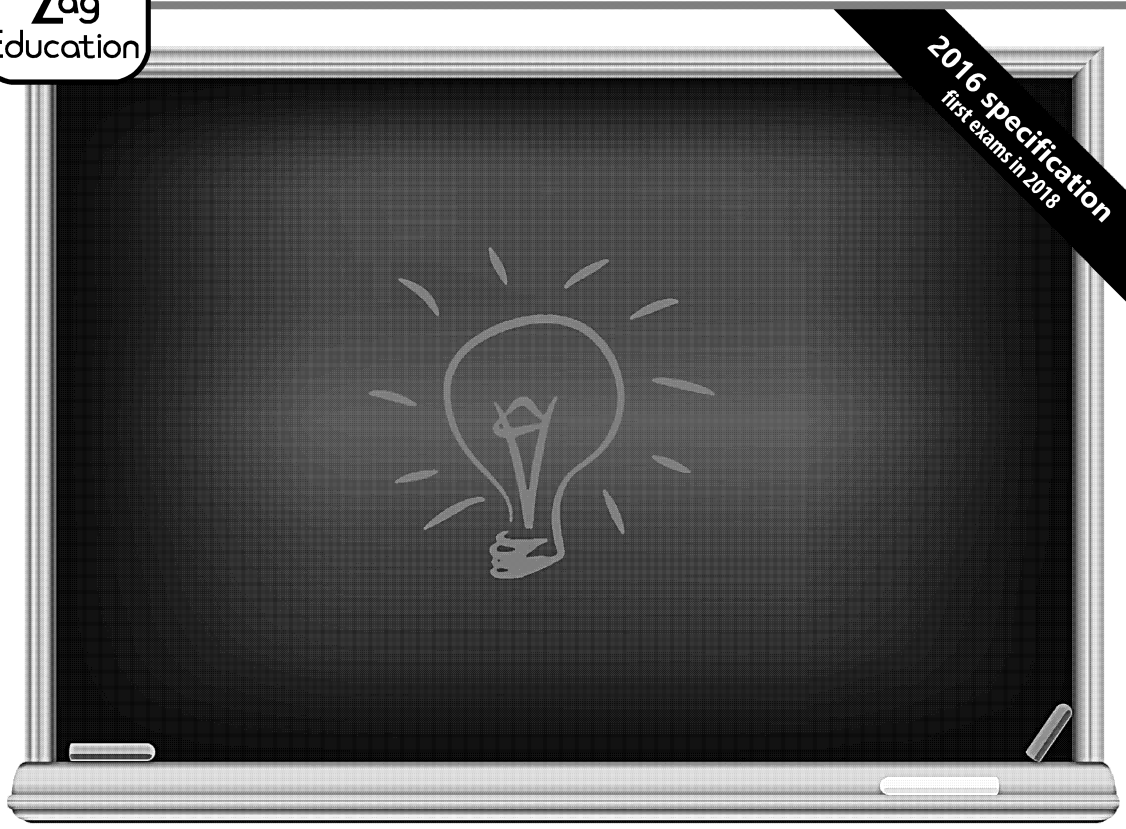
Zig Zag Education

Geography

GCSE



GCSE Geography Emergency Cover Lessons

Volume 4

zigzageducation.co.uk

POD 9540

Contents

Thank You for Choosing ZigZag Education ..... **ii**

Teacher Feedback Opportunity ..... **iii**

Terms and Conditions of Use ..... **iv**

Teacher's Introduction **1**

Lesson Index by Volume/Specification – Physical Geography 2

Lesson Index by Volume/Specification – Human Geography 3

Theme 1: Natural Hazards **4**

Extreme weather in the UK (I) 4

Extreme weather in the UK (II) 9

Mitigation and prediction of earthquakes 13

Mitigation and prediction of volcanic eruptions 17

Theme 2: Climate Change **21**

Mitigation and adaptations for climate change 21

Theme 3: Ecosystems **28**

Tropical rainforests: Sustainable management 28

Theme 4: UK Physical Landscapes **31**

Human activity and management of coasts 31

Human activity and management of rivers (II) 35

Theme 5: Urbanisation **39**

Sustainable living in cities 39

Liuzhou Forest City, China: A case study 43

Theme 6: Development **48**

Development strategies and aid (I) 48

Development strategies and aid (II) 53

Theme 7: The UK **58**

UK & the wider world (I) 58

UK & the wider world (II) 62

Theme 8: Natural Resources **66**

Food (II) 66

Energy (II) 71

Water (II) 75

Teacher's Introduction

As a former Geography teacher and Head of Humanities for many years, I know the value of a ready-to-go resource for GCSE cover lessons! This resource is designed as a 'dip-in', with lessons spread across eight key themes of geography: Hazards, Climate, Ecosystems and UK Landscapes (for the physical elements), and Urbanisation, Development, the UK, and Natural Resources (to cover the human aspects).

A lot of the time, cover lessons unfortunately come down to a revision guide, and the instruction to 'make notes' then answer questions. While revision guides have good diagrammatic information, they don't provide sufficient depth or include any extension, and students know that often no one will find time to mark the work they are doing. With this resource, however, the marking and feedback cycle could be completed within the lesson, while any additional activities can be set for homework.

The resource provides meaningful and stimulating learning during periods of cover, allowing students to apply their knowledge and practise key skills while progressing within the topic area they are studying. For a teacher, being able to decide at the last minute the lesson to be studied – and knowing that their class is on-task during an unplanned absence – is a godsend!

