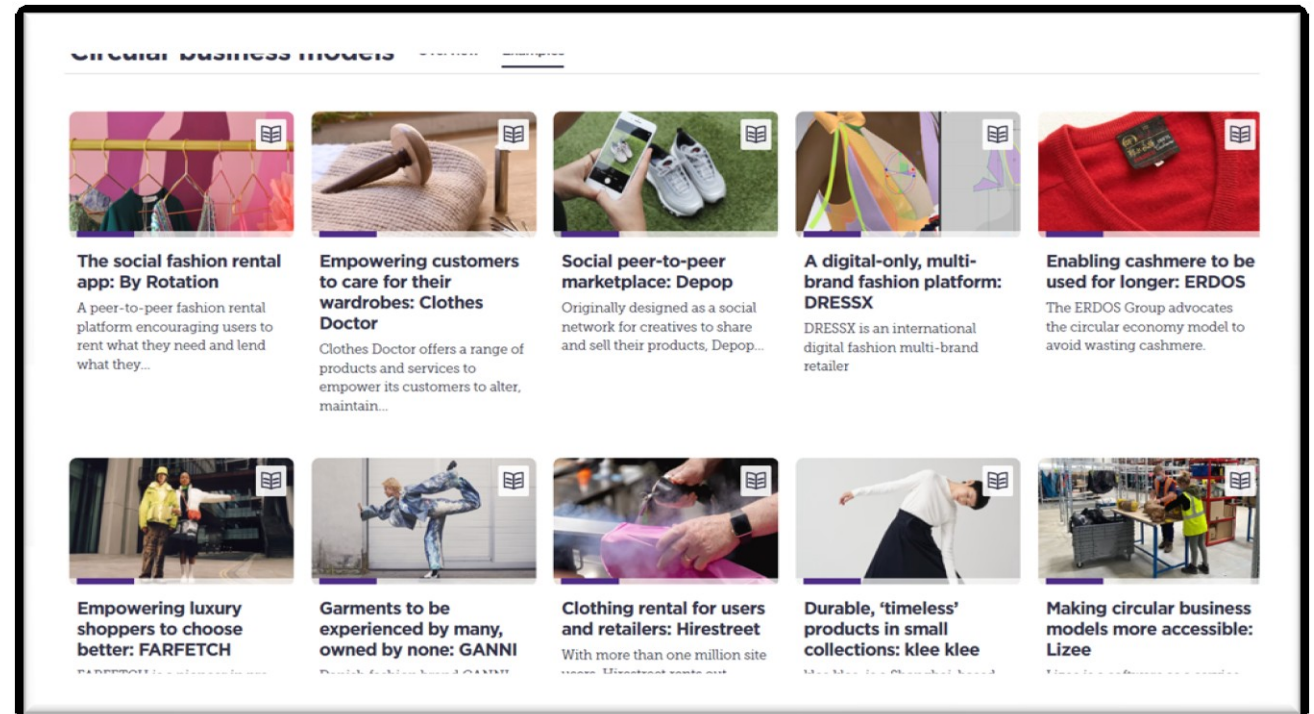
2018	Nilmore® was founded
2018-2020	Development of NILPLA® textiles and its recycling
2019-2020	Production of prototypes and their validation
2020	Verification of recycling at the industrial level
	Nilmore® clothing launch
	Finalist of the Creative Business Cup 2021
2021	1st place at GreenLight 2021
	Finalist of the Vodafone Idea of the year 2021
	1st place of the S Brand – the most sustainable brand of 2021
	1st place Sustainable startup of 2021
2021-2022	Development of other circular materials
2022	Launch of other circular materials



