30 ideas
to kickstart your circular business

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This is a tool to aid business large and small to design, develop and evaluate the business models of the future. Thirty 'what if' questions challenge the status quo and inspire new solutions to today's problems. Each card showcases a successful business profiting by moving towards a circular economy.

As Innovate UK's network partner, the Knowledge Transfer Network links new ideas and opportunities with expertise, markets and finance through our network of businesses, universities, funders and investors.

The Agency of Design is a design and innovation consultancy who help organisations design a better future by re-thinking their physical and digital worlds.

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The Linear Economy

Our current economy is a one way flow of materials, from extraction, manufacturing, use and ultimately, disposal. This model relies on cheap flows of energy and materials.

The linear economy has been extraordinarily successful at bringing affordable products and material prosperity to billions of people.
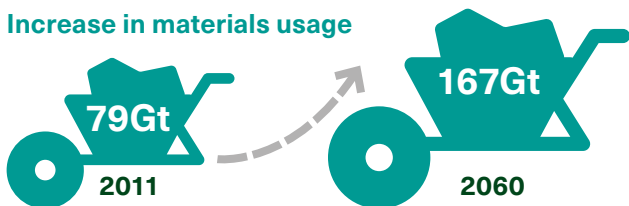
Whilst there is space for this model to grow and find efficiencies, **it is impossible to have infinite growth on a finite planet.**

As reported by the OECD[1], between 2011 and 2060 the world population is expected to increase by 150%, with a total material use increase of 210%, and an increase in per capita income of 270%, which represents a convergence to the 2011 OECD average levels. Even though recycling is predicted to increase, this is still not sufficient to match the requirements for the increase in use of materials.

1- https://www.oecd.org/environment/waste/highlights-global-material-resources-outlook-to-2060.pdf

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Key facts & projections

Increase in materials usage

79Gt
2011

167Gt
2060

		2011		2060
	Metals	8Gt	↗	20Gt
	Fossil fuels	14Gt	↗	24Gt
	Biomass	20Gt	↗	37Gt
	Non-metallic minerals	37Gt	↗	86Gt

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The Circular Economy

The circular economy is a practical framework for creating an economy which is sustainable by design. It aims to keep products, components, and materials at their highest quality and value at all times. Crucially, growth is decoupled from scarce resource use.

Material use is of two types: biological (renewable) materials, for reuse and ultimate return to the earth; and technical (non-renewable) materials, designed to move back and forth between production and consumption with minimal loss in quality or value.

New business models question the ownership of products, with services offering access to better products, at lower price points. Businesses retain ownership of valuable products, materials and components, increasing profitability and resilience. These new priorities design out product obsolescence.

Systems should ultimately run on renewable energy, made possible by the reduced energy required by a restorative, circular economy.
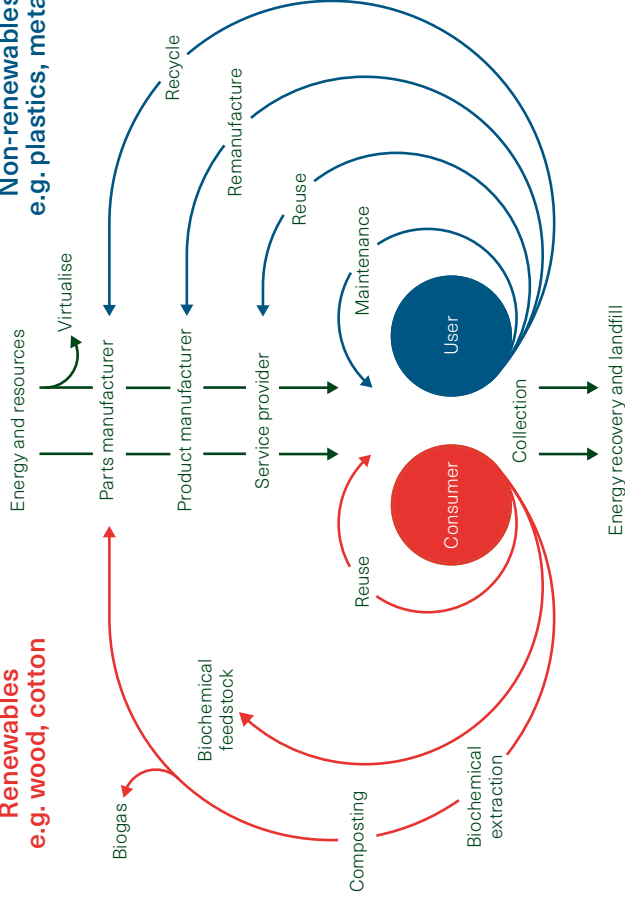
In 2015, McKinsey predicted that adopting circular-economy principles could generate a net economic benefit of €1.8 trillion by 2030[1]. The European Commission have also produced their Circular Economy Action Plan[2] that sets out how this can be achieved.