This resource is one part of a set of four volumes which are available in this Emergency Cover Lessons range for GCSE Geography. The full index of lessons for all four volumes is given on the following pages, cross-referencing each lesson to the exam board specifications for which it is suitable. The content within this volume is presented distinctly from that of the others.

Each volume contains lessons in every theme. Broadly, each volume builds upon the foundations and content in previous volumes. With this structure, Volume 1 is perfect for providing cover early on in a topic teaching block, or as consolidation of the basics at a later stage in the topic. Lessons in Volume 4 might be more suitable towards the end of a block of teaching, or to stretch and challenge students in a top set!

The lessons in all volumes have been designed for non-specialist use and independent student study, allowing any cover teacher the opportunity to photocopy the relevant sheets, distribute these to the class, and offer minimal support throughout the lesson. A specialist Geography teacher may, of course, decide to be more hands-on with the delivery of the lesson.

I hope you find this resource, and indeed the full set of volumes, useful in your school!

February 2019

Lesson Index by Volume/Specification – Physical Geography

Lessons	Volume	AQA	Edexcel A	Edexcel B	OCR A
Theme 1: Natural Hazards					
What causes extreme weather? (I)	1	✓	✓	✓	✓
What causes extreme weather? (II)	1	✓	✓	✓	✓
Tropical storms: Formation & Distribution (I)	2	✓	✓	✓	✓
Tropical storms: Formation & Distribution (II)	2	✓	✓	✓	✓
Tropical storms: Impacts & Mitigation (I)	3	✓	✓	✓	✓
Tropical storms: Impacts & Mitigation (II)	3	✓	✓	✓	✓
Extreme weather in the UK (I)	4	✓	✓	✓	✓
Extreme weather in the UK (II)	4	✓	✓	✓	✓
Tectonics: Earth structure and processes (I)	1	✓		✓	
Tectonics: Earth structure and processes (II)	2	✓		✓	
Impacts of earthquakes	3	✓		✓	
Mitigation and prediction of earthquakes	4	✓		✓	
Impacts of volcanoes	3	✓		✓	
Mitigation and prediction of volcanic eruptions	4	✓		✓	
Theme 2: Climate Change					
Natural climate change: Patterns, causes, evidence	1	✓	✓	✓	✓
Human causes of climate change	2	✓	✓	✓	✓
Impacts of climate change	3	✓	✓	✓	✓
Mitigation and adaptations for climate change	4	✓	✓	✓	✓
Theme 3: Ecosystems					
What are ecosystems and biomes? (I)	1	✓	✓	✓	✓
What are ecosystems and biomes? (II)	1	✓	✓	✓	✓
Tropical Rainforest: Structure & characteristics	2	✓	✓	✓	✓
Tropical Rainforests: Deforestation	3	✓	✓	✓	✓
Tropical Rainforests: Sustainable management	4	✓	✓	✓	✓
Theme 4: UK Physical landscapes					
Coastal processes (I)	1	✓	✓	✓	✓
Coastal processes (II)	2	✓	✓	✓	✓
Coastal landforms	3	✓	✓	✓	✓
Human activity and management of coasts	4	✓	✓	✓	✓
River processes	1	✓	✓	✓	✓
River landforms	2	✓	✓	✓	✓
Human activity and management of rivers (I)	3	✓	✓	✓	✓
Human activity and management of rivers (II)	4	✓	✓	✓	✓
Glacial processes and landforms	1	✓	✓		
Human activities in glaciated landscapes	2	✓	✓		

