Extreme global impacts

teachitgeography

Contents page

Introduction

This unit of work is a collection of teaching ideas and student resources (all of which were specifically commissioned for the pack), on the theme of *Extreme global impacts* for the support of the KS3 curriculum.

The unit covers:

- the impacts of people on our cities
- the impacts of tourism on extreme environments
- the impacts of people on the global commons.

It is planned as a six-week unit of work and includes a selection of:

- starter activities
- activities to show students' understanding
- plenary activities
- suggestions for differentiation.

The unit lends itself particularly well to being used in different ways. It could be dipped into on an ad hoc basis, to teach individual lessons or a sequence of two or three, or it could form the basis of a longer unit of work. The resources are all available in adaptable formats, making it easy to differentiate the tasks by ability.

We've included links to each separate PowerPoint resource within this unit so that you can access the resources directly on www.teachitgeography.co.uk. We've included the file number or name for the PowerPoint resources — just pop these into Teachit geography's search box.

Our thanks go to our contributor Laura Brook who has written the resources for this pack.

We hope you enjoy using this unit. If you have any questions, please get in touch: email support@teachitgeography.co.uk or call us on 01225 788850. Alternatively, you might like to give some feedback for other Teachit geography members — you can do this by adding a 'love heart' and commenting on the relevant page of the resource on Teachit geography (please log in to access).

Resource listing

Suggested route through

Section A: Extreme cities

Lesson 1: Extreme growth

Lesson PPT, resource 34601: Megacities

Starter:

Slide 1 of this PowerPoint can be used by the teacher to introduce the students to the concept of millionaire, megacities and metacities along with a YouTube clip:

youtu.be/_jnMivEZ8gc

This explains what megacities are and how they are projected to change through the next decade.

Activity 1:

Refer to slides 2 -6 of the PowerPoint presentation to introduce the concept of mapping megacities using longitude and latitude.

Activity 2:

Name of resource: 1.1 The growth of megacities mapping

Plot the latitude and longitude of each megacity, using the data provided on the resource, ensuring the different data sets are in different colours to highlight the difference.

Students are completing multiple GCSE skills here, plotting the location of places using latitude and longitude and completing a dot map.

Extension activity:

Using their completed data presentation, students should aim to describe their map for both time periods.

- Which continents have the highest values in 2000 and 2100?
- Which continents have the lowest in 2000 and 2100?
- How has the location shifted?
- Can you give reasons for this?

Plenary:

Use slides 7 – 11 to complete a simple true or false quiz to assess students understanding. You could use mini white-boards or heads down, thumbs up.

Lesson 2: Extreme living

Lesson PPT, resource 34602: Dharavi slum

Starter:

Use slide 1 of this PowerPoint presentation to help students consider push v pull factors affecting why people leave the Indian countryside and migrate to Mumbai.

Activity 1:

Name of resource: 2.1 Life in Dharavi slum

Refer to slides 2 – 4.

Students are to take notes on their worksheet whilst watching the video.

youtu.be/fU8AnqSOiho

They should then create a mind map to categorise the issues into SPEED (social, political, environmental, economic and demographic).

Students can use the card sort to add additional information which they may not have noted down from the video.

Activity 2:

Refer to slides 5 – 8.

Students are to answer a 'to what extent' style question:

'To what extent is the growth of slums negative for a megacity?'

They should produce APEEL (adverb, point, evidence, explanation and link back to question) paragraphs to help answer the question. A WAGOLL has been included in the PPT for students to use as an exemplar.

Students could then colour code their answers with either highlighters or coloured pencils to ensure they have used the structure for each paragraph.

Students should come to an overall judgement: are slums good or bad? But still work on a 2:1 ratio (2 points in favour and 1 counterargument or vice versa).

Discuss what the official plans to help Dharavi are. Watch the YouTube clip (lots are available depending on the amount of time you have):

youtube.com/watch?v=gYa6ooID1ZE

Give students a Post-it to write their opinion on and place it onto the opinion line. Will it work?

Plenary:

Heads up – place the cards (used in the mind map activity) face down on the table. Students pick up a card and put it on their forehead without looking at it. Their partner has to describe the issue without using the words in bold.

Lesson 3: Extreme city pollution

Starter:

Name of resource: 3.1 The worst type of pollution?

What different types of pollution are there? Discuss pollution with the class and make a list of the different types they can think of.

Are some worse than others? Why / why not?

Using the types of pollution worksheet, students should cut out the cards and rank them in order from most polluting to least polluting. They should be ready to feedback for a class discussion.

Activity:

Name of resource: 3.2 The most polluted cities in the world

Read through the most polluted cities/places cards and rank them from most/worst polluted to least polluted.

How does this compare to how you ranked your starter cards?
Do you still agree with this order? If so, why? If not, why not?

Extension:

Categorise the types of pollution mentioned in each card. Can one type of pollution have a knock-on effect?

Plenary:

Where are the most polluted areas? Does the type of pollution vary by area?

Arrange the eight areas by income of the country. Can you identify any pattern? Why have you found the pattern you have?

Do you think this pattern may change in the future? How / why?

Section A Extreme cities

We've included a screenshot of the PowerPoint slides here so you can see the resource. To access this resource please go to the Teachit geography Extreme global impacts page.

Extreme cities

1. Megacities

Millionaire	an urban agglomeration with populations between one and ten million residents.
Megacities	an urban agglomeration with populations exceeding ten million residents.
Metacities	20+ million residents!

youtu.be/_jnMivEZ8gc

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Extreme cities

The growth of megacities

Lesson objectives:

- to be able to define the terms millionaire, megacity and metacity
- to be able to plot the locations of these cities using latitude and longitude
- to describe the changes in the location of megacities and predict what will happen in the future.

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Extreme cities

Where do you think the megacities are?

Make a list of the cities you think could have the largest populations in the world.

Try to come up with five:

1. _____
2. _____
3. _____
4. _____
5. _____

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Extreme cities

Largest cities in 2000

Rank	City	Population (in millions)
1	Tokyo	27.2
2	Mexico City	16.9
3	São Paulo	16.8
4	New York	16.4
5	Mumbai	15.7
6	Shanghai	13.7
7	Los Angeles	12.6
8	Beijing	11.4
9	Kolkata	12.1
10	Buenos Aires	11.9

Largest cities in 2100

Rank	City	Population (in millions)
1	Lagos	88.3
2	Kinshasa	83.5
3	Dar es Salaam	73.7
4	Mumbai	67.2
5	Delhi	57.3
6	Khartoum	56.6
7	Niamey	56.1
8	Dhaka	54.3
9	Kolkata	52.4
10	Karachi	49.1

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Extreme cities

Plotting our data

How should you locate the different cities on a map?

- Use lines of latitude (north/south) and longitude (east/west) to locate the city.
- Plot 2000 data in one colour and 2100 data in a different colour.
- Complete a dot map – a dot is placed showing the location of a megacity or a metacity.

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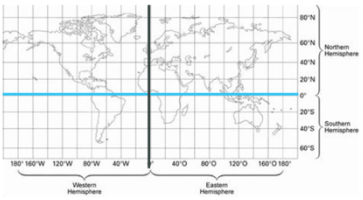
Extreme cities

Lines of latitude run across and determine whether the city is in the Northern or Southern Hemisphere

Lines of longitude run down and determine whether the city is in the Western or Eastern Hemisphere.



Tip: Find the latitude first, then the longitude, and where the lines cross, this is the location of the city. You will have to estimate – the world is a pretty big place!

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Extreme cities

True or false?

A metacity has more than 10 million residents

False: It has more than 20 million

 7

Extreme cities

True or false?

You plot longitude first, then the latitude.

False: Latitude is first, then longitude

 8

Extreme cities

True or false?

There are only two cities that are in both the 2000 list and the 2100 list

True: They are Mumbai and Kolkata

 9

Extreme cities

True or false?

Africa has the highest number of metacities in 2100

True: There are 5 metacities in Africa

 10

Extreme cities

True or false?

Lagos is projected to be the largest city in the world in 2100 but it is not even the capital of Nigeria!

True: The capital city is Abuja

 11

1.1 The growth of megacities mapping

Student task:

- Use this data to plot the longitude and latitude of the 10 largest cities.
- Use one colour for the year 2000 top ten and another colour for the 2100 top ten (there are two countries which appear in both data sets, you should place two dots as close together as you can for these).

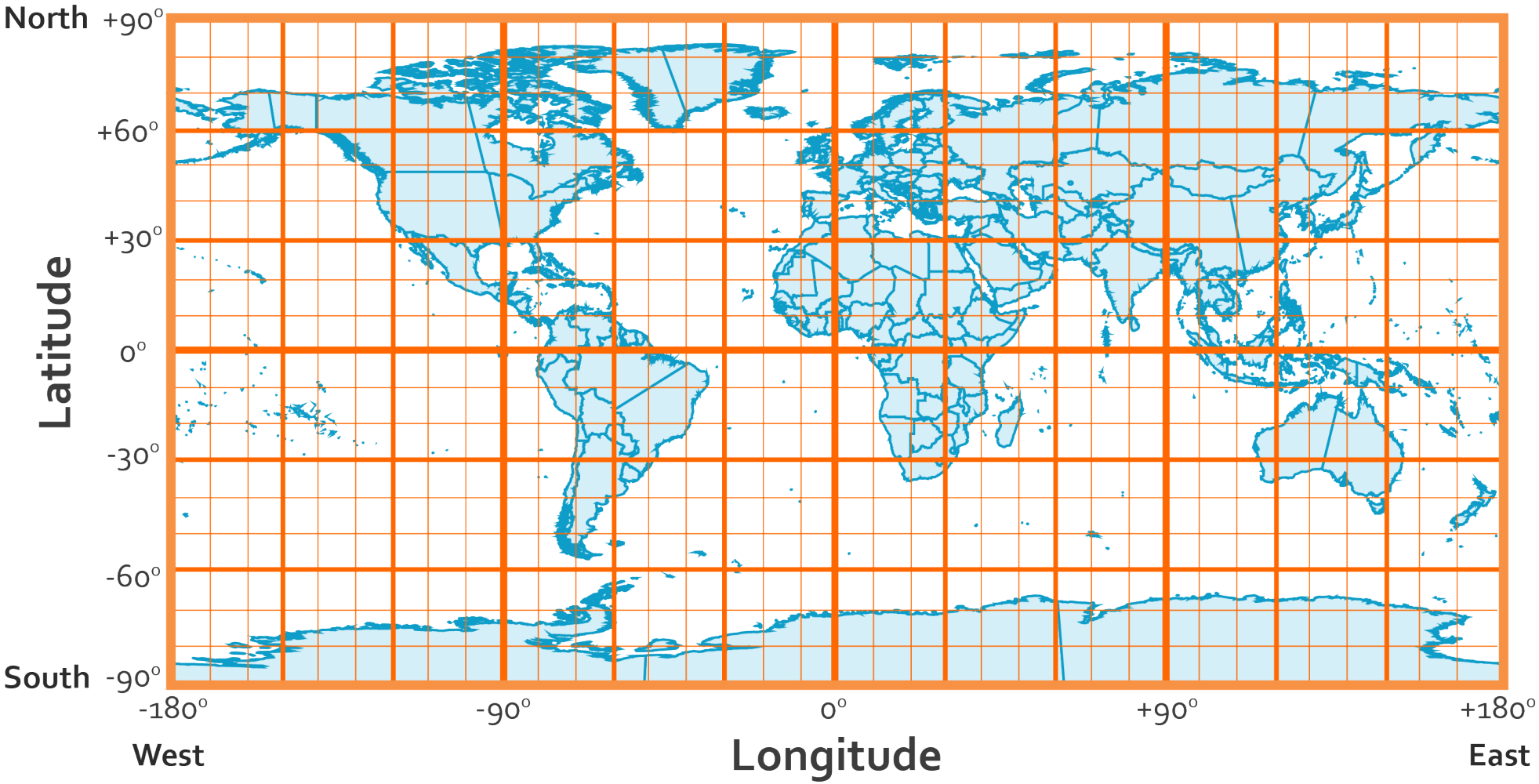
2000 data set

Rank	City	Population (in millions)	Latitude	Longitude
1	Tokyo	27.2	35˚N	139˚E
2	Mexico City	16.9	19 ˚N	99˚W
3	São Paulo	16.8	23˚S	46 ˚W
4	New York	16.4	40 ˚N	74 ˚W
5	Mumbai	15.7	18 ˚N	72 ˚E
6	Shanghai	13.7	31 ˚N	121 ˚E
7	Los Angeles	12.6	34 ˚N	118 ˚W
8	Beijing	11.4	39 ˚N	116 ˚E
9	Kolkata	12.1	22 ˚N	88 ˚E
10	Buenos Aires	11.9	34 ˚S	58 ˚W

2100 data set

Rank	City	Population (in millions)	Latitude	Longitude
1	Lagos	88.3	6 ˚N	3 ˚E
2	Kinshasa	83.5	4 ˚S	15 ˚E
3	Dar es Salaam	73.7	6 ˚S	39 ˚E
4	Mumbai	67.2	18 ˚N	72 ˚E
5	Delhi	57.3	28 ˚N	77 ˚E
6	Khartoum	56.6	15 ˚N	32 ˚E
7	Niamey	56.1	13 ˚N	2 ˚E
8	Dhaka	54.3	23 ˚N	90 ˚E
9	Kolkata	52.4	22 ˚N	88 ˚E
10	Karachi	49.1	24 ˚N	67 ˚E

Title: .....