1 - https://www.mckinsey.com/business-functions/sustainability/our-insights/europes-circular-economy-opportunity
2 - "Circular Economy Action Plan, For a cleaner and more competitive Europe", March 2020

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Non-renewables
e.g. plastics, metals

Renewables
e.g. wood, cotton

Energy and resources

Virtualise

Parts manufacturer

Product manufacturer

Service provider

Recycle

Remanufacture

Reuse

Maintenance

User

Consumer

Reuse

Collection

Energy recovery and landfill

Biochemical feedstock

Biogas

Composting

Biochemical extraction

Instructions

The cards are divided into three categories to help you navigate the deck and generate rounded ideas:
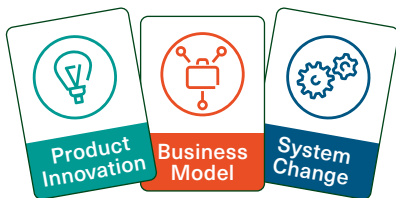
Use the deck in any of the four different methods on the reverse of this card to generate new ideas.

With each method, start by capturing all ideas on Post-it notes, and sharing with the group by sticking them to the wall. Remember to use the brainstorming rules.

Once there are a wide range of ideas, use the worksheet to connect, develop and refine the most promising ideas.

What you will need:

- Large table
- A big wall (for Post-it notes sharing)
- Pens and Post-it notes
- Worksheets

Methods

Creative warm up

Lay all the cards out, questions facing up. Use the cards to generate ideas for how a fictional business might become more circular, e.g. a vacuum manufacturer, a supermarket or a high-street fashion chain.

Full house

Lay all the cards out, questions facing up. Pick any card which presents an opportunity to your business. Once you have generated some ideas, find a complementary card from each of the other two categories so you make a full set, including a Product Innovation, Business Model and a System Change card.

Lead by example

Lay all the cards out, case-studies facing up. Find the most exciting or analogous example to your business and use the 'what if?' statements on the reverse face to stimulate new ideas.

Lucky dip

Fan the deck and let someone pick a card at random. Explore how the card could apply to your business. It may not be obvious at first so make sure you persevere and look for a connection or opportunity for each card.

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Brainstorming Rules

No judgement
Make everyone feel like they can say the idea that's on their mind. No negativity at the idea generation stage.

Think extraordinary thoughts
No idea is too crazy. Think beyond material or technical constraints.

Use each other's ideas
Re-interpretations are crucial to get to ideas that you couldn't reach on your own.

Keep focused on the task
Try to keep the discussion on target, and in scope.

Listen to the group
Teams work best when everyone is paying attention.

Get drawing
Nothing gets an idea across faster than drawing it.

Think quick
The best way to have a good idea is to have lots.

Set time intervals
Keep an eye on the clock for each idea to keep energy up in the group and to make time for idea evaluation.

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What if your products lasted 50 years?

Could you make your product extremely durable? Could you find new customers looking for quality and longevity? Would this mean you would need to make money in different ways?

Davek Umbrellas

Davek umbrellas are engineered for ultimate durability. Each umbrella is crafted using 96 steps and a 12 point inspection. The result is a product with unparalleled quality and guaranteed durability. If your umbrella should fail to function properly, they will repair or replace it for free.

What if your customer could repair their product?

Could you design your product to be easily repaired by your customer? Would this create greater brand loyalty? Could you generate additional revenue from selling spare parts?

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Fairphone

Fairphone is the world's first modular smartphone available for purchase, with over 200,000 users. The modular design, and readily available spare parts allow users to repair their own phone or replace the parts that most frequently break. The phone has been awarded a 10/10 score by iFixit for repairability.

What if you could keep selling the same product again and again?

Could you take back your product and restore it to a like new state? Could refurbished products allow a lower price point with a larger margin? Could you re-sell products to a different market?