Lesson Index by Volume/Specification – Human Geography

Lessons	Volume	AQA	Edexcel A	Edexcel B	OCR A
Theme 5: Urbanisation					
What is urbanisation?	1	✓	✓	✓	✓
Megacities	2	✓	✓	✓	✓
Lagos: A case study	2	✓	✓	✓	✓
How cities change	3	✓	✓	✓	✓
UK Regeneration: A case study	3	✓	✓	✓	✓
Sustainable living in cities	4	✓	✓	✓	✓
Liuzhou Forest City, China: A case study	4	✓	✓	✓	✓
Theme 6: Development					
What is development?	1	✓	✓	✓	✓
How is development measured?	1	✓	✓	✓	✓
Development theories	2	✓	✓	✓	✓
Uneven development	2	✓	✓	✓	✓
Globalisation and trade (I)	3	✓	✓	✓	✓
Globalisation and trade (II)	3	✓	✓	✓	✓
Development strategies and aid (I)	4	✓	✓	✓	✓
Development strategies and aid (II)	4	✓	✓	✓	✓
Theme 7: The UK					
Physical distinctions of the UK (I)	1	✓	✓	✓	✓
Physical distinctions of the UK (II)	1	✓	✓	✓	✓
Population change & demographics in the UK	2	✓	✓	✓	✓
Migration in the UK	2	✓	✓	✓	✓
Employment change in the UK	3	✓	✓	✓	✓
UK & the wider world (I)	4	✓	✓	✓	✓
UK & the wider world (II)	4	✓	✓	✓	✓
Theme 8: Natural Resources					
What are natural resources? (I)	1	✓	✓	✓	✓
What are natural resources? (II)	2	✓	✓	✓	✓
Food (I)	3	✓			
Food (II)	4	✓			
Energy (I)	3	✓	✓	✓	✓
Energy (II)	4	✓	✓	✓	✓
Water (I)	3	✓	✓		
Water (II)	4	✓	✓		

To order additional volumes call us on 0117 950 3199:

- **Vol 1**: ZZBR/9203 – 15 Lessons
- **Vol 2**: ZZBR/9204 – 15 Lessons
- **Vol 3**: ZZBR/9539 – 16 Lessons
- **Vol 4**: ZZBR/9540 – 17 Lessons

Extreme weather in the UK (I)

	Description
Task 1	Consider the causes of extreme weather by interpreting sources, and
Task 2	Consider whether they have seen a change in the weather

In this lesson you will:

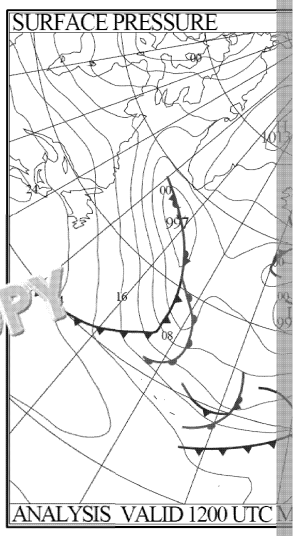
- ✓ interpret weather maps and other sources to identify and explain two weath
- ✓ consider whether you have experienced changes in the weather

Task 1

Below is a selection of sources for two extreme weather events. Look at the sources an

Weather Event 1

There were reports of severe flooding across parts of North Cornwall, with up to three
falling. One particular line of intense storms ran north-eastwards from St Ives up towar



Boscastle is indicated by the star symbol on the pressure map.