Key:	2000		2100	

We've included a screenshot of the PowerPoint slides here so you can see the resource. To access this resource please go to the Teachit geography Extreme global impacts page.

Extreme cities

Urbanisation starter

Urbanisation - the increase in the proportion of people living in towns and cities.

Push - why do people leave the Indian countryside?	Pull - why do people migrate to Mumbai?

 1

Extreme cities

2. Dharavi slum

Lesson objectives:

- to be able to describe a range of problems faced by slum dwellers in their daily lives
- to be able to use case study facts to support the points made
- to be able to evaluate the solutions to these problems.

 2

Extreme cities

Issues of living in Dharavi

Watch the following video clip and make notes on your sheet about the issues faced by people living in Dharavi:

www.youtube.com/watch?v=fU8AnqSOiho

 3

Extreme cities

Where do you think the megacities are?

Create a mind map to categorise the issues faced by people in Dharavi. Use your notes and sort the cards which have been given to you.

Separate the issues into categories.

Think **SPEED**:

S = **S**ocial
P = **P**olitical
E = **E**nvironmental
E = **E**conomic
D = **D**emographic

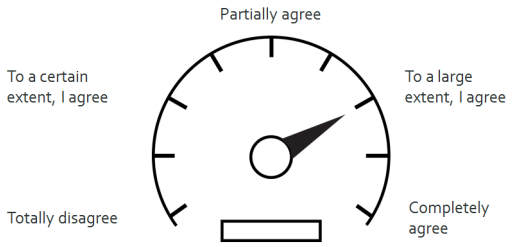
Remember:

Issues can be positive as well as negative!

 4

Extreme cities

To what extent is the growth of slums negative for a megacity?



Tip: Make your argument clear, avoid sitting on the fence (always use a 2:1 ratio).

 5

Extreme cities

To what extent is the growth of slums negative for a megacity?

Aim: To write three **APEEL** paragraphs

Paragraph section	Why use?
Adverb	Shows instant critical understanding: the tone of the paragraph is set instantly.
Point	This is clear: what happened?
Evidence	Four specific facts used within one paragraph: this shows you know the case study in significant detail.
Explanation	Incorporating facts to justify your argument: why aren't slums negative?
Link back to the question	Re-emphasising the initial point. Just reading this sentence in isolation answers the question.

Extension:
Using coloured pencils, colour code your paragraphs to ensure you have included each of the requirements.

 6

Extreme cities

To what extent is the growth of slums negative for a megacity?

What a good one looks like…

Paragraph section	Why use?
Adverb	Shows instant critical understanding: the tone of the paragraph is set instantly.
Point	This is clear: what happened?
Evidence	Four specific facts used within one paragraph: this shows you know the case study in significant detail.
Explanation	Incorporating facts to justify your argument: why aren't slums negative?
Link back to the question	Re-emphasising the initial point. Just reading this sentence in isolation answers the question.

Economically, Dharavi contributes financially to Mumbai. It provides $1bn annually. This enables Mumbai to be a successful metacity and therefore proving that the development of the slum wasn't entirely negative.

 7

Extreme cities

Dharavi redevelopment

What are the official plans to help the residents of Dharavi?

youtube.com/watch?v=gYa6ooID1ZE

Will it work?

Not a chance. Yes, absolutely.

 8

2.1 Life in the Dharavi slum

Student task:

Good progress:	**to be able to effectively describe Dharavi using a variety of adjectives (at least three).**
Outstanding progress:	**to be able to support these descriptions with factual evidence.**

Facts about Dharavi (number, %, Statistics)	**Key geographical words (words that good geographers use, e.g. poverty)**
Adjectives to describe Dharavi (dirty, disgusting, enlightening – not all negative!)	**Problems in Dharavi (anything that could hurt/harm people)**

Have you included: ✓ **D -** description ✓ **A -** adjective ✓ **P -** problem ✓ **C -** connective ✓ **K -** key word ✓ **F -** fact	**Self-assessment:** **WWW:** .... **EBI:** ....

Student task:

Cut out these cards and sort them into categories to show the different issues faced by people living in Dharavi.

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There are over one million people in one square mile = ***densely populated.***	There are 4000 cases of diphtheria and typhoid per day = ***rapid spread of disease.***	There is one toilet per 1440 people = ***poor sanitation.***	It costs 2p to go to the toilet so ***open defecation*** is a major issue.
Water standpipes are on for two hours a day (5 - 7am) = ***poor access to clean water.***	***Mahim Creek*** is a local river used as a toilet, water source and washing area.	90% of buildings are ***illegal*** – squatters could be removed at any time.	Up to 15 people live in one small room (12x12ft) = ***overcrowding.***
Many of residents survive on less than $1 per day = ***poverty.***	Leather tanning and pottery are two of the ***highest polluting industries***.	During the monsoon season Dharavi regularly ***floods***. The water can be up to waist height.	300 new families arrive in Mumbai every hour with nowhere to live. This is massive ***rural to urban migration***.
Quite often workers in Dharavi have to work in dangerous conditions, working long hours for very little pay in ***sweatshops.***	Lots of jobs are ***informal***. This means if employees don't work they don't get paid and there are no working conditions bosses have to abide by.	The buildings are crammed together and fire spreads rapidly. ***High building density*** is dangerous.	It costs £2 a month to go to school. Many parents can't afford school fees, so their children are ***illiterate*** (cannot read and write).
Dharavi is an illegal settlement built on a swamp = ***unsuitable for building*** and prone to flooding.	The employment in Dharavi contributes $500 million to the ***economy.***	Breathing the air in Dharavi is the equivalent of smoking 100 cigarettes per day = ***health concerns.***	

3.1 The worst type of pollution?

Student task:

Cut out the following pollution cards and rank them in order from the most polluting to the least polluting. Be ready to justify your order!

Air pollution Contamination of the air by smoke and gases.	**Thermal pollution** The increase of temperature caused by human activity.
Land pollution Degradation of the Earth's surface caused by a misuse of resources and improper disposal of waste.	**Visual pollution** What you would call anything unattractive or visually damaging to the nearby landscape.
Water pollution The contamination of any body of water.	**Light pollution** The brightening of the night sky, inhibiting the visibility of stars and planets, by the use of improper lighting of communities.
Noise pollution Any loud sounds that are either harmful or annoying to humans and animals.	

✂

Student task:

Cut out the following pollution cards and rank them in order from the most polluting to the least polluting. Be ready to justify your order!

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Noise pollution Any loud sounds that are either harmful or annoying to humans and animals.	

3.2 The most polluted cities in the world

Student task:

Linfen, China

Wins the prize for:

Worst air quality in the world

Causes: Coal mining. The landscape is covered in legal and illegal coal mines. Coal is burned for most things: manufacturing, cooking, heating homes etc.

Effects: Just breathing the air here is the equivalent of smoking 3 packets of cigarettes per day, an alarming number of residents suffer from cancers, a heavy blanket of yellow smog covers the city all year round, the sky is a greyish-yellow instead of blue, and you can never see clouds.

La Oroya, Peru

Wins the prize for:

Number of children affected

Causes: Heavy metal mining & processing. Smelting (which is basically a process of applying heat to ore in order to extract a base metal).

Effects: 99% of children have blood levels that exceed acceptable limits of lead which affect vision and cause cancers. Even after active emissions from the smelter are reduced, the expended lead will remain in La Oroya's soil for centuries. If the smelter is closed down it will cost the region thousands of jobs.

Citarum River, Indonesia

Wins the prize for:

Most polluted river in the world

Causes: Heavy pollution of river water by household and industrial waste. Every day people dispose of 400 tonnes of livestock waste into the river. Every day, as many as 25 thousand cubic metres of household waste is accommodated there and 280 tonnes of industrial waste flows towards the Citarum River.

Effects: 5 million people rely on this river for their primary water supply. It provides employment for hundreds of scavengers who earn money from collecting and recycling plastics. In some areas the plastics are so thick that you cannot see the river beneath. Fishermen have seen huge reductions in fish stocks, so have to find other ways of making money, like recycling plastics.

Lake Karachay, Russia

Wins the prize for:

Quickest death from pollution

Causes: Was a dumping ground for the Soviet Union's nuclear weapon facilities. It was also affected by a string of accidents and disasters causing the surrounding areas to be highly contaminated with radioactive waste.

Effects: It's said that one hour of exposure would be lethal. There has been a 21% rise in cancer cases, a 25% rise in birth defects, and a 41% rise in leukaemia in the surrounding region of Chelyabinsk. Testing has revealed that, even though there were no surface outlets visible, the lake's contaminated water was actually seeping through into the groundwater and entering the surrounding Asanov swamp. Large areas of the region are obviously uninhabitable.

Dzerzhinsk, Russia

Wins the prize for:

Most chemically polluted place in the world

Causes: Cold War-era chemical weapons manufacturing including Sarin.

Effects: Life expectancy here is 45 years! 300 000 tons of chemical waste (including some of the most dangerous neurotoxins known to man) were improperly dumped in Dzerzhinsk between 1930 and 1998. Parts of the city's water are infected with dioxins and phenol at levels that are reportedly 17 million times the safe limit.

Rondônia, Brazil

Wins the prize for:

Most destroyed region in the Amazon

Causes: Farming and road building

Effects: 50% of the forested area is now lost (7X bigger than NYC), deforestation globally accounts for 15% of all greenhouse gas emissions, flooding, endangerment of species only found in this area.

Mumbai, India

Wins the prize for:

Nosiest city in the world

Causes: Mumbai's severe city traffic and overpopulation can lead to noise of over 100 decibels, and it has been declared the noisiest city in the world in previous studies. The worst offenders are the ever-continuing construction, loudspeakers, firecrackers, festivals, honking, rickshaws and taxis.

Effects: Continuous exposure causes significant ear damage, The World Health Organisation (WHO) has described noise pollution as an underestimated threat that can cause hearing loss, cardiovascular problems, cognitive impairment, stress and depression. Some experts go further: they believe exposure to environmental noise could be slowly killing us.

Europe

Wins the prize for:

Most light polluted place in the world!

Causes: Light pollution is caused by uncontrolled emissions and reflections. The design of most of the light-emitting sources allows a significant fraction of light to go up in the sky. Excessive use of light-emitting sources also causes significant loss of light energy and increases the production of greenhouse gases.

Effects: 80% of the world's population lives under light polluted skies, 1/3 of the global population can no longer see the milky way (closest galaxy to us). It also kills between 300 million and 1 billion birds each year, wastes billions of dollars' worth of energy in the US annually, and keeps humans from sleeping well (we need complete darkness for our bodies to effectively release the hormones necessary for sleep).

Student task:

1. Read through the cities/places cards and rank them in order from the most polluted (1) to the least polluted (8).
2. Use your rankings to complete the table below.

Rank	Place	Type of pollution	Justification
1 (Most polluted)			
2			
3			
4			
5			
6			
7			
8 (Least polluted)			

Extension:	Categorise the types of pollution mentioned in each card. Can one type of pollution have a knock-on effect?

.....

.....

.....

.....

Suggested route through

Section B: Extreme tourism

Lesson 4: Extreme Everest

Lesson PPT, resource 34603: Extreme Everest

Starter:

Refer to slides 1 – 3.

What is extreme tourism? Students create their own definition of extreme tourism and give examples of places that can be classed as extreme destinations.

Students who need a little more structure could use the worksheet to guide them through the activities.

Name of resource: 4.1 Extreme environments tourism

Activity 1:

Refer to slides 4 – 7.

Where is Nepal and what are the attractions there? There are many tourism promotion videos for Nepal on YouTube, two are included:

youtu.be/wJDZPoMqX1w

youtu.be/u9bmmxtTu9M

Students make a copy of the grid from the slide and fill it in as they watch the videos.
A worksheet is provided, should some students need more structure of support with this task.

