

PLASTICS CHALLENGE

A STEM and enterprise challenge to turn waste plastics into profit



WHAT DO YOU SEE?

Spend a few minutes looking at the photographs and in your groups discuss the following questions:

What do you see?

What does it make you think about?

Are there any problems that you can identify?

And finally...

What questions do the photographs raise for you?



RUBBISH FACTS... IN THE UK



...but waste is a not just an issue in the UK

KATHMANDU - NEPAL



In Kathmandu, the capital of Nepal, waste is a big issue too.

Private companies collect waste from homes but not everyone can afford to pay for the service. Those who can't have the option of taking their waste to selected areas within the city or leaving it out on the streets.

Informal street collection and waste areas provide opportunities for up to 15,000 people, including children, to make a living from waste.



SAYEED AND SUNIL

One of the first opportunities to make money is to sort waste into different material types and sell it on to scrap dealers for reuse or recycling.



Sayeed and Sunil aged 13 and 15 collect waste, including plastics and metals, from the streets of Kathmandu to sell on to scrap dealers.

Sorting through mixed materials is a dangerous job. One simple way the boys keep safe is to wear protective clothing provided by Practical Action in Nepal.



IDENTIFYING PLASTICS

Activity:

Look through your bag of waste plastics and decide as a group the best way to sort them.

- Think about what might generate the most income for you if you took them to a plastic dealer for reuse or recycling.
- Your teacher may now give you some investigation activities so that you can identify and sort your plastics into different types.



WASTE TIMELINE

Activity

- You have been given eight picture cards.



- Place them in a timeline on your desk, from the fastest to the slowest item to decompose.

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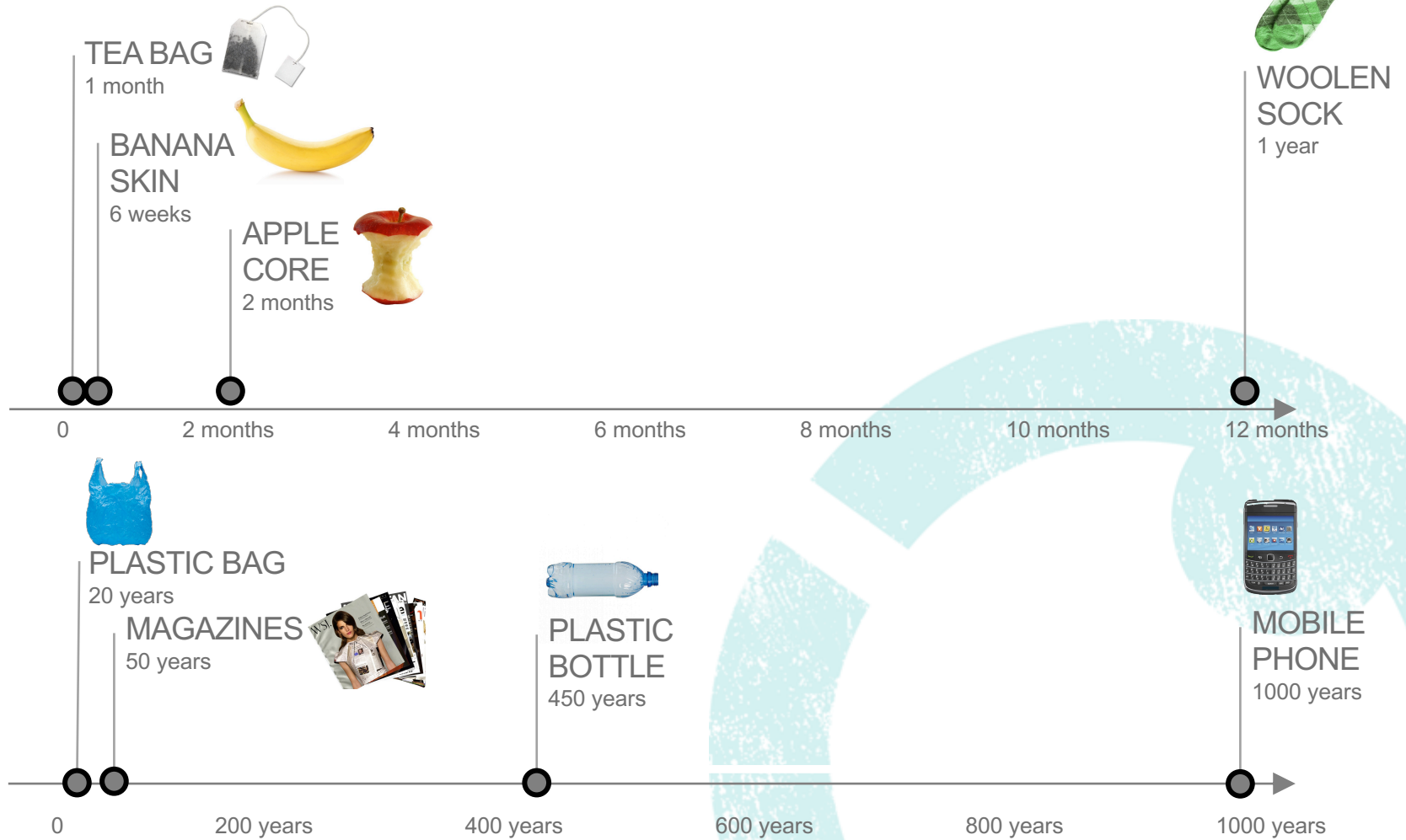
CHECK YOUR TIMELINE



Did you get them in the right order?