Name the type of weather hazard.

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Explain how the meteorological conditions caused the weather hazard.

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Suggest how the local surroundings may have increased the risk.

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Suggest one social and one economic impact of the hazard.

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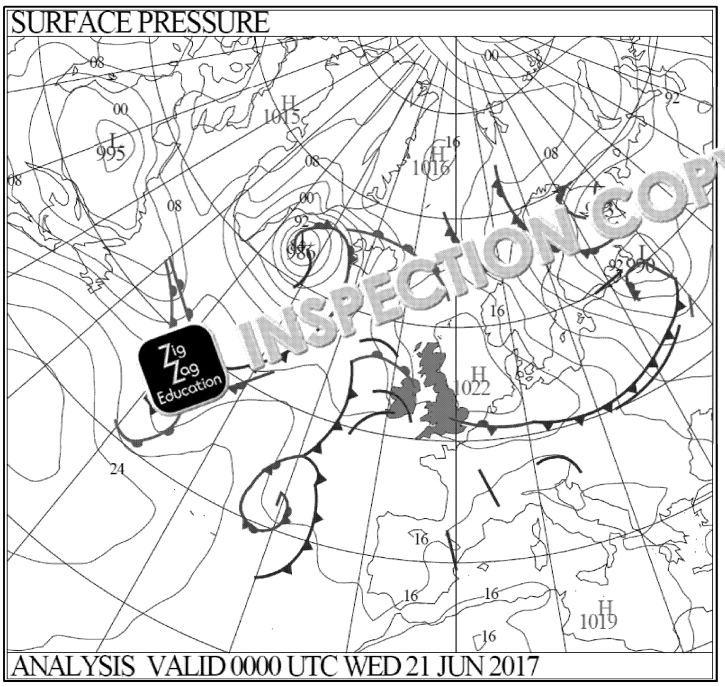
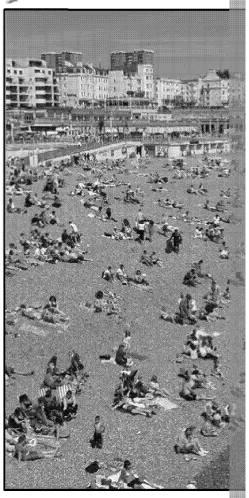
Weather Event 2



**Britons RA
sell out AC
THIS sh**



Elsewhere, across much of England and Wales it was dry, sunny and very hot, wit
average for the time of year.

Weather map Crown copyright

Name the type of weather hazard.

.....

Explain how the meteor... conditions caused the weather hazard.

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Suggest one social and one economic effect of the hazard.

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Task 2

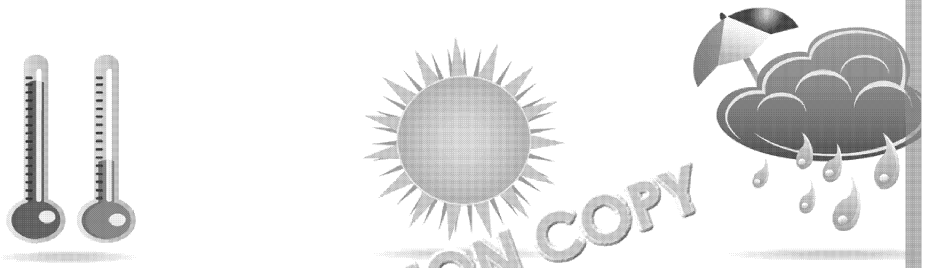
It is difficult to categorise exactly what conditions make up the overall climate of a
average of weather over a long period of time – 30 years or so. However, you pro
the typical climate of the UK, and you could probably describe a typical summer o
noticed different patterns in the weather over your lifetime – or in fact some char
patterns year by year. Scientists predict that climate will change in the future.