Name of resource: 4.2 Tourism in Nepal

Obviously, the main attraction is climbing Everest, but this is both deadly to climbers and is gradually destroying the environment. There is also an article from the BBC which refers to the dangers of climbing Mount Everest.

youtu.be/JpLEQV2x5bM

www.bbc.com/future/story/20151008-the-graveyard-in-the-clouds-everests-200-dead-bodies

Activity 2:

Refer to slide 8 and ask students to use their knowledge of why tourists visit Nepal and the damage they are doing to Everest, to write a postcard home imagining they are there.

There is a postcard template. For the address, students could write the location of Everest to practice geographical descriptions, e.g. country, continent etc.

Name of resource: 4.3 Nepal postcard template

Activity 3:

Refer to slides 9 – 11.

Begin by asking students how they think the problems identified on Mount Everest could be solved. This could be completed as a think, pair, share activity.

You will need to have printed copies of the following three articles, or have access to computers for students to access them online:

- www.telegraph.co.uk/travel/destinations/asia/nepal/11455963/Is-tourism-turning-Mount-Everest-into-an-open-cesspit.html
- theweek.com/articles/546387/how-turned-mount-everest-into-dump
- www.theguardian.com/world/2015/apr/12/mount-everest-sherpa-disaster-one-year-on

Allocate one of the articles to pairs of students. They need three highlighters or coloured pens to categorise the following: any problems, unknown words and solutions.

Students then feedback on the key information from their articles.

This should be recorded on the worksheet by other students, so they have notes on all the different solutions.

Name of resource: 4.4 Improving Everest

Extension:

Evaluate these solutions. What is good or bad about them?
How feasible are they?

Lesson 5: Extreme destinations (ICT facilities are needed for this lesson)

Lesson PPT, resource 34604 : Extreme destinations

Starter:

Refer to slide 1 and discuss how to become an Instagram travel writer.
Social media influencing is a growing business, especially travelling. Instagrammers can enjoy free holidays and luxury goods and are even paid to advertise certain locations. They tend to get paid per 1000 followers, so the more followers they have, the more money they can make. Interactions (the communication between instagrammer and follower) also generate income. Look at some examples of Instagram travel writers. One is included on the PPT:

www.instagram.com/muradosmann/

Activity 1:

Refer to slides 2 – 4.

Go through the tips for creating the best Instagram captions. This could be compared to 21st century persuasive writing!

This has been put into a bingo grid so students could be rewarded if they manage each strategy.
Name of resource: 5.1 Instagram travel writing

Activity 2:

Referring to slide 5:

1. Students should pick one of the extreme tourism destinations from the PPT and research the attractions there.
2. They should pick a photograph showing the most exciting / best element of this location to attract your followers as a travel influencer.
3. They should construct a caption underneath the image.
4. Students could shade in each box on their bingo grid as they complete it.

Plenary:

Prepare voting symbols to be used by the students, you could print them double-sided and laminate them.

Name of resource: 5.2 Instagram voting symbols

Referring to slide 6, ask for volunteers to read the first three sentences of their caption. Students vote for 'more', i.e. would they click on the hyperlink to read the rest? If the majority would, then carry on reading!

Finally, do they deserve a like? Hold up the hearts to count how many likes they'd get.

Section B: Extreme tourism

We've included a screenshot of the PowerPoint slides here so you can see the resource. To access this resource please go to the Teachit geography Extreme global impacts page.

Extreme tourism

What are extreme environments? Can you give four examples?

 1

Extreme tourism

Why do people want to go to extreme tourist destinations?

Would you?

Where would you go and why?

Would you go here?

youtu.be/DFDECH8Y91U

 2

Extreme tourism

What does extreme environment tourism mean?

Task:

Create your own definition of extreme tourism. Try to use at least two of the words below.

niche

increasing demand

physical challenge

new market

Extension:
Can you describe the demographic (type of person) that will be interested in extreme tourism destinations?

 3

Extreme tourism

4. Extreme Everest

Lesson objectives:

- to be able to describe the location of Mount Everest
- to be able to categorise the physical and human attractions of Nepal
- to be able to explain the problems caused by increasing tourism in the area
- to describe the solutions posed by the Nepalese government.

 4

Extreme tourism

Where is Nepal?

Write a description of the location of Nepal.
Include the size of the country, the continent it is in, surrounding countries and any other information you can think of.
You could use an atlas to help add more detail!

 5

Extreme tourism

Nepal: why go?

Watch the following clips and make notes on why people might visit Nepal.

www.youtube.com/watch?v=wJDZPoMqX1w

www.youtube.com/watch?v=u9bmmxtTu9M

Physical attractions:	Human attractions:
Activities:	Problems:

 6

Extreme tourism

Mount Everest basecamp

Watch the following clip about a trek to basecamp. Make notes about what you think it was like and the hazards they faced.

www.youtube.com/watch?v=JpLEQV2x5bM

This links to an article about the dangers of climbing Mount Everest:

www.bbc.com/future/story/20151008-the-graveyard-in-the-clouds-everests-200-dead-bodies

- Over 200 deaths
- Rarely recovered (could take up to 6 Sherpas the best part of a day)

Extreme tourism

Writing a postcard home…

- Imagine you have climbed to Everest basecamp.
- Write a postcard home describing what it's like and the problems faced there.
- Why should we protect this place?
- In the address section practice writing accurate geographical locations:
  - Where is Mt Everest?
  - Which country is it in?
  - Which continent is it in?

Extreme tourism

Solving the problems

How do you think the problems on Everest could be solved?

Think…

Pair…

Share…

Extreme tourism

As a pair, read through the article you have been given…

1. Use one colour to highlight any problems caused by tourism.
2. Use another colour to highlight any words you need to find the definition of.
3. Use your third colour to highlight any solutions to these problems.

Share:

Now listen to the other groups.
What problems and solutions did they read about in their articles? Are they similar or different to yours?

Extension:
Evaluate these solutions. What's good and bad about them?

Extreme tourism

Articles:

- www.telegraph.co.uk/travel/destinations/asia/nepal/11455963/Is-tourism-turning-Mount-Everest-into-an-open-cesspit.html
- theweek.com/articles/546387/how-turned-mount-everest-into-dump
- www.theguardian.com/world/2015/apr/12/mount-everest-sherpa-disaster-one-year-on

4.1 Extreme environments tourism

Student task:

Give four examples of extreme tourism destinations, describe their attractions and the activities people could possibly do there.

Would you like to be an extreme tourist? Why / why not?

Student task:

Fill in the missing words to complete the definition of extreme tourism:

Extreme tourism is experiencing an .... which is fairly ..... (this means appeals to a small section of society). There is a .... when undertaking a holiday like this. You have to be fairly young and athletic.

Niche	physical challenge	increasing demand

4.2 Tourism in Nepal

Student task:

Nepal – where is it?

Nepal is a (circle one) small / large country in the continent of Asia / Europe. It contains the tallest mountain in the world which is called M.....t

E..... t.

Can you name any countries that border it?

.....

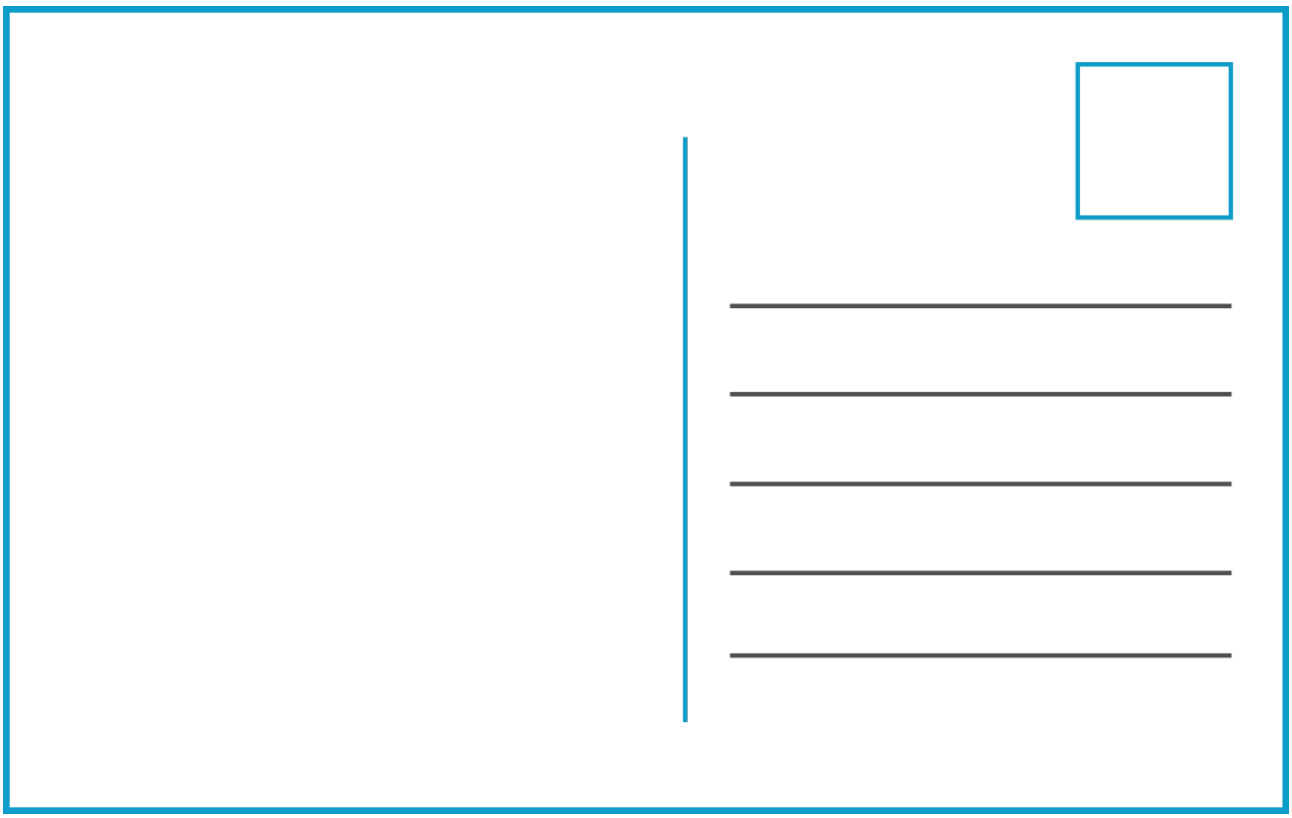
.....

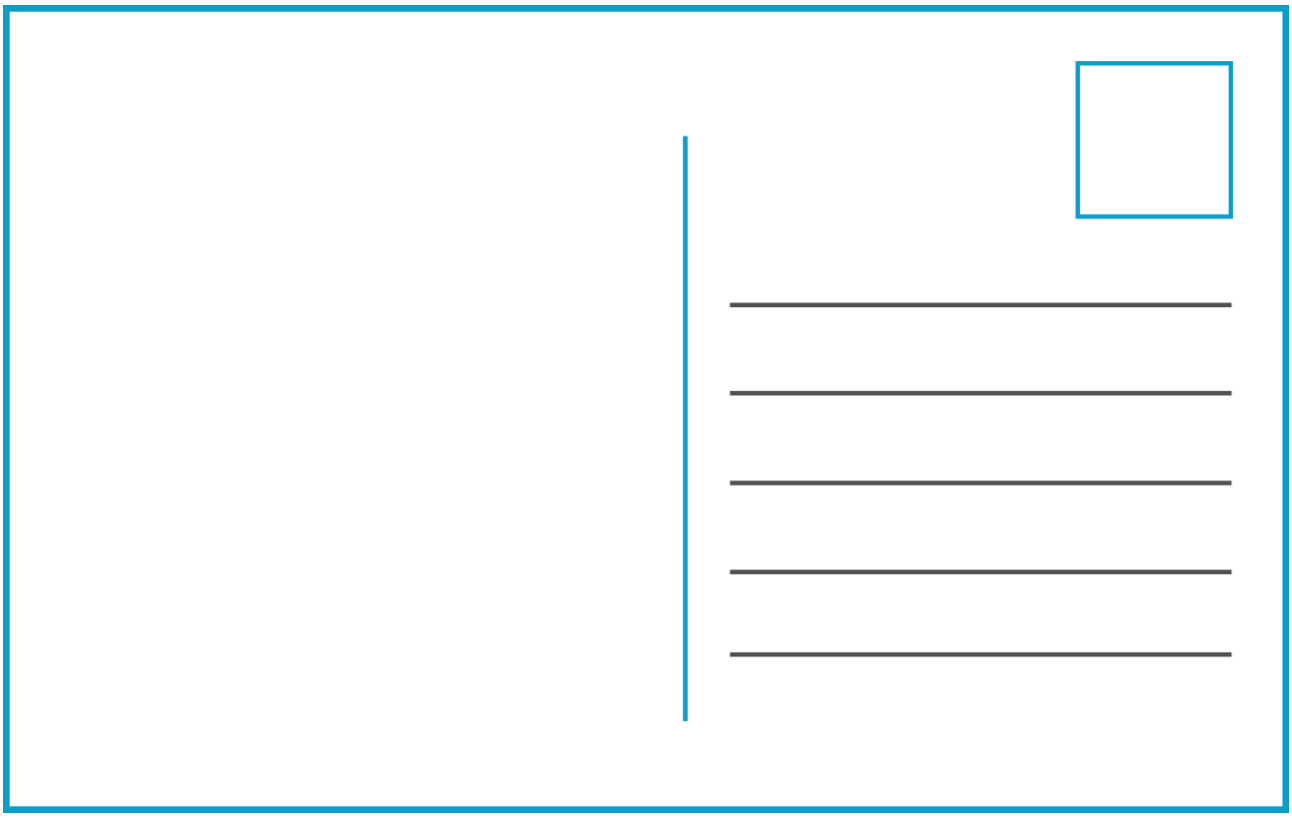
Why go to Nepal?