How long do you think it would take each item to decompose on a landfill site?

TIME TO DECOMPOSE



LIFE STORY OF A PLASTIC BOTTLE

A life cycle analysis (LCA) is used to work out the environmental impact of a product throughout its whole life.



Why might a designer, engineer or scientist be interested in the LCA of a plastic bottle?

4RS

The **4Rs** (**R**ethink, **R**educe, **R**euse and **R**ecycle)

can be used to develop ideas to reduce the negative impact a product has on the environment.

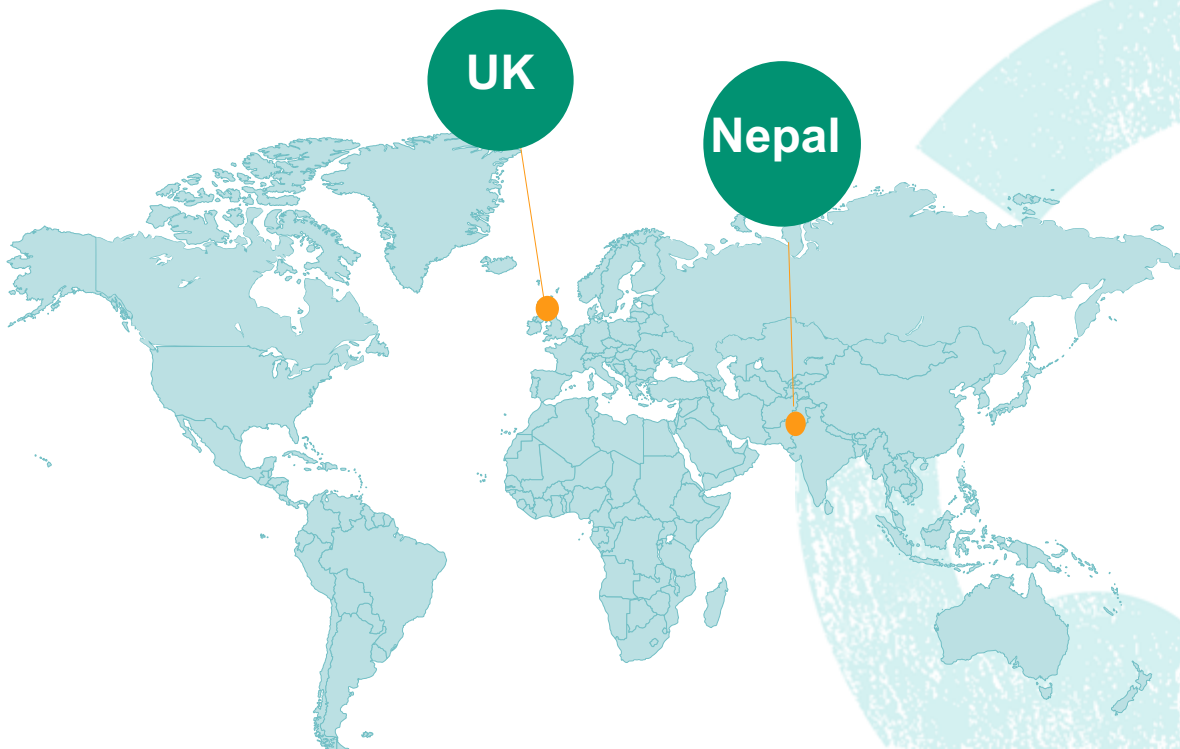


What ideas do you have to make plastic better for people and the environment?

YOUR PLASTICS CHALLENGE

...is to develop a solution to tackle the environmental problems caused by plastic waste either in Nepal or the UK.

One option is to explore reusing waste plastic for enterprise...turning plastics into profit.



PLASTICS INTO PROFIT NEPAL

The Hamro Mahila Women's Group in Nepal was set up after a group of women were trained and supported by Practical Action in making crafts from 'waste' plastic. Their enterprise allows them to work in a safer environment whilst earning money.

- Your challenge is to design a product that could be made by the women's group from locally found waste plastic. The women have the use of a sewing machine, iron and basic craft tools. The products need to be made cheaply and safe to use.
- At the moment they make pencil cases, coasters and baskets, but are looking to expand their range of products.



PLASTICS INTO PROFIT

UK YOUNG ENTERPRISE

Your newly set-up young enterprise company have decided to take on 'The Fiver Challenge' which aims to create a mini business idea with a start-up fund of £5.

It is up to you what you use the £5 for but your product must:

- reuse locally sourced plastic
- engage with the community either in the creation of the product or its final use

You will need to consider your target market and your product branding.

PLASTICS INTO PROFIT

UK CHARITY

The charity Practical Action are looking to broaden awareness of the work they do, so want you to design a product that could be sold online at Practical Presents practicalpresents.org

They would like the product:

- to have a strong sustainability message so would like you to use plastic 'waste' that is easily available
- should be cheap to make but safe to use and have a high quality finish.





WE HOPE YOU HAVE ENJOYED THE
PLASTICS CHALLENGE...

To find out more about Practical Action's other
STEM challenges go to practicalaction.org/stem



A British Science Association programme

practicalaction.org/plastics-challenge