Think about the weather events that stand out in your mind – things you've exper
news. What were those events?

Is there anything unusual about the scale of the events that you have considere
or heatwaves more than you used to?

Or are there any trends in the weather that you have noticed – for example, do yo
the winter, or more distinct seasonal variation, or was it less windy?

Complete your answers to these questions as a mind map using the space below.



Extreme weather in the UK (I) Answers

Task 1

Weather event 1

- Flash flood
- Low-pressure weather system (depression): air rose and condenses to form p
  very intense. Occurred during the sum – the ground may have been dry.
- Steep valley sides – rapid run-off as valley funnelled water downwards thro
- Social – flooding of homes and homelessness and damage to possession), etc.; e
  business and tourism, etc.

Weather event 2

- Heatwave
- High-pressure weather system (anticyclone). Allow references to air masses, plu
- Social – discomfort or health implications due to the heat, etc. Allow any su
  economic consequences – increase in the sales of fans as per the newspaper
  related products; decreased productivity in the workplace; travel disruption,

	Description
Task 1	Plan where to build a business, taking flood risk into account

In this lesson you will:

✓ plan where to build a business, taking flood risk into account

Task 1

In this task, you will decide whether it is necessary to relocate your business beca

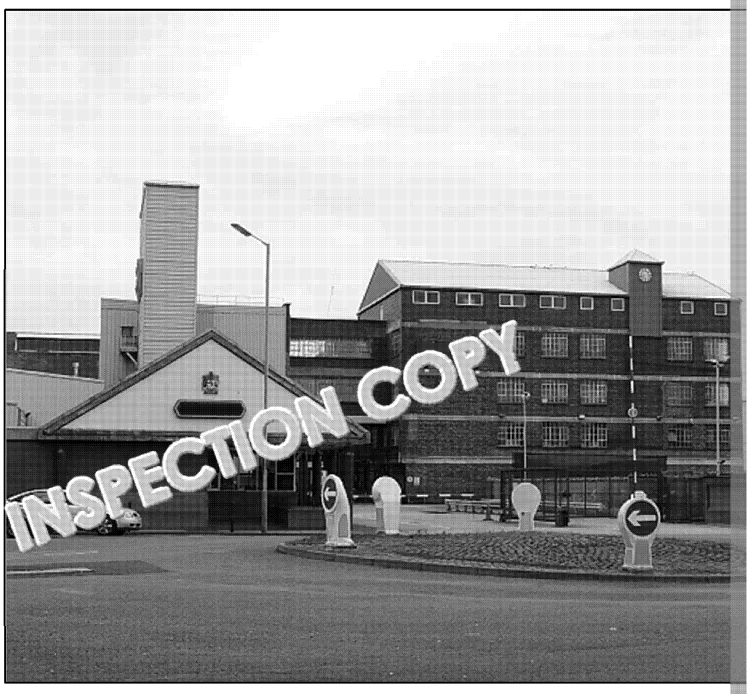
This example is loosely based on the example of a biscuit factory in the town of Ca

https://www.theguardian.com/business/2016/apr/01/carrs-water-biscuits-carlisle

Imagine that you own a biscuit factory in the town of Carlisle.