Physical attractions:	**Human attractions:**
Activities:	**Problems:**

4.3 Nepal postcard template

Student task:





4.4 Improving Everest

Student task:

What are the problems of tourism for Mount Everest?

.....

.....

.....

.....

.....

.....

.....

.....

.....

What are the possible solutions to these problems?

Solution	How will it help?
The government has built toilets at the base camp at Everest.	
Climbers have to bring back their waste or lose their $4,000 deposit.	
The Indian and Nepalese army collected 4 tonnes of rubbish.	

Which solution is the best and why?

.....

.....

.....

.....

.....

.....

.....

.....

We've included a screenshot of the PowerPoint slides here so you can see the resource. To access this resource please go to the Teachit geography Extreme global impacts page.

Extreme tourism

Fancy some free holidays?

Become an Instagram travel writer and visit some of the world's best destinations, get paid to do it and take some amazing photos!

Sounds like fun? It's a lot harder than it looks/sounds!

www.instagram.com/muradosmann/

 1

Extreme tourism

5. Extreme destinations

Lesson objectives:

- to research an extreme tourism destination and create the most Insta-worthy caption like the best Instagram travel writers in the business!
- to be brave and promote your destination to the rest of the class – see how many 'more's and likes you get!

 2

Extreme tourism

How to write the best Instagram caption!

- A great Instagram caption will add context, show off your personality, entertain the audience, and/or compel people to take action.
- Captions can be up to **2200** characters in length, include emojis, and up to 30 hashtags. That doesn't mean your captions should be hashtag-ridden essays stuffed with cryptic emoji messages.
- As with any piece of good web writing, your Instagram caption should be **attention-grabbing** and easy to read and follow. It should also speak to the content and the audience.

 3

Extreme tourism

Tips for your Instagram caption

2200 characters in length.	Know your **target audience.**	For posts in feeds, only the first three lines of a caption will be displayed, then people will have to tap 'more' to read the whole thing.
Place the most important words at the **beginning** of the caption.	Do **several drafts**, especially if your captions are more than a few lines long. Great writing takes multiple drafts and edits.	Make sure every word supports the content and message you're trying to convey. **Cut out unnecessary words** to keep it concise.
Only use **hashtags that are relevant** to your post and target audience.	Get more comments on your photo is by using the **caption to pose a question** to your followers.	**Invite people to leave a comment, tag their friends, or weigh in** with an opinion.

 4

Extreme tourism

Pick one of the extreme tourism destinations below...

1. Where is your destination? How would you get there?
2. Attractions – why would you go?
3. Cost / visitor numbers / facts.
4. Threats / dangers.
5. Pros/cons of this type of holiday.

 5

Extreme tourism

Be brave – the life of a travel influencer is never easy...

- Read out the first three sentences of your caption.
- Your classmates will vote if they want more.
- Finally, how many ♥ will you get?

 6

5.1 Instagram travel writing

Student task:

Instructions:

1. Pick one of the extreme tourism destinations and research the attractions there.
2. Pick a photo showing the most exciting / best element of this location to attract your followers as a travel influencer.
3. Construct a caption underneath the image using the prompts below.
4. Use the tips below to help you. Shade each box as you complete it.

2200 characters in length (can include emojis).	Know your **target audience** – what demographic are adventure tourists?	For posts in feeds, only the first three lines of a caption will be displayed. For captions longer than three lines, people will have to tap "More" to read the whole thing – **can you captivate your audience enough to read on**?
Place the most important words at the **beginning** of the caption.	Take your time and don't be afraid to go through **several drafts**, especially if your captions are more than a few lines long. Great writing—whether you're aiming for humour or education—takes multiple drafts and edits.	Make sure every word supports the content and message you're trying to convey. **Cut out words** that are clearly unnecessary to keep it as concise as possible.
Use **hashtags that are relevant** to your post and target audience. Don't use so many that they crowd your copy and make it difficult to read.	One of the easiest ways to get more comments on your photo is by using the **caption to pose a question** to your followers – brands pay you for the amount of interactions you have.	Want to drive engagement? Ask for it by **inviting people to leave a comment, tag their friends, or weigh in** with an opinion.

5.2 Instagram voting symbols

Student task:

Instructions:

Print out these symbols (could be double- sided), so that students can vote on their peers' Instagram presentations.

More...

Suggested route through

Section C: Extreme global commons

Lesson 6: Extreme climate change

Lesson PPT, resource 34605: Extreme climate change

Starter:

Refer to slides 1 – 2.

Students look at the different images and ask: Who do these belong to?

The answer is nobody but everybody. We have a collective responsibility for these places. This is known as the global commons. Some might argue the internet constitutes as the 5th global commons.

Explain that they will be looking at three examples of the global commons over the next few lessons: the atmosphere (climate change), Antarctica and the high seas (plastic pollution in the oceans).

Activity 1:

Refer to slides 3 – 5.

Introduce climate change by discussing: Climate change or global warming (greenhouse effect)? What are they? What is the difference?

Watch the comedy cartoon clip (www.youtube.com/watch?v=OqVyRa1iuMc), then discuss the different terms and what they have heard about them.

youtu.be/OqVyRa1iuMc

Students use the data from the pie-chart on the PPT to create a proportional symbols map showing the biggest contributors to climate change. You will need to provide a map of the world for students to use for this activity.

Activity 2:

Refer to slides 6 – 7.

Teachers print off the posters showing effects of climate change on different countries around the world and stick them in different places around the room.

Name of resource: 6.1 Effects around the world

Students move around the room and annotate their maps showing the countries/areas most effected.

When completed students are then to categorise the effects into SPEED (social, political, economic, environmental and demographic).

Extension:

Categorise the effects into primary effects (a direct result of climate change) or secondary (as a result of the primary effect).

Activity 3:

Refer to slide 8 and ask the students to look at their maps and consider whether the biggest contributors to climate change are the worst affected?

The answer is no. This could be used to stimulate discussion. Is this fair?

Lesson 7: Extreme climate solutions

Lesson PPT, resource 34606: Extreme climate change

Starter:

Referring to slide 1, students should cut out and arrange the statements/events into a timeline by putting key dates in the history of climate change in the correct order.

Name of resource: 7.1 Climate change timeline

Go through the actual order to ensure students have the key events in the correct order. They can then either stick the statements onto the timeline or write down a summary.

Answers:

The correct order and dates for the different events are as follows:

- **1712** - British ironmonger Thomas Newcomen invents the first widely used steam engine, paving the way for the Industrial Revolution and industrial scale use of coal.
- **1800** - World population reaches one billion.
- **1886** - Karl Benz unveils the Motorwagen, often regarded as the first true automobile
- **1896** - Swedish chemist Svante Arrhenius concludes that industrial-age coal burning will enhance the natural greenhouse effect. He suggests this might be beneficial for future generations.
- **1927** - Carbon emissions from fossil fuel burning and industry reach one billion tonnes per year.
- **1930** - Human population reaches two billion.
- **1938** - Using records from 147 weather stations around the world, British engineer Guy Calendar shows that temperatures had risen over the previous century. He also shows that CO^2 concentrations had increased over the same period, and suggests this caused the warming.
- **1972** - First UN environment conference, in Stockholm. Climate change hardly registers on the agenda, which centres on issues such as chemical pollution, atomic bomb testing and whaling.
- **1987** - Montreal Protocol agreed, restricting chemicals that damage the ozone layer.
- **1988** - Intergovernmental Panel on Climate Change (IPCC) formed to collate and assess evidence on climate change.
- **1992** - At the Earth Summit in Rio de Janeiro, governments agree the United Framework Convention on Climate Change. Its key objective is 'stabilisation of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system'.

- **1997** - Kyoto Protocol agreed. Developed nations pledge to reduce emissions by an average of five per cent by the period 2008-12, with wide variations on targets for individual countries.
- **2001** - President George W. Bush removes the US from the Kyoto process.
- **2011** - Data shows concentrations of greenhouse gases are rising faster than in previous years.
- **2015** - At the Paris climate conference (COP21) in December 2015, 195 countries adopted the first-ever universal, legally binding global climate deal.
- **2017 –** Donald Trump (POTUS) removes the US from the Paris Treaty

Activity 1:

Refer to slides 2 – 3.

Students should read through the solutions to climate change cards and categorise them into local, national and global solutions.

Name of resource: 7.2 Solutions to climate change cards

They should summarise them on the worksheet and use connectives to explain how each solution will help solve the problem of climate change.

Extension:

Discuss with students the positives and negatives of the different solutions. They could write a paragraph to evaluate the different solutions.

Which do they feel would be most viable? Global, national or local?

Activity 2:

Mitigation or adaptation? Referring to slide 4, discuss these two terms with the students and discuss how they differ.

Using their worksheet, students should colour code the solutions into whether they are mitigating against climate change or adapting to it.

Plenary:

Referring to slide 5, students should consider whether they are contributing to the climate change problem by calculating their own carbon footprint. There are many websites which can be used to do this, footprint.wwf.org.uk/ is one of the easier to use.

How could they reduce the size of their carbon footprint? Can they list a few ideas?

Lesson 8: Extreme Antarctic climate

Lesson PPT, resource 34607: Antarctic climate

Starter:

Referring to slide 1 and 2, the teacher should recap that Antarctica is a global common and explain again what the global commons are.

Students should watch the two video clips showing what Antarctica is like and showing the differences between the Arctic and the Antarctic.

youtu.be/s87KIX6owko

youtu.be/Z5VRoGTF6os

Activity:

Students are to create a climate graph for Antarctica. Refer to slide 3, which shows a WAGOLL for Tokyo to help students with the structure of a climate graph. Discuss the different parts of a climate graph and how these are represented.

Students construct a climate graph based on the data sheet provided. You will need to provide graph paper or a template for students to use to complete this task.

Name of resource: 8.1 The climate of Antarctica

Extension:

Students could complete a variety of data analysis questions to develop their geography skills.

1. Calculate the range for wind speed
2. Calculate the median temperature
3. Calculate the mean temperature
4. Calculate the % by month precipitation

Lesson 9: Extreme development

Lesson PPT, resource 34608: Developing Antarctica

Starter:

Referring to slide 1, students should complete the five W's (and an H) activity. They will probably not know the answers to all the questions, but it should help to raise some debate about developing Antarctica and who should be involved in any decision making regarding a global common.

Activity:

Refer to slides 2 – 4.

You will either need access to the internet or should print off the relevant section (Subsection: 7.6 Antarctica and the Southern Ocean) from the following website for students to use as an information sheet.

ebooks.dynamic-learning.co.uk/prod_content/extracted_books/9781471859083-1.20.1/OEBPS/c07-1.htm

Read through the information about the different opportunities and threats in Antarctica by following the links on the worksheet. You could either highlight the threats and opportunities or take relevant notes from the website.

Name of resource: 9.1 Should we develop Antarctica?

If students are sitting in groups, they could take a section each and then summarise/share the information.

Discuss with students what a SWOT analysis is and why it is useful (slide 3 and 4). They should complete their SWOT analysis using the information they have gathered, thinking about whether or not we should develop Antarctica.

Extension:

Who are the stakeholders for Antarctica (people with a vested interest) – what would their viewpoint be on the development of Antarctica? Try to come up with as many contrasting viewpoints and stakeholders as possible.

Plenary:

Referring to slide 5, the 'agree-o-meter', students should consider the question: 'Should we develop Antarctica?

Provide students with a Post-it. Ask them to cast their vote by placing their Post-it where their opinion fits. They should write a short justification (one reason) for their choice on the Post-it.

Lesson 10: Extreme plastics pollution

Lesson PPT, resource 34609: Causes of plastics pollution

Starter:

Name of resource: 10.1 Entry and exit tickets

Referring to slide 1, students to be given an entry ticket and should answer the two questions (on the entry side) to gauge existing knowledge on plastics pollution. This is to be revisited at the end of the lesson to see if their answer has changed and if they can add to it (using the exit side).