Impact on business concepts in new forms of business models



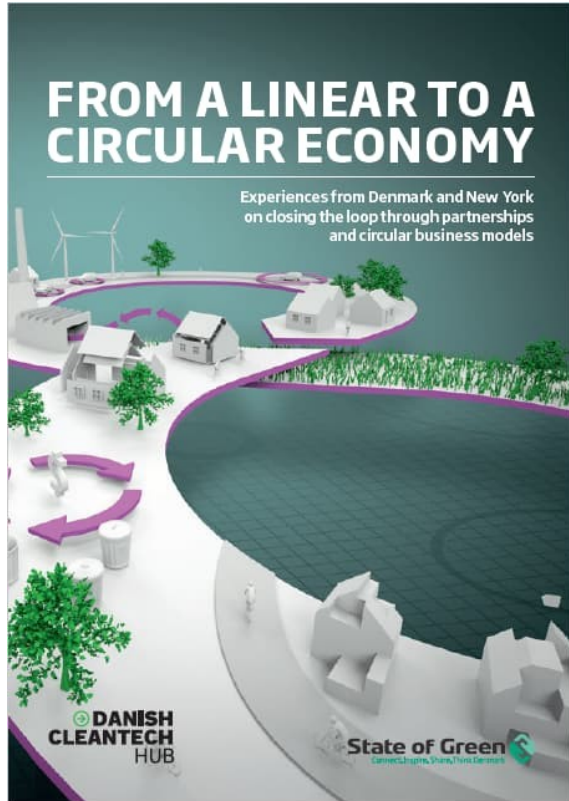
- [Circular Business models](#)
(ELLEN MACARTHUR FOUNDATION)
- [10 Circular Business Model Examples](#)
(Circular value chains through data / Circular product design / Use, reuse, share, and repair)
- [10 Examples of Circular Economy Solutions](#)
(Industrial symbiosis / The Danish deposit and return system for recycling cans and bottles / Denmark s first circular social housing project / Recycling of artificial turf / Closed loop in reuse packaging-as-service / Re-using old bricks to build a greener future)
- [Circulars Awards Program](#)



Explore publication...



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Experiences from Denmark and New York on closing the loop through partnerships and circular business models



How business models can accelerate the transition to a circular economy



A circular economy as an opportunity for successful innovations of Czech firms

Explore ...



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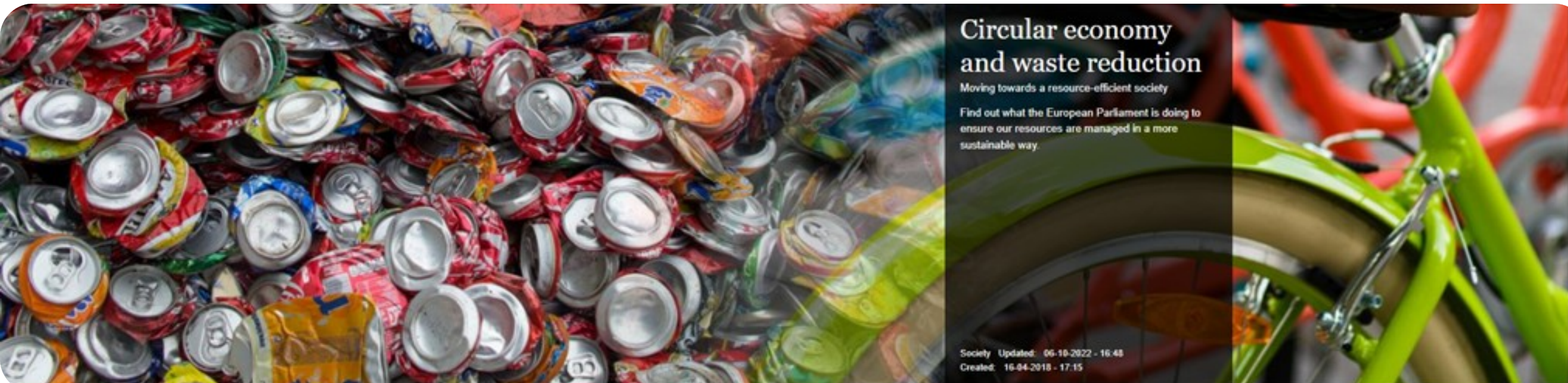
European Parliament/News/Priorities/Circular economy

Circular economy and waste reduction

Moving towards a resource-efficient society

Find out what the European Parliament is doing to ensure our resources are managed in a more sustainable way.

<https://www.europarl.europa.eu/news/en/headlines/priorities/circular-economy>





What are you taking away from today's module?





**Use the infographic and try
to draw it!**

Show it 😊

Thank you...

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