Disposable Camera

Disposable cameras are largely perceived as a single use item. In reality, when they are returned to be developed, the internal components get reused for many lifecycles, with the customer getting the same reliable product. Kodak have recycled over 1.5 billion single use cameras, a recycling rate of 84%.

What if your customer could upgrade or customise their product?

Could you design your product to be modular?
How could your product adapt and change with the customer needs? Could you add new features or functions without replacing the whole product?

Vitsoe 606 Shelving System

Vitsoe's design team work with their customers to create bespoke storage solutions with their highly modular, expandable storage system. If a customer moves house, or needs more storage, Vitsoe will re-configure their items to fit the new space, and send the packaging to protect their shelving in transit.

What if your product was reusable rather than consumable?

Could you make your product or its components reusable? Would this generate more repeat custom? Would this enable your product to be shared?

Splosh

Splosh sells concentrated cleaning products using durable, refillable bottles at home. A sachet of concentrated liquid is added to the bottle with warm tap water to create cleaning products. Bottles can be used repeatedly, with 8 refill sachets delivered in a single box through the post.

What if your product was as easy to disassemble as it was to assemble?

Would this make repair more cost effective? Who would be disassembling your product? Could you update and upgrade your product cost effectively?

Ara by Orangebox

Ara is the first task chair manufactured in Europe to achieve Cradle to Cradle accreditation. Ara is designed for rapid disassembly to facilitate cost effective remanufacturing. The back membrane attaches without fasteners and a single aluminium vertebra simplifies an often complex assembly.

What if your customers never wanted to throw your product away?

Could you foster more attachment and trust in your product? Could you celebrate its age? Would this build a stronger relationship with your customer?

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Loake Shoes

There are some customers still wearing Loake shoes they purchased over 25 years ago. With their repair and resole service, customers can have new looking shoes, but keep their comfortable, worn in upper and insole. Their UK repair service will re-sole on the original mould on which the shoe was first made.

What if we stole all our ideas from nature?

Nature has been generating and testing ideas for 3.6 billion years, there's a wealth of solutions and no patent lawyers. Could nature inspire new solutions for your product or service?

Energy from Water

Cambrian Innovation have taken inspiration from nature by adopting bioelectrochemical technologies to generate clean water and energy from wastewater. The technology used is based on the ability of certain microbes to generate electricity when in direct contact with electrodes.

What if your product was only made out of renewable materials?

Could you replace non-renewable materials with renewable alternatives? Could you ensure they make it back to natural systems at the end of their life?

Ecovative
Ecovotive produces materials from the mushroom network mycelium that can be used for a wide range of applications such as packaging, building materials and meat-free food alternatives.

What if your product was only made out of one material?

Could you radically reduce the number of materials in your product? Would this enable high quality recycling when it is thrown away? How could you profit from this?

Aluminium Can

Recycling aluminium uses only around 5% of the energy needed to make it from the virgin aluminium ore. A redesign of the opening tab in the 1970's ensured it stayed attached to the can and therefore more widely recycled. 6,700 cans are made every second with 2/3 of all cans recycled globally.

What if there were no toxins in your product?

Could you remove all toxins or use safer materials in your products? Would this make it safer and cheaper to remanufacture or recycle?
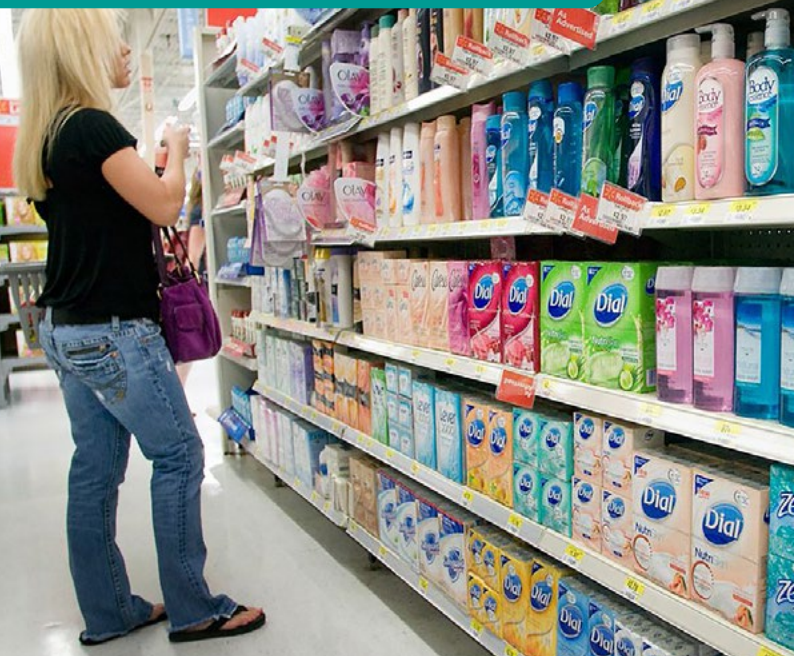
Walmart