Activity 1:

Name of resource: 10.2 Plastics match up cards

Refer to slides 2 – 7.

Students to complete the match to mine activity. To prepare for this activity, print out the cards and cut them up. One card should be given to each student and their job is to find their other half. There are some shocking statistics on plastic pollution in our ocean.

The cards are matched up on the sheet, so keep one copy so that you have the questions with their correct answers, so you can go over the answers with the class once the task is completed.

Watch the video clip (slide 8) to gain some background knowledge of the issues surrounding plastics pollution:

youtu.be/iAdmiSAPdfk

youtu.be/RS7IzU2VJIQ

This is a longer, more detailed version.

Activity 2:

Referring to slide 8 and 9, students complete the skills task to understand who the biggest offenders of plastic pollution are. Students follow the instructions on the PPT slide to create a pie chart based on the biggest plastic polluters globally.

Extension:

Referring to slide 10, students should aim to describe their data presentation by trying to identify patterns, e.g. are the main offenders HICs, NEEs or LICs? Are they from certain continents? Can you explain why you think these countries are the biggest plastic offenders?

Plenary:

Name of resource: 10.1 Entry and exit tickets
Referring to slide 11, students should revisit the answers from the entry ticket – do they have any additional information to add? They should complete the exit side of their ticket.

Lesson 11: Extreme ocean impacts

Lesson PPT, resource 34610: Effects of plastics pollution

Starter:

Referring to slide 1: Plastic everywhere!

In sixty seconds, ask students to make a list of everything they can think of that is made of plastic. How many did they come up with – their lists should be long!

Activity:

Name of resource: 11.1 Plastics problem Venn diagram

Refer to slides 2 – 3.

Students are to cut out the cards and sort them into whether they apply to HICs, LICs or NEEs (or all).

They can either stick them onto the Venn diagram, or summarise the information by taking notes from the statements (differentiation by task – some students could be allowed to stick the statements down, whereas those more able could summarise the information).

They should then colour code the statements as to whether they are causes or effects of plastic pollution. Ensure that students add a key to their diagram for the causes and effects.

Extension:

Can the students think of any solutions to the problems created by plastics pollution? Once they have a few suggestions, you could evaluate these solutions as a class, what are the positives and negatives of them?

Plenary:

Referring to slide 4, read the quote by Jacques Cousteau – to what extent do you agree? Encourage students to justify their responses using the facts from the previous task.

Lesson 12: Extreme plastics solutions

Lesson PPT, resource 34611: Solutions to the plastics problem

Starter:

Refer to slides 1 – 5 and last lesson's extension activity.

Discuss the existing solutions to the world's plastic problem – think small (using a bag for life when you go shopping) to large scale solutions (TNCs reducing their reliance on plastic packaging).

Slides 2 – 5 look at a different solution each. There is a video clip and information on each slide.

Pose questions such as:

- Where would this be appropriate?
- Why only certain locations?
- What are the drawbacks?
- What scale could this be used on etc.?

This is to get the students think about their next task.

Activity:

Name of resource: 12.1 Solutions design sheet

Referring to slides 6 and 7, students are going to design their own solution to the plastic problem using the criteria for 'What makes an excellent designer?'

They should use the design sheet to summarise the key information about their solution and ensure that they have completed all sections and can be ready to justify the decisions they have made about their design.

Plenary:

A carousel activity where students can move around the room looking at all the different designs. Some could present to the class if they wish.

Students could add some WWW, positive, Post-its and some EBI statements to try to improve the designs.

Extension/homework:

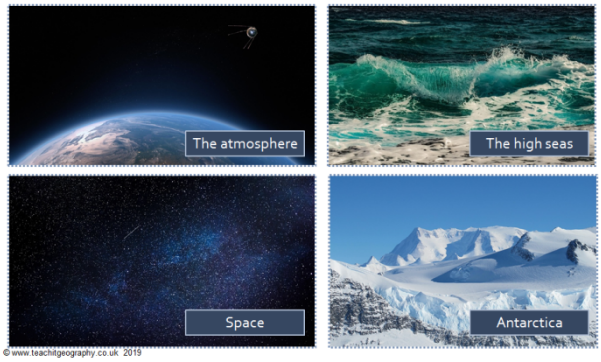
To extend these tasks, the design could then be taken home to be made/improved, taking into consideration the WWW and EBI comments.

Section C: Extreme global commons

We've included a screenshot of the PowerPoint slides here so you can see the resource. To access this resource please go to the Teachit geography Extreme global impacts page.

Extreme global commons

Who do these belong to?



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Extreme global commons

What are the global commons?

This refers to resource domains or areas that lie outside of the political reach of any one nation state.

It is a term used to describe supranational 'spaces' in which common shared resources can be found.

International law recognises four global commons:

1. The high seas
2. The atmosphere
3. Antarctica
4. Outer space

Some might argue that the internet constitutes a 5th

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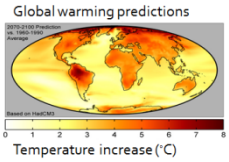
Extreme global commons

Climate change or global warming?

- Climate change is more geographically accurate as some areas of the world will experience warming, whereas others may experience cooling.
- We may have colder winters and warmer summers so technically climate change is the better term to use.



youtu.be/OqVyRa1iuMc

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Extreme global commons

6. Extreme climate change

Lesson objectives:

- to describe the causes of climate change
- to name the biggest contributors to climate change
- to categorise the effects of climate change (into **SPEED**)
- to name the countries most at threat
- to compare the countries that are the biggest contributors and those that are most at risk and assess whether or not this is fair.

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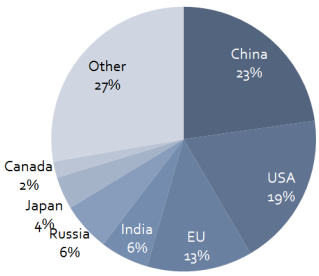
Extreme global commons

Task: Create a proportional symbols map to represent the information from the pie chart below

Contributors to climate change



Don't forget:

- a title
- the key
- a north arrow

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Extreme global commons

Mapping activity

- Move around the room and read the information on the country fact files.
- Find the country affected and annotate your map (add a detailed label) showing the effects of climate change here.

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Extreme global commons

Mapping activity

- When back in your seat, colour code the effects using **SPEED** (**Hint**: some might be more than one category).
- **Make sure you give your map a title.**

S	= **S**ocial	anything to do with people
P	= **P**olitical	governments / decision making
E	= **E**conomic	anything financial
E	= **E**nvironmental	natural landscapes etc.
D	= **D**emographic	anything that affects the structure of the population

Extension:
Categorise again into primary effects (a direct result of climate change) or secondary (as a result of the primary effect).

 7

Extreme global commons

Are the contributors those who are affected the most? Discuss…

 8

6.1 Effects around the world

Student task:

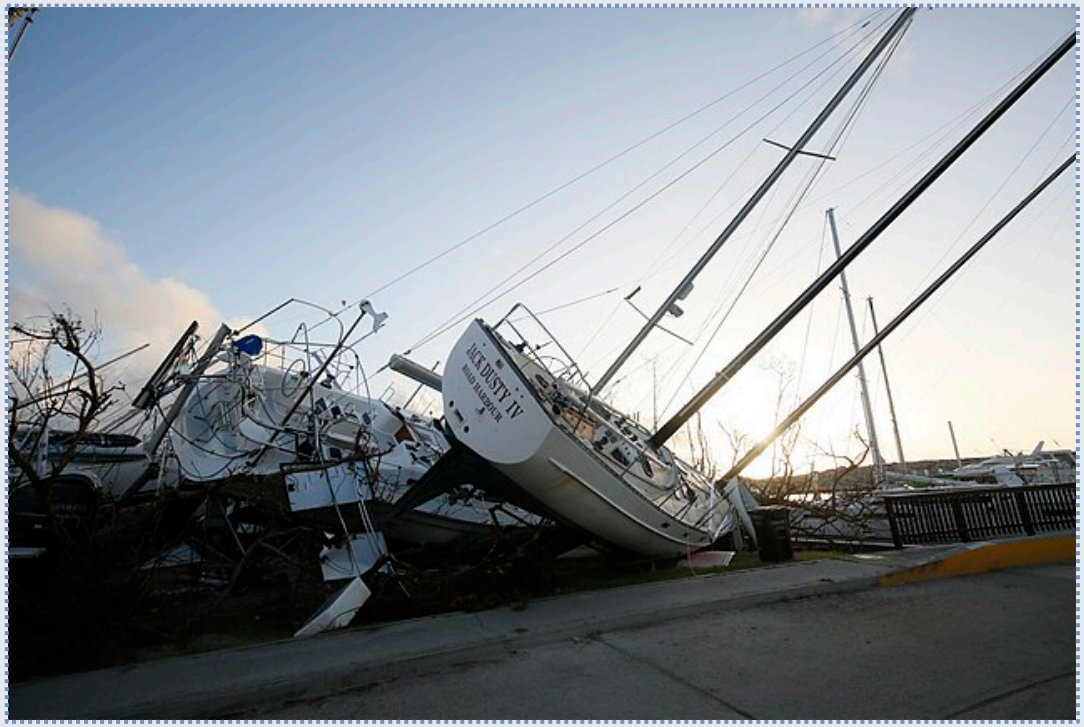
Bangladesh

People living in the flood-prone delta nation are feeling the full force of climate change. Frequent flooding wipes out crops, spreads disease and destroys homes. The UK government's Department for International Development (DFID) has pledged £75m over the next five years to help the people of Bangladesh cope with the impact of global warming (figures correct as of 2009).

Sudan

Rising temperatures are causing the Sahara Desert to expand, eating into the farmland on the edge of the wastelands and causing immense pressure for food. Rainfall in the northern regions of Sudan, including war-torn Darfur, is down by 30 per cent over the past 40 years, with the Sahara advancing by well over a mile every year. Scientists believe that Darfur is an example of climate change conflict, with tribal disputes being exacerbated by increased demand for scarce fertile land and water reserves.

Caribbean



Warmer seas are believed to be bolstering the power of hurricanes, which rip through the Caribbean regions with increasing frequency and savagery. Hurricane Katrina swept through New Orleans in 2005, killing 1600 people and causing an estimated $40 billion of damages, while research published in this summer in the science journal ***Nature*** suggests that hurricanes in the Atlantic are more frequent than at any time in the last 1000 years.

Australia

Australia's arid climate means it has always been prone to forest fires, but scientists believe the ferocity of recent blazes is linked to climate change. The temperature has been rising steadily since the 1950s and this is increasing the intensity and frequency of outbreaks.

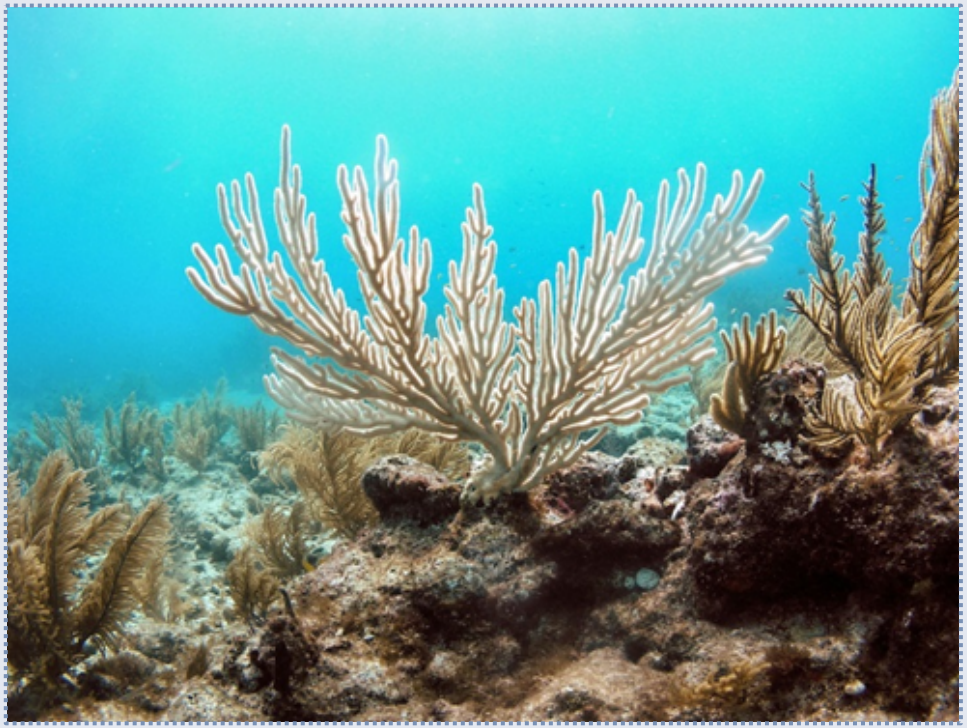
Siberia

In one of the world's last wildernesses, global warming is causing profound changes to the lives of its people. Winters that used to reach -50 degrees are now a comparatively mild -30, which is causing the permafrost to melt. Arctic houses are subsiding, and the nomadic people of the tundra find that their annual migrations are disrupted by unseasonably warm temperatures or unexpected snow falls.

