The Circular Economy

In a circular economy things are made to last. They are designed to be repaired, reused and recycled, rather than used and thrown away.

The Sustainable Development Goals

The 17 Sustainable Development Goals (SDGs) were adopted by the United Nations in 2015 as a call to "end poverty, protect the planet, and ensure that by 2030 all people enjoy peace and prosperity". Find out more here: https://www.undp.org/sustainable-development-goals.

The circular economy and the SDGs

Key SDGs for the circular economy include:

SDG11 | Sustainable Cities and Communities: Make cities and human settlements inclusive, safe, resilient and sustainable.

SGD12 | Responsible consumption and production: Ensure sustainable consumption and production patterns.

SDG13 | Climate action: Take urgent action to combat climate change and its impacts.

SDG14 | Life below water: Conserve and sustainably use the oceans, seas and marine resources for sustainable development.

SDG15 | Life on land: Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss.
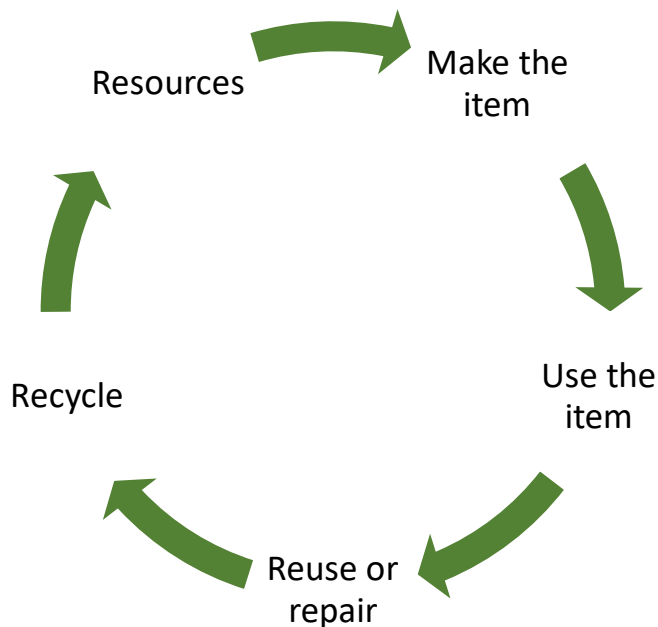
Where are we now?

We currently have a mainly Linear Economy, which means that we:

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Take          Make          Use          Throw it
resources →   something →   it      →     away
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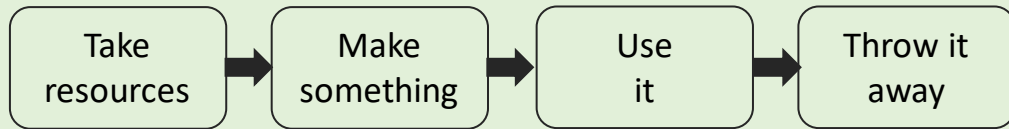
This means that we are taking too many resources and producing too much waste.

In a Circular Economy, we would use our resources like this:

Resources → Make the item → Use the item → Reuse or repair → Recycle → (back to Resources)

However, the Circularity Foundation reported in 2023 that only 7.2% of the global economy is circular, and this has got worse in recent years. https://www.circularity-gap.world/2023

Find out more from National Geographic Kids: https://www.natgeokids.com/uk/discover/science/general-science/all-about-the-circular-economy/
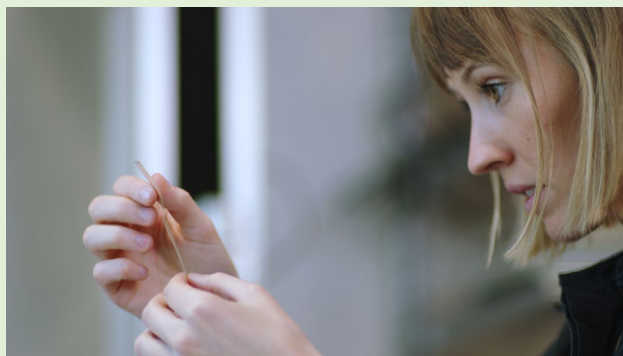
How can a circular economy help?

The United Nations say that a circular economy "aims to minimize waste and promote a sustainable use of natural resources, through smarter product design, longer use, recycling and more, as well as regenerate nature."

https://climatepromise.undp.org/news-and-stories/what-is-circular-economy-and-how-it-helps-fight-climate-change

This can help with problems such as:

- Pollution
- Climate change
- Biodiversity loss (declining numbers and reduced variety of species).

For example, real-life engineer Lucy uses fish processing plant waste to make biodegradable plastic. Because she uses fish scales and red algae, not only is she making good use of the waste,

Female product designer creates biodegradable plastic alternative.. © This is Engineering. Used under CC BY-NC-ND 2.0 via Flickr.

she is also helping to protect the oceans. The plastic is made of natural marine materials, so even if it does end up in the sea, it won't harm the wildlife there.
Find out more at:
https://thisisengineering.org.uk/people/lucy-hughes/

Other ways we can move to a more circular economy include:

- Making use of community projects like Repair Cafés, where people repair your items for you. As the sign in this photo from a Repair Café in Reading says, "What do you do with a chair when the leg has come loose? With a toaster that no longer works? Or a woollen jumper with moth holes? Toss it? No way! You can repair it at Repair Café!"

- Buying items second-hand, or swapping things between people.

- Turning waste into something useful, for example making food waste into compost.

- Designing things so that they can be easily repaired, instead of being thrown away and replaced.

- Renting items rather than buying them, so they can be reused when were finished with them, and designing products so their components can easily be reused and recycled.

Engineering and engineers help us understand how to do this!

Find out more in the Ellen MacArthur Foundation's video:
https://www.youtube.com/watch?v=zCRKvDyyHmI

Minecraft Challenge

Design and build a community space or resource that helps towards a circular economy.

This could be something like:
- A place to get things fixed
- Somewhere to make things from second-hand items
- Equipment to help people repair their items
- A space to swap items
- A community orchard where food waste can be composted
- Anything else you think of!

You could use:
- some of the engineering techniques we have covered
- your own ideas

If you do not have access to Minecraft you could:
- draw your design
- build your own using simple materials.