Walmart's 'Sustainable Chemistry Policy' aims to reduce, restrict and eliminate the use of 'High Priority Chemicals' (HPCs) from their products. By working with their suppliers to reformulate products they have successfully removed 95 percent of HPCs by weight from the products they sell in Walmart U.S.

What if you designed your product to go through a letter box?

Could you redesign your product to better fit logistics systems? Would this make it easier to recover at end of life? Could it also mean easier delivery to a second customer?

I fit most letterboxes

Tear here – quick set-up instructions inside cov

BT

BT Router
BT redesigned their home hub to fit through their customers' letterbox. This lowers their delivery costs as they never need to make a second delivery attempt and makes sure their customers get the product on time.
It also allows the product to be easily returned when it's time to upgrade.

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What if you sold outcomes, rather than products?

Does your customer want lightbulbs or the light that they provide? Could you be better meeting their needs by delivering a service rather than selling a product? Would this change your product's design?

Michelin

In the 1920s, Michelin pioneered leasing tyres under a pay-per-kilometre programme. Michelin Solutions now have over 500,000 vehicles under contract in 23 countries, with tyre management. By 2023 Michelin aims to use RFID chips into all its car tyres, thus enhancing cradle-to-grave monitoring and better customer safety.

What if you charged per month for your product?

How could offering customers access to products rather than ownership create a more compelling customer experience? Would a subscription allow you to upgrade your products over time?

Mud Jeans

At Mud Jeans, you can lease or buy jeans. If leasing you pay €9.95 per month, with a discount by returning an old pair of jeans. After 12 months you either keep the jeans or return them for a new pair. The jeans contain 40% recycled denim.

What if hiring was more desirable than buying?

Could hiring your product deliver a better outcome for your customer? Could they access better products at a lower price? Would your customers value the flexibility and choice that comes with hiring?

Zipcar

Zipcar has created a huge network of cars parked strategically around city centres that their customers can book instantly via the app. It has removed the hassle of car hire and made the upfront cost and maintenance of a car seem very undesirable.

Zipcar was purchased for $500 million in 2013.

What if you charged per use of your product?

Could you shift to a pay per use model that charges per unit of use e.g. miles driven, hours used? Would this engage new customers at lower price points? Would it change your design priorities?

Bundles

Bundles offer washing machines, tumble dryers, dishwashers, and coffee machines as a service. Working with Miele and Siemens the company provide the machine and charge per use. By connecting to the internet maintenance, repairs, and even replacements are facilitated and included in the price.

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What if you didn't have a physical product?

Could you dematerialise your product into a digital service or platform? Think Netflix rather than Blockbuster, or Spotify rather than a CD collection.

Netflix

At the end of 2020 Netflix surpassed 200 million subscribers with a net income of $542 million for the fourth quarter, and all without manufacturing a single product. Producing and shipping a single DVD uses as much energy as watching video content online non-stop for three days.

What if you could make money from others' unused assets?

Could you maximise the productivity of vehicles, properties, tools, workforces or infrastructure which currently sit idle? How could they be better used, more of the time?

Airbnb

Prior to the Coronavirus pandemic, Airbnb had grown to have a base of 150 million users by offering private apartments and room rentals in 65,000 towns and cities worldwide. However, there are also unintended consequences for this type of model, can you think of some?

What if you took back your old products?