Tuvalu

The low-lying Pacific islands of Tuvalu face the very real threat that they could be wiped out by climate change. The highest point of the islands reaches only four and a half metres above sea level, and the coral upon which the islands are built is seeping sea water, making much of the land too salty to farm.

Great Barrier Reef



Climatologists believe that Australia is experiencing "accelerated climate change", which puts the vast Great Barrier Reef at severe risk. Rising ocean temperatures cause bleaching of the coral, when the plants expel the tiny animals living inside them and turn into colourless calcium skeletons.

Alps

Many resorts have been forced to use artificial snow.

The much-loved European winter playground is increasingly under threat from warmer temperatures, disrupting the snowfall and causing the ice to melt. Scientists from the Convention for the Protection of the Alps published a report in June this year claiming that the Alps were gradually being split in two, with the southern regions receiving 10 per cent less precipitation over the past 100 years and the northern regions facing flooding and landslides.

Britain

Although climate change in Britain may not be as keenly felt as in Bangladesh or Tuvalu, scientists still maintain its effects are noticeable. The National Trust warns of threats to historic properties and estates from flooding and storm surges, and highlights the worrying loss of wildlife habitats.

We've included a screenshot of the PowerPoint slides here so you can see the resource. To access this resource please go to the Teachit geography Extreme global impacts page.

Extreme global commons

Starter:

1. Cut out the different events related to climate change.
2. Organise these key events into the order in which you think they happened.

- Go through the correct dates. How many did you get correct?
- Now create a timeline by taking notes from the different events and placing them along the line accurately.

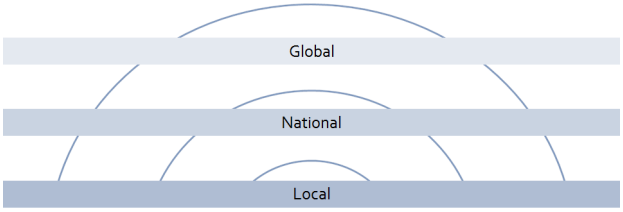
 1

Extreme global commons

7. Solutions to climate change

Lesson objectives:

- to describe at least three solutions to climate change
- to categorise these solutions based on their scale (local, national and global).



 2

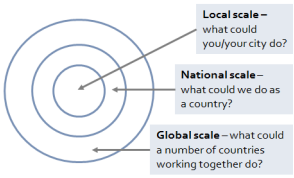
Extreme global commons

What could be the solution?

Task:

Read through the cards and sort them into the different scaled categories below (local, national and global).

1. Pick two solutions for each scale and write them onto your sheet.
2. Explain (use connectives) how each solution would help.



#Leedsbyexample video clip: www.youtube.com/watch?v=5Hffflf9BIA

Extension:
Evaluate these solutions – what are the positives and negatives of them?

 3

Extreme global commons

Mitigation vs. adaptation – what's the difference?

Mitigation- the action of reducing the severity or seriousness of something

Adaptation- changing behaviour to make a positive change or to deal with the effects of something

Task:

Colour code the solutions; one colour for mitigation and another colour for adaptation.

Extension:
Can you add any of your own ideas?

 4

Extreme global commons

Are you contributing to the problem?

Challenge:

Carbon dioxide is a main contributor to climate change. What is your carbon footprint?

- Follow this link and calculate your carbon footprint: footprint.wwf.org.uk/
- How could it be reduced?

 5

7.1 Climate change timeline

Student task:

1. Cut out these events to do with climate change.
2. Try to rearrange them into the correct order in terms of the date on which they happened, look for clues in each statement!

First UN environment conference, in Stockholm. Climate change hardly registers on the agenda, which centres on issues such as chemical pollution, atomic bomb testing and whaling.
At the Paris climate conference (COP21) in December 2015, 195 countries adopted the first-ever universal, legally binding global climate deal.
British ironmonger Thomas Newcomen invents the first widely used steam engine, paving the way for the Industrial Revolution and industrial scale use of coal.
Montreal Protocol agreed, restricting chemicals that damage the ozone layer.
World population reaches one billion.
Donald Trump (POTUS) removes the US from the Paris Treaty.
Karl Benz unveils the Motorwagen, often regarded as the first true automobile.
Carbon emissions from fossil fuel burning and industry reach one billion tonnes per year.
Using records from 147 weather stations around the world, British engineer Guy Callendar shows that temperatures had risen over the previous century. He also shows that CO^2 concentrations had increased over the same period, and suggests this caused the warming.
Intergovernmental Panel on Climate Change (IPCC) formed to collate and assess evidence on climate change.
At the Earth Summit in Rio de Janeiro, governments agree the United Framework Convention on Climate Change. Its key objective is 'stabilisation of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system'.
Kyoto Protocol agreed. Developed nations pledge to reduce emissions by an average of five per cent by the period 2008-12, with wide variations on targets for individual countries.
President George W. Bush removes the US from the Kyoto process.
Swedish chemist Svante Arrhenius concludes that industrial-age coal burning will enhance the natural greenhouse effect. He suggests this might be beneficial for future generations.
Data shows concentrations of greenhouse gases are rising faster than in previous years.
Human population reaches two billion.

1700 1800 1900 2000

7.2 Solutions to climate change

Student task:

1. Cut out the following cards and read through the information.
2. Arrange the cards in order of the scale of the solution; global to national to local. If there are some that are at the same scale, put them in order of which you think is most achievable.

UK carbon capture, usage and storage

The idea behind carbon capture is relatively straightforward.

Places like coal power stations produce carbon dioxide, but instead of being funnelled into the air, it's stored away.

One way to do this is by taking it away by pipeline to an offshore platform where it's injected into the space left by depleted oil and gas fields.

Scotland has the capability to be at the forefront of this technology, given the North Sea's potential as the biggest CO^2 storage space in Europe.

But as simple as the theory is, carbon capture needs a lot of funding to develop it.

Curitiba 'trash-for-tokens'

Curitiba is the sustainable capital of the world – it is a city in Brazil. 85% of the population uses the Mass Transit System (MST) transporting 2 million riders per day.

Under the Green Exchange programme, developed by Lerner's assistant Nicolau Klüppel in 1989, Curitiba residents trade trash for tokens. Four pounds of trash for a pound of produce.

Today, 90% of the city participates in its recycling programme, and more than 10000 residents make use of the trash-for-tokens exchange.

Where most cities develop mountains in landfills along the periphery, Curitiba recycles 70% of its garbage. "We can't have landfills forever, and we can't ask others to accept our trash," Lerner said. "Garbage removal is a citizen responsibility."

The UK gaining 15% of its energy from renewable supplies

The UK's targets for renewable energy consumption come from agreement at European Union level.

The European Union has set itself the target of producing 20% of its energy from renewable sources by 2020.

Each country in the EU has its own target to meet. These targets vary depending on a number of factors, including how much renewable capacity was already installed when the overall goal was set, and how rich the country is.

The UK has been asked to procure 15% of its energy consumption from renewable sources in 2020.

The Paris Treaty, 2015

At the Paris climate conference (COP21) in December 2015, 195 countries adopted the first-ever universal, legally binding global climate deal.

The agreement sets out a global action plan to put the world on track to avoid dangerous climate change by limiting global warming to well below 2°C.

Syria and Nicaragua (now joined by the USA) were the only countries not to sign the agreement.

The reduction in temperature can only be achieved through a significant reduction in the emission of greenhouse gases.

At the time, the US pledged to cut their climate pollution by 26-28% from 2005 levels.

China's target is to reach peak CO^2 emissions by 2030 at the latest, lower the carbon intensity of GDP by 60% - 65% below 2005 levels by 2030, and to increase the share of non-fossil energy carriers of the total primary energy supply to around 20%.

The EU plans to cut emissions by 40% by 2030 on 1990 levels.

#Leedsbyexample recycling reward scheme

Last year alone we spent a whopping £17.4 billion on food and drink to eat on the go in the UK. It stacks up to about 13 billion plastic bottles, 9 billion drinks and 2.5 billion coffee cups every year!

That's a whole lot of packaging, and less than half of local authorities have the street infrastructure to collect and recycle it. This is often because the quality of what's collected on the street is so poor that the costs don't stack up to collect it; either we put the wrong materials in the bin meaning the whole lot goes to waste, or it still has food or liquid in it.

A new approach is needed and Leeds is trialling it. Between October 2018 - April 2019, the city will be trialling new ways to make recycling consistent and easy to do. The city will #LeedsByExample with empty plastic, cans and coffee cups.

Recycle reward machines are common around parts of Europe and can help improve the quality of our recycling. Now they're coming to Leeds to give you a chance to make some money from your used empty plastic bottles, cans and coffee cups! It will be starting at Beckett University and Kirkgate market, and will be testing different rewards to see what's needed to incentivise recycling.

Maldives builds barriers to global warming

The Republic of Maldives was one of the first countries to recognize the danger of rising sea levels. It's also one of the first to come up with a plan to adapt to a warmer world.

President Gayoom initially tried political solutions. The Maldives was the first country to sign the Kyoto protocol to fight global warming. But that hasn't done much yet to slow down sea-level rise.

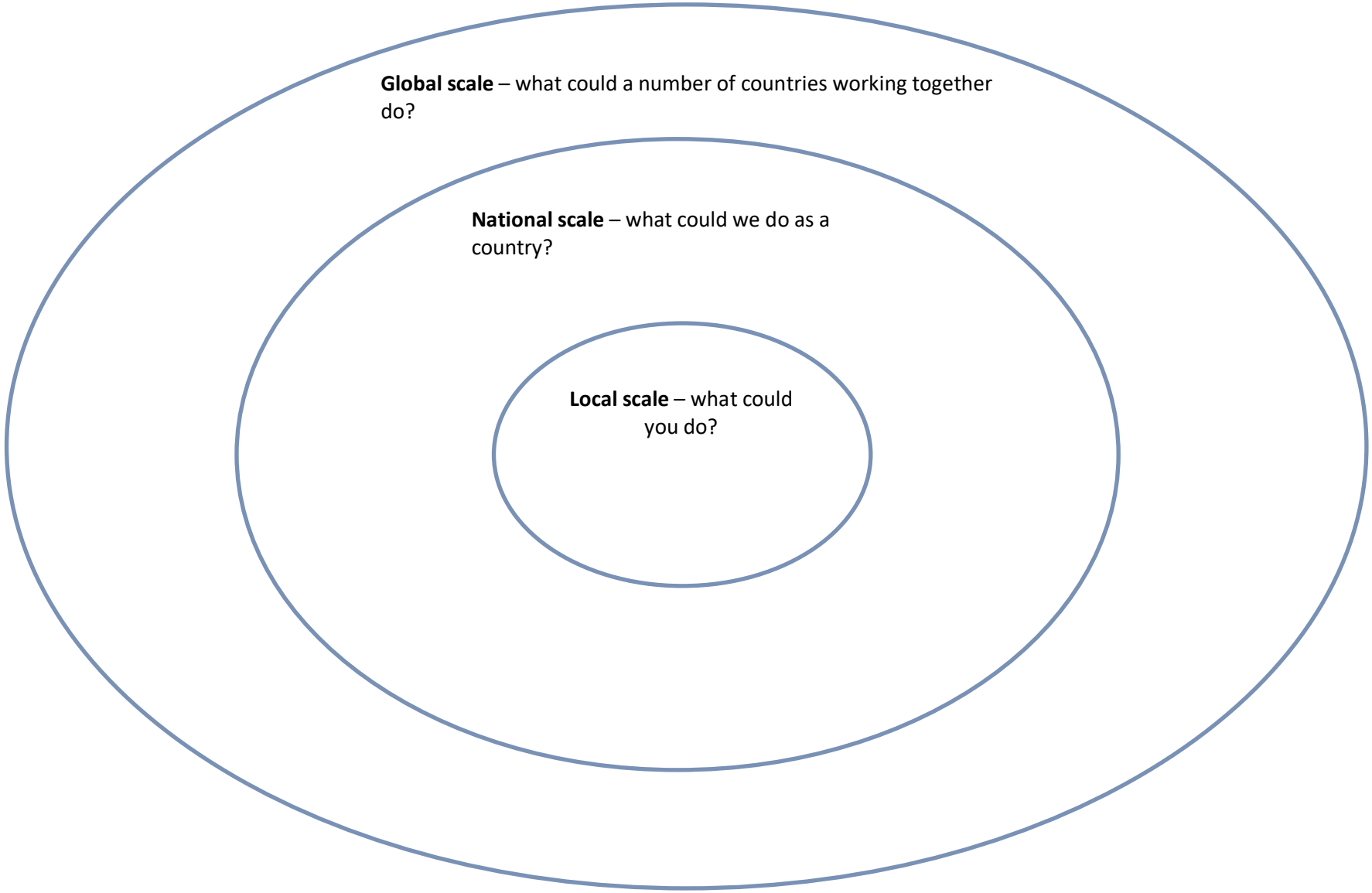
So Gayoom, ruler of the Maldives for 30 years now, has been experimenting with a more hands-on approach, starting with a project near his presidential palace.