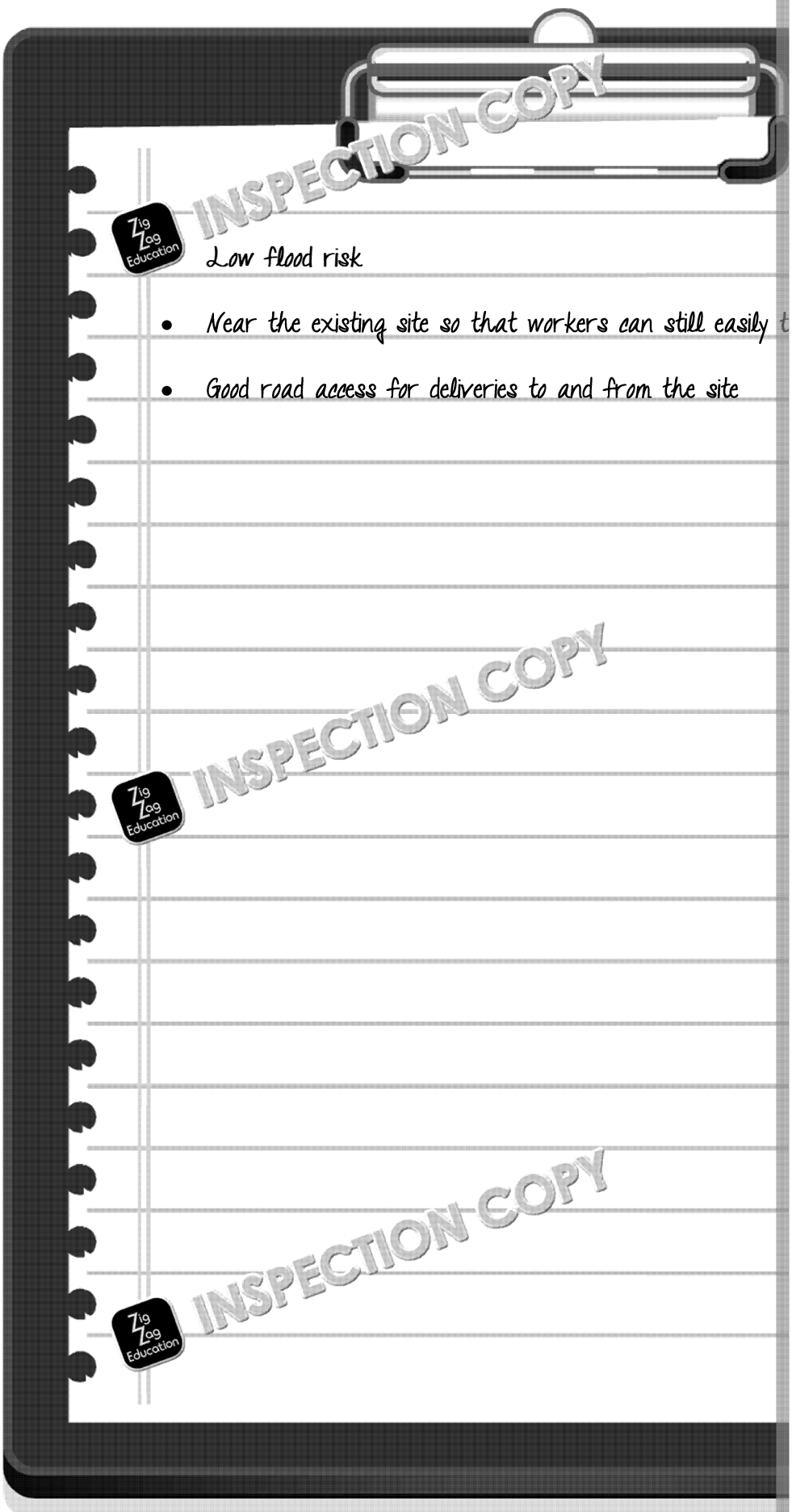
- Your factory has flooded twice in the past decade.
- Your factory has just flooded during a series of winter storms.
- You employ several hundred workers, many of whom live in the town, and ar
- Critical equipment was damaged, and the factory could be shut for several m
- You need to decide whether to choose:
  - Option 1: rebuild the factory at a different site, or
  - Option 2: repair your existing site and spend ca. £a million pounds on d