Would taking back your old products lead to higher quality material recovery? Could it enable remanufacturing of your products? Would it encourage repeat custom?
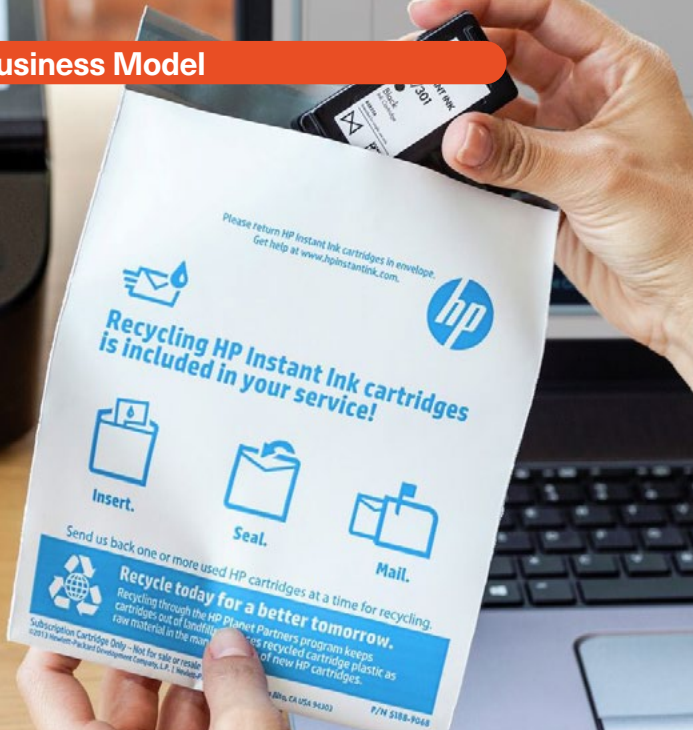
HP

In their 2019 Sustainable Impact Report, HP stated that they repaired 4.62 million units of hardware (22,500 tonnes) and recycled 117,4000 tonnes of hardware. They recycled 14,300 tonnes of hp laser-jet toner, and 1,400 tonnes of ink cartridges.

What if you facilitated people sharing their products?

Could you make revenue from helping others share?
How could digital technologies make this possible?
Could products be better designed for sharing?

Business Model
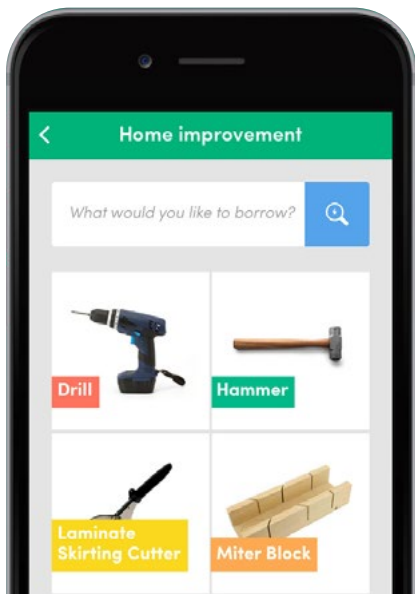
Peerby

Peerby is a website and app that enable people in cities to borrow products from others in their neighbourhood. The platform is active across social media.

On Facebook they have almost 25,000 followers, and a claimed impact for 2019 of over 5,000L water and 400kg CO_2.

What if you designed your product to fit recycling systems?

Could you choose materials that maintain their quality through the recycling system? Could you minimise the number of materials in your product?

Flute Office
Each FlutePro desk contains nearly 30 square metres of grade A micro-fluted corrugated paperboard, made from recycled paper and virgin fibre from managed sustainable sources. It arrives part-assembled needing no tools, screws or glue for assembly, which can be done in less then 5 minutes.

What if you shifted to renewable energy?

How could investing in your own energy sources save you money in the future? Would powering your business with clean energy appeal to new customers?

Apple

100% of Apple's global operations run on renewables, with 100% of their data centres now running on clean energy. This huge investment in clean energy means every customer's iMessage, app download, or email is carbon neutral.

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What if waste was illegal?

What materials in your products would need to change? Could you design out waste in your supply chain, customer use, and end of life? Could you use this waste as a resource?

Tarkett

Over 60% of Tarkett's carpet tile range is made with ECONYL yarn. This yarn is made from nylon found in waste carpets, clothing and fishing nets. The waste materials are broken down into their base monomers then repolymerised back into nylon with no loss of quality compared to virgin materials.

What if you could track, locate and update your product remotely?

Could asset tracking enable more circular products and business models? Could updates keep products in use for longer? Would preventative maintenance extend product life?