His first effort was a massive seawall made of concrete tetrapods. It surrounds the entire capital of Male.

Gayoom was able to persuade the Japanese government to pay for the $60 million wall after the floods of 1987. The wall reduced the vulnerability of Male, which is a mile long and houses one-third of the country's population.

But the wall also makes Male the least attractive of the Maldives' 200 inhabited islands.

Solution to climate change



We've included a screenshot of the PowerPoint slides here so you can see the resource. To access this resource please go to the Teachit geography Extreme global impacts page.

Extreme global commons

8. Antarctic climate

Lesson objectives:

- to explain why nobody owns Antarctica yet we all have a collective responsibility for it
- to describe the climate in Antarctica and present the data for this in an appropriate way.

 1

Extreme global commons

Who owns Antarctica and what is it like?

Watch these two videos:

youtu.be/s87KIX6owko

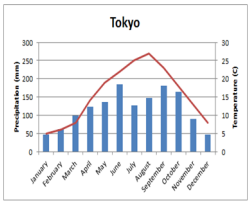
youtu.be/Z5VR0GTF6os

 2

Extreme global commons

Create a climate graph showing the temperature and precipitation annually in Antarctica

Precipitation in mm on the left hand axis (the bars)



Temperature in degrees C on the right hand Y axis (the line)

Months of the year along the X axis

Extension:
1. Calculate the range for wind speed
2. Calculate the median temperature
3. Calculate the mean temperature
4. Calculate the % by month precipitation

 3

8.1 The climate of Antarctica

Student task:

Use the data below to draw a climate graph for Antarctica. Use the example on the PPT as a guide.

Month	Temperature (˚C)	Precipitation (mm)	% by month precipitation	Wind speed (km/h)
January	-5.5	15		11
February	-11.6	21.2		9
March	-21.1	24.1		14
April	- 24.9	23.7		11
May	-27.1	24.9		17
June	-27.3	15.6		18
July	-30.1	11.3		17
August	-31.8	11.8		17
September	-29.4	11.8		17
October	-23.4	9.7		17
November	-12.7	9.5		13
December	-6	15.7		11

✂

Student task:

Use the data below to draw a climate graph for Antarctica. Use the example on the PPT as a guide.

Month	Temperature (˚C)	Precipitation (mm)	% by month precipitation	Wind speed (km/h)
January	-5.5	15		11
February	-11.6	21.2		9
March	-21.1	24.1		14
April	- 24.9	23.7		11
May	-27.1	24.9		17
June	-27.3	15.6		18
July	-30.1	11.3		17
August	-31.8	11.8		17
September	-29.4	11.8		17
October	-23.4	9.7		17
November	-12.7	9.5		13
December	-6	15.7		11

We've included a screenshot of the PowerPoint slides here so you can see the resource. To access this resource please go to the Teachit geography Extreme global impacts page.

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Starter:

What resources are there that can be developed?	When did people first visit Antarctica?
Who needs to be informed and involved with issues of development?	Where do people who want to develop Antarctica come from?
How does development in Antarctica cause conflict?	Why do some countries want to develop Antarctica?

 1

Extreme global commons

9. Developing Antarctica

Lesson objectives:

- give reasons why interested parties want to develop Antarctica and complete a SWOT analysis
- to justify if we should preserve Antarctica as one of the last great wildernesses.

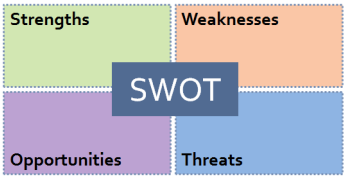
 2

Extreme global commons

Should we develop Antarctica?

Task:

Read through the information outlining all of the opportunities and threats for Antarctica and fill out the **SWOT** analysis.



Use information from the following website:

ebooks.dynamic-learning.co.uk/prod_content/extracted_books/9781471859083-1.20.1/OEBPS/c07-1.htm

 3

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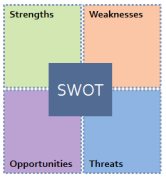
Should we develop Antarctica?

What are the positives of developing Antarctica? e.g., who benefits?

What opportunities are there? i.e. what could be done (for example, fishing)



What are the problems with developing in such a remote wilderness? e.g. who will police it?

What are the downfalls of developing Antarctica?

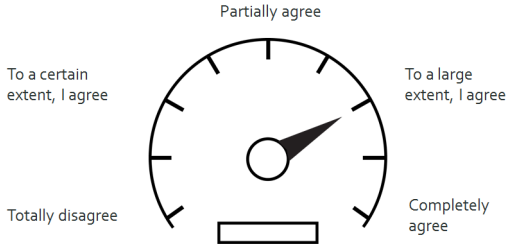
Extension:
Who are the stakeholders for Antarctica (people with a vested interest)?
What would their viewpoints be on the development of Antarctica? Try to come up with as many contrasting viewpoints and stakeholders as possible.

 4

Extreme global commons

Should we develop Antarctica?

- Cast your vote by placing your Post-it where your opinion fits.
- Justify (give at least one reason) your choice.



 5

9.1 Should we develop Antarctica?

Student research task:

Use the following website to read about the opportunities and threats facing Antarctica (you will need to scroll down to section 7.6 Antarctica and the Southern Ocean).

ebooks.dynamic-learning.co.uk/prod_content/extracted_books/9781471859083-1.20.1/OEBPS/c07-1.htm

1. Sealing:

ebooks.dynamic-learning.co.uk/prod_content/extracted_books/9781471859083-1.20.1/OEBPS/c07-1.htm

Use the link above and scroll down to:

- Subsection: 7.6 Antarctica and the Southern Ocean
- Subheading: Threats to Antarctica

2. Fishing and whaling:

ebooks.dynamic-learning.co.uk/prod_content/extracted_books/9781471859083-1.20.1/OEBPS/c07-1.htm

Use the link above and scroll down to:

- Subsection: 7.6 Antarctica and the Southern Ocean
- Subheading: Threats to Antarctica – Fishing and whaling

Read the following article:
www.theguardian.com/environment/2008/mar/23/fishing.food

3. Climate change:

ebooks.dynamic-learning.co.uk/prod_content/extracted_books/9781471859083-1.20.1/OEBPS/c07-1.htm

Use the link above and scroll down to:

- Subsection: 7.6 Antarctica and the Southern Ocean
- Subheading: Threats to Antarctica - Climate change

4. Resources:

ebooks.dynamic-learning.co.uk/prod_content/extracted_books/9781471859083-1.20.1/OEBPS/c07-1.htm

Use the link above and scroll down to:

- Subsection: 7.6 Antarctica and the Southern Ocean
- Subheading: Threats to Antarctica – The search for mineral resources

5. Tourism:

ebooks.dynamic-learning.co.uk/prod_content/extracted_books/9781471859083-1.20.1/OEBPS/c07-1.htm

Use the link above and scroll down to:

- Subsection: 7.6 Antarctica and the Southern Ocean
- Subheading: Threats to Antarctica – Tourism and scientific research

Use your reading to complete this SWOT analysis:

Strengths	Weaknesses
Opportunities	**Threats**

We've included a screenshot of the PowerPoint slides here so you can see the resource. To access this resource please go to the Teachit geography Extreme global impacts page.

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Starter: entry ticket

Use your existing knowledge to answer the questions on the entry side of your ticket.

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10. Causes of plastics pollution

Lesson objectives:

- give reasons why there is so much plastic pollution globally
- be able to explain why we should reduce the amount of plastic pollution we create
- name the biggest plastic polluters globally.

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Match to mine

- **Read your card** – walk around the room and try to find the person that matches your card.
- Stand next to them until we are ready to find out the answers.

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Match to mine: Answers

What is the record for the number of bits of plastic found in a shearwater's stomach?	**260**
How many sea mammals die each year due to entanglements?	**300000**
The deepest depth plastic has been found at is...	**7 miles – the bottom of the Marianas trench!**
The most remote place plastic has been found is...	**Lord How island**
How many plastic bottles are bought per minute in the UK?	**1 million**
How many disposable bags are bought per minute in the UK?	**2 million**

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Match to mine: Answers

How many disposable cups are bought per minute in the UK?	**1 million**
How many tonnes of rubbish end up in the ocean every year?	**8 million**
How many people globally do not have access to adequate sanitation?	**2 billion**
How much is plastic expected to increase by in 2025?	**By 50%**
Which animal is on the brink of extinction due to entanglement in plastic fishing nets?	**The North-Atlantic right whale**
The plastic in the Pacific is bigger than...	**The state of Texas**

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Match to mine: Answers

What's the most common type of plastic pollution found in the ocean?	**Cigarette butts, plastic bags, fishing gear, and food and beverage containers**
Why do sea animals consume plastic?	**Algae grows on it which makes it attractive to fish, some mistake it for fish eggs or carrier bags for jellyfish**
What % of plastic is thrown away after just one use?	**50%**

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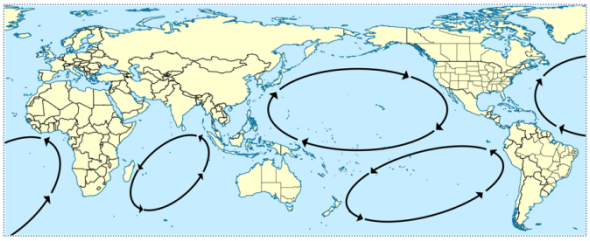
Extreme global commons

Shocking statistics:

youtu.be/iAdmiSAPdfk



 7

Extreme global commons

Skills task: pie chart

1. Add up the total plastic pollution by tonnes.
2. To calculate the percentage, divide the amount of plastic pollution by the total and multiply by 100.
3. To calculate the degrees for your pie chart multiply the percentage by 3.6.
4. Draw a large circle with a compass.
5. Measure the degrees with a protractor and plot your data.
6. Add a key (colour code each country)
7. Add data labels (what % does each one equate to?)
8. Add a title stating what your pie chart shows.

 8

Extreme global commons

Skills task: pie chart

Country	Amount of plastic pollution annually (in tonnes)
China	8.82
Indonesia	3.22
The Philippines	1.88
Vietnam	1.83
Sri Lanka	1.59
Thailand	1.03
Egypt	0.97
Malaysia	0.94
Nigeria	0.85
Bangladesh	0.79
South Africa	0.63

 9

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Extension:
Describe your data - try to identify patterns (are the main offenders HICs, NEEs or LICs?). Can you explain why you think these countries are the biggest plastic offenders?

 10

Extreme global commons

Final task: exit ticket

Revisit your entry ticket – do you have any new information to add? Has your opinion/view changed on anything?

 11

10.1 Entry and tickets

Name:	Entry	Exit
	1. Why is there so much plastic pollution?	1. Why is there so much plastic pollution?
	2. Why should we all work to prevent plastic pollution?	2. Why should we all work to prevent plastic pollution?

Name:	Entry	Exit
	1. Why is there so much plastic pollution?	1. Why is there so much plastic pollution?
	2. Why should we all work to prevent plastic pollution?	2. Why should we all work to prevent plastic pollution?

Name:	Entry	Exit
	1. Why is there so much plastic pollution?	1. Why is there so much plastic pollution?
	2. Why should we all work to prevent plastic pollution?	2. Why should we all work to prevent plastic pollution?

10.2 Plastics match up cards

Teacher preparation/instructions:

Cut out these cards and distribute to the students.
The students should then try to match themselves up with the student who has the matching question or answer to theirs.
The cards on this sheet are matching pairs.