IBM

IBM servers come equipped with a call home feature so the company is notified of the health and status of their machines, enabling preventative maintenance. Connectivity also allows more effective remote troubleshooting, decreasing time from problem, to resolution.

What if you made your product locally?

Could you manufacture your products near to your customers? Would it enable cost effective remanufacture? Could it allow for more customised, on-demand manufacture?

Opendesk
Opendesk is a global platform offering workspace furniture which can be made locally, on demand, all around the world. Customers can choose from a range of products by international designers and have them produced by a local maker using digital fabrication technologies.

What if you could use your neighbour's waste?

Could someone else's waste become your raw material? Could your waste have value if you found the right customer? Could you change your processes to make your waste more valuable?

Kalundborg Symbiosis
At Kalundborg Business Park in Denmark, public and private companies buy and sell waste from each other in a closed cycle of industrial production. Driven by increased costs of materials and energy, exchanges are based on economic gains in saving of resources or money.

What if you could get mutiple lifecycles out of your renewable materials?

Could you cascade renewable materials by using them multiple times in different uses? Could you create energy from anaerobic digestion, or extract biochemicals from organic waste?

Packington Water Treatment

Severn Trent Water have invested £4 million at their Packington waste-water treatment plant to test a range of technologies for phosphorus removal. Some of the technologies have already been rolled out delivering efficiencies valued at over £13.6 million.

What if recycling a material didn't lose any of its quality?

Could you use new recycling technologies to maintain material quality? Could you make components out of a single material to aid efficient recycling?
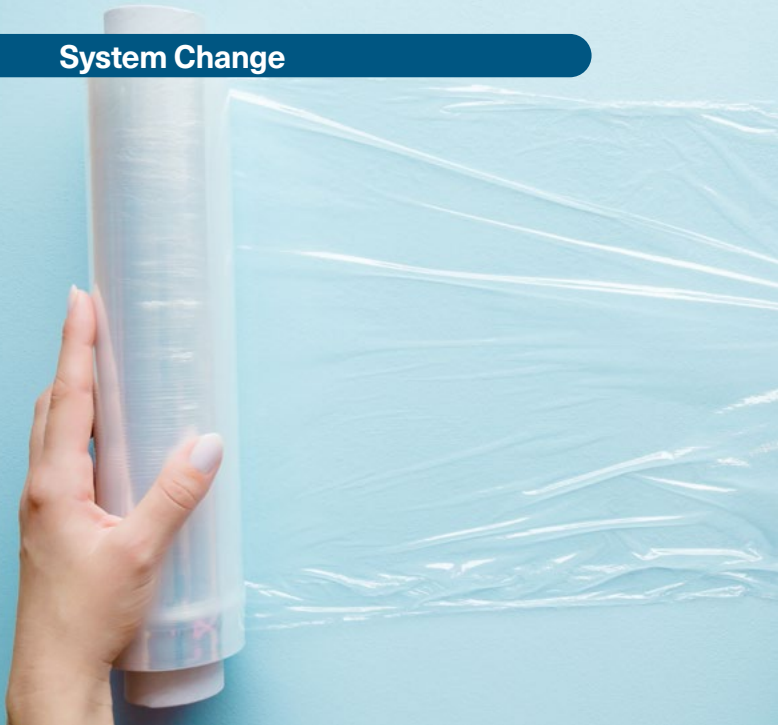
Recycling of Food-Grade Soft Plastic
Soft plastic is notorious for the difficulty to recycle it. However, Tesco launched a trial in 10 stores to collect soft plastics. Using a supply chain of manufacturers, new plastic is produced that contains 30% recycled plastic. Tesco sell seven cheeses that use this new material.

What if you grew more material than you used?

Would growing your own raw material protect you from future price shocks? Can you recycle your end products to feed back into your own supply chain?

Kingfisher

Timber is used in up to 40% of Kingfisher's products. They aim to protect their timber supplies and profits by taking a restorative approach, creating more forest than they use by 2050. Projects in China, Poland, Spain and the UK have so far benefited forested areas of over 13,000 hectares.

What if you embraced new digital technology to disassemble and make new products?

Could you help your customers to produce their own products from their old products in front of their eyes? Could you encourage an increase in circular economy and, at the same time, allow customisation?

H&M remake
H&M have opened a unit in one of their Stockholm stores where customers can take their old clothing and, via an eight-step process, see their old clothing become a new garment in front of their eyes.