Question	Answer
What is the record for the number of bits of plastic found in a shearwater's stomach?	**260**
How many sea mammals die each year due to entanglements?	**300000**
The deepest depth plastic has been found at is…	**7 miles – the bottom of the Marianas trench!**
The most remote place plastic has been found is…	**Lord How island**
How many plastic bottles are bought per minute in the UK?	**1 million**
How many disposable bags are bought per minute in the UK?	**2 million**
How many disposable cups are bought per minute in the UK?	**1 million**

How many tonnes of garbage end up in the ocean every year?	**8 million**
How many people globally do not have access to adequate sanitation?	**2 billion**
How much is plastic expected to increase by in 2025?	**By 50%**
Which animal is on the brink of extinction due to entanglement in plastic fishing nets?	**The North-Atlantic right whale**
The plastic in the Pacific is bigger than…	**The state of Texas**
What percentage of sea turtles have consumed plastic?	**50%**
What's the most common type of plastic pollution found in the ocean?	**Cigarette butts, plastic bags, fishing gear, and food and beverage containers**
Why do sea animals consume plastic?	**Algae grows on it and makes it attractive to fish, some mistake it for fish eggs or carrier bags for jellyfish**
What % of plastic used is thrown away after just one use?	**50%**

We've included a screenshot of the PowerPoint slides here so you can see the resource. To access this resource please go to the Teachit geography Extreme global impacts page.

Extreme global commons

Plastic everywhere!

Task: Make a list of everything you can think of that is made from plastic.

You have 60 seconds!

 1

Extreme global commons

11. Effects of plastic pollution

Lesson objectives:

- to categorise the causes, effects and solutions to the plastic pollution problem
- to identify where the causes, effects and solutions are likely to occur (HICs, NEEs or LICs).

 2

Extreme global commons

Causes, effects and solutions to the plastic problem

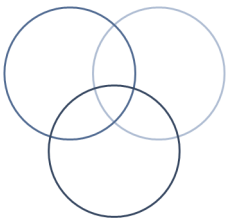
Effects of plastic pollution: Venn Diagram

Key

Cause

Effect

Solution



Tasks:

1. Cut out the cards.
2. Sort into whether they relate to HICs, LICs or NEEs (or all).
3. Colour code as to whether they are causes or effects.

Extension:
Can you think of any solutions to these problems?

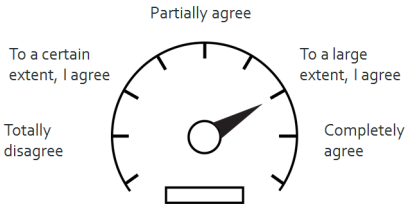
 3

Extreme global commons

Read the quote below – to what extent do you agree with it?

"Water and air, the two essential fluids on which all life depends, have become global garbage cans."

Jacques Cousteau



 4

11.1 Plastics problem Venn diagram

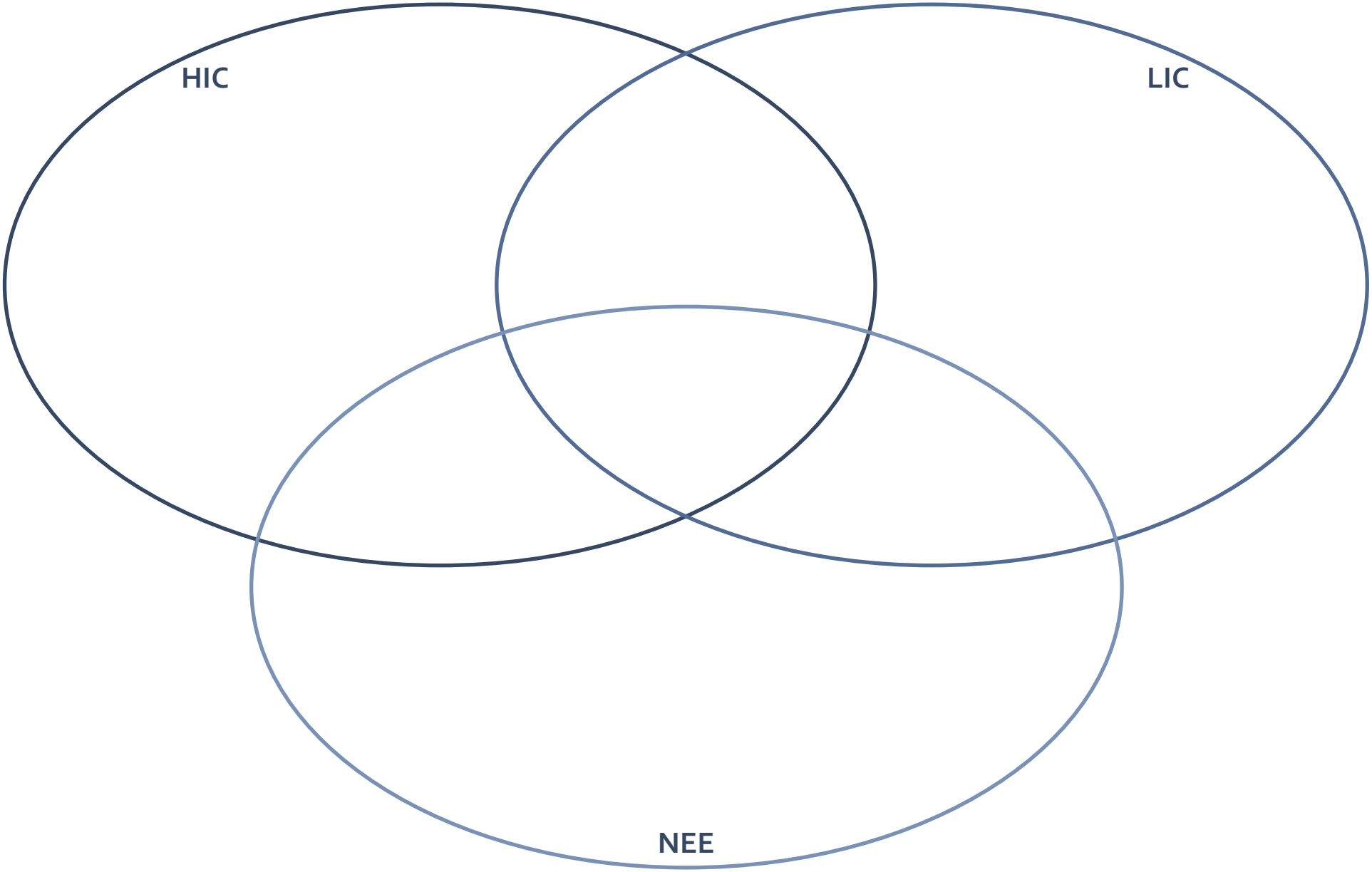
Student task:

Cut out the cards below then complete the following tasks:

1. Sort the cards into whether they relate to HICs, LICs or NEEs. Some may refer to two or even all categories. Can you put them into the correct place on your Venn diagram? You may need to summarise the statement rather than just stick it on!
2. Once you have done this, colour code the statements as to whether they are causes or effects of the plastics problem. Make sure you add a key to your diagram.

260 pieces of plastic were found in one shearwater bird.	Sea grass reduces bacteria transported by plastic by up to 50%.	There are 51 trillion pieces of plastic in the ocean.	Only 11% of plastic is recycled globally.
If nothing is done, it is estimated plastic production will increase by 500%.	It is estimated that from every wash load of clothes 700000 micro plastic fibres are released.	Rain on car tyres and beads from face washes lead to plastic being released into the ocean.	The North-Atlantic right whale is on the brink of extinction due to entanglement in plastic fishing nets.
Plastics have pores that can transport pathogens (bacteria which causes disease).	300000 sea mammals die per year due to entanglement in plastic fishing nets.	Bottle bank – people get credits for the plastic they bring to be recycled.	Algae grows on plastic and its scent attracts fish.
½ of all plastic waste comes from rivers – the Yangtze, Ganges and Nile are among the worst.	1 million plastic bottles are bought in the UK per minute.	The Citarum river in Indonesia is one of the worst – 2000 tonnes of plastic flows down this river every day.	The number of fish species living in the Citarum has reduced by 60% due to plastic pollution.
Improper waste disposal is the biggest cause – villagers throw their waste straight into the river.	2 billion people globally have no access to proper waste management.	Many rare sea plants have become extinct due to discarding plastic waste in the seas.	The fishing industry is a big contributor to plastic pollution – they contributed 1 million tonnes last year.

The nets used for certain large-scale trolling operations are usually made of plastic. First, these spend long times submerged in water, leaking toxins at will, but they also often get broken up or lost, left to remain wherever they fall.	Bisphenol A, a chemical released from waste bottles and packaging containers thrown away by the seashore, when consumed by the fish causes health problems to those who eat such infected fishes.	Big TNCs have been blamed for selling products to LICs because they have no way of disposing of them properly (sachets are a big problem).	Burning plastic is incredibly toxic and can lead to harmful atmospheric conditions and deadly illnesses.
As plastic is less expensive, it is one of the most widely available and overused items in the world today.	It costs millions of dollars each year to clean affected areas after exposure, not to mention the loss of life to plants, animals, and people.	The amount of plastic is set to double by 2025.	Plastic is meant to last! It is nearly impossible to break down; therefore, if it is in landfill, it will never stop releasing toxins in the area.
Even though recycling is beneficial, the process of recycling plastic can lead to plastic irritants being released in a number of ways.	Tiny microbeads can affect the world's tiniest organisms such as plankton. When these organisms become poisoned due to plastic ingestion, this causes problems for the larger animals that depend on them for food and ultimately humans as it passes up the food chain!	When plastic is dumped in landfills, it interacts with water and forms hazardous chemicals. When these chemicals seep underground, they degrade the water quality.	Wind carries and deposits plastic from one place to another, increasing the land litter. It can also get stuck on poles, traffic lights, trees and fences. Animals that come in the vicinity and may suffocate.



We've included a screenshot of the PowerPoint slides here so you can see the resource. To access this resource please go to the Teachit geography Extreme global impacts page.

Extreme global commons

12. Solutions to the plastics problem

Lesson objectives:

- to describe at least two solutions to the world's plastic problem
- to design an appropriate solution for either a HIC, NEE or LIC
- to justify your design choice, supporting it with facts from the previous lessons
- to present your design to a team of experts.

 1

Extreme global commons

The Seabin: Australia

Watch the following video clip:

youtu.be/njqng3OMkIE

- The Seabin is a floating rubbish bin that is located in the water at marinas, docks, yacht clubs and commercial ports.
- The Seabin moves up and down with the range of tide collecting all floating rubbish. Water is sucked in from the surface and passes through a catch bag inside the Seabin. Litter and debris are trapped in the catch bag to be disposed of properly.

 2

Extreme global commons

The Floating Boom: San Francisco

Watch the following video clip:

youtu.be/nYC4Q-owcAc

- The 600m floating boom towed from San Francisco to the Great Pacific Garbage Patch (an island of trash twice the size of Texas).
- The system was created by The Ocean Cleanup, an organization founded by Boyan Slat, a 24-year-old innovator from the Netherlands who first became passionate about cleaning the oceans when he went scuba diving at age 16 in the Mediterranean Sea and saw more plastic bags than fish.
- The cost was $35 million.

 3

Extreme global commons

Seaweed packaging: Indonesia

Watch the following video clip:

youtu.be/lw6FCdVeBNE

- Indonesian company developed edible packaging in a bid to eliminate waste.
- They created biodegradable seaweed packaging that can be eaten along with food.
- Seaweed is high in fibre and vitamins and is grown without fertilisers.

 4

Extreme global commons

Bottle bank: Norway

Watch the following video clip:

youtu.be/lC4ymsm5Ilk

- People in Norway are rewarded when they use particular machines to recycle their plastic bottles.
- 97% of plastic bottles are recycled.

 5

Extreme global commons

What makes a good designer?

Observation
Research: why does the world need this design?

Listening
What exactly do we need?

Desire
Why do we need this invention?

Context
Is it appropriate?
Where is your design suitable for: HIC, NEE or LIC?

Consideration
Who is your target market?

Designer traits

Solutions
Designing solutions for problems people are willing to pay money for. If a design doesn't solve a problem, it's often considered a weak design. Great designers find solutions.

Communication
Designers communicate by sketching, making models, using computers, writing, speaking and any other tools necessary.

 6

Extreme global commons

Design a solution to the plastics problem

Some points to think about:

- use the criteria of an excellent designer to help you know what to include
- use visuals to show how your design will look/work
- be prepared to answer questions posed about your design
- use facts from previous lessons, it might be easier to start with what you think is the biggest cause of plastic pollution and then how you think you can solve this.

 7

Extreme global commons

Final activity: carousel

- Move around the room and have a look at other students' designs
- Stick a positive Post-it on their work – WWW
- Be ready to share the best design (in your opinion)

 8

12.1 Solution design sheet

Student task:

Why does the world need your design?

Where is your design suitable for? Why?

What does your idea look like? Add detailed annotations – it may help if you turn the page landscape.

What is your idea/proposal?

My design

How will your design help solve the problem?

Target market – which demographic is your idea suitable for?

Acknowledgements

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