You look first at Option 1 – relocation



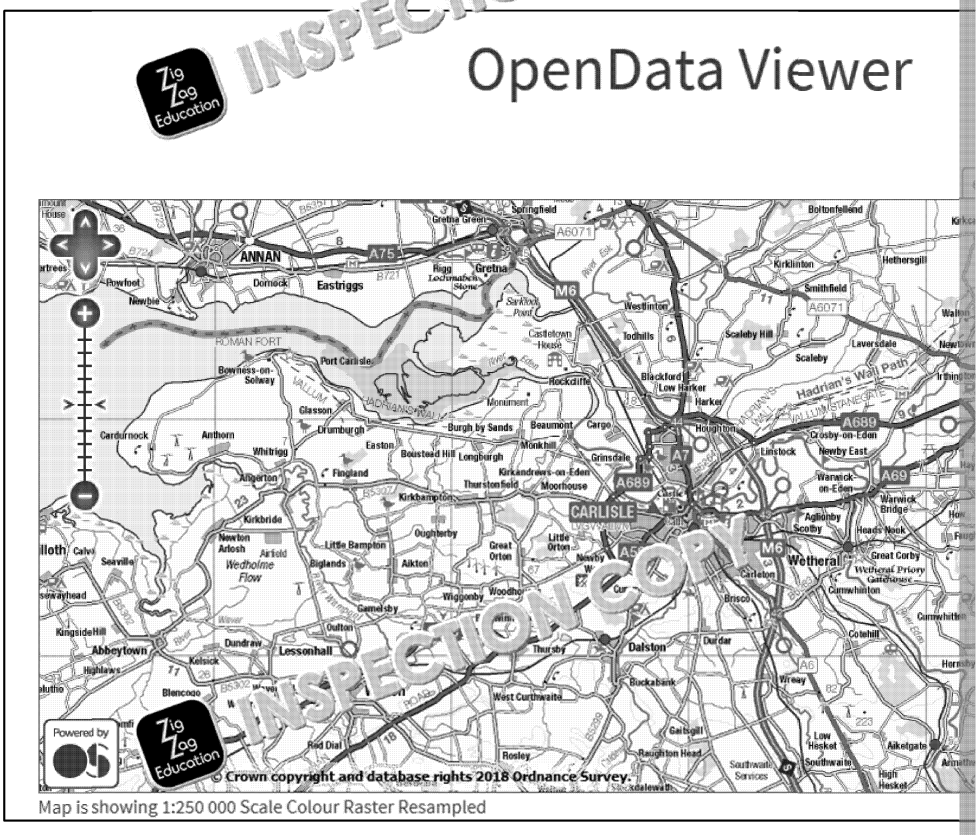
Relocation

Draw up a wish list for your new site. You don't have to fill the entire clipboard! S
part. The first three are given for you:



Now take a look at the maps below. Existing factory:

Your task is to find a suitable site for the new factory. You might want to draw a r
factory if you have set a distance limit. Choose the most suitable site. Spend abo



Now draw up a list of costs and benefits of your new site.

Costs	

Which of your wishes **didn't** your new site achieve? List them here.

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Spend about 15 minutes on this part.

Repair

Now you look at the second option – building new flood defences.

Identify two ways in which you could protect your existing factory.

1. .....

.....

2. .....

.....

Give an advantage and disadvantage of each type of defence. You could discuss f issues associated with each type.

Type of defence	Costs	

Decision time!

Spend about 10 minutes on this part.

Now you need to decide whether you will relocate or stay put! Write your decisio made this c

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Mitigation and prediction of earthqu

	Description
Task 1	Define a series of keywords
Task 2	Plan and consider how a city could be protected from an earthq

In this lesson you will:

- ✓ define keywords
- ✓ plan how to protect a city from an earthquake

Task 1

Define the following words, in relation to earthquakes:

Planning:

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Monitoring:

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Prediction:

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Protection:

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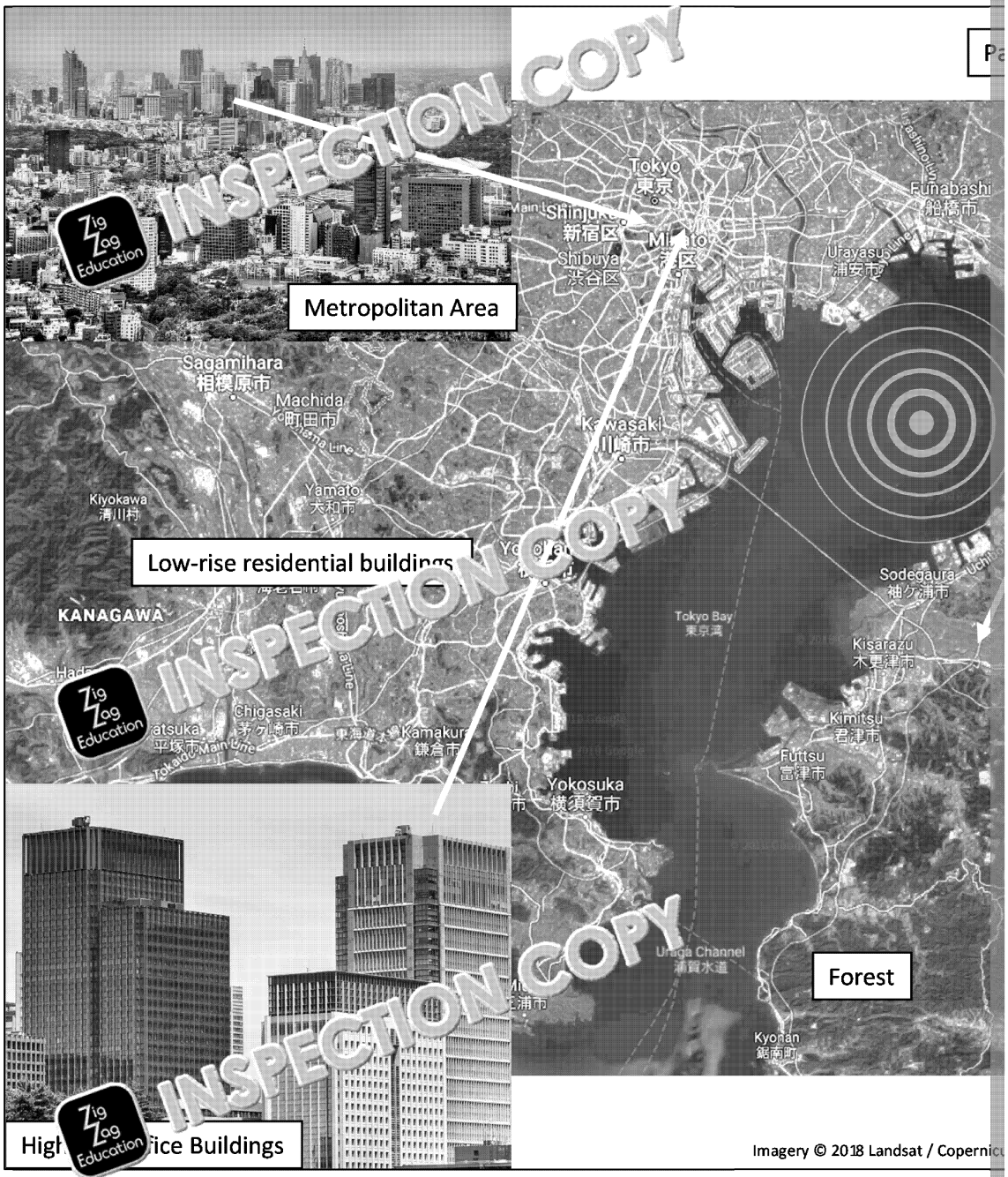
Task 2

In this task you will plan how to protect a city from an earthquake – loosely based on Photos are indicative and may not relate to the actual locations shown on the map.

Aim to spend 15 minutes on each section.

This will be a written task – for example, you could divide two sides of A4 paper in of the four sections on half a side. You will also be expected to draw on the map. tasks, or points to write about.



Part 1: Planning

The city of Tokyo has a large population. The city area (metropolis) has a populati
the wider metro area has a population of over 38 million. Japan sits on a number
boundaries in the Pacific Ring of Fire. Earthquakes are a regular feature of the re
planning and preparation takes place in Japan.

For parts of this task, assume that a fictional earthquake h[illegible]ccurred. The epicen
symbol:

There are a number of primary a[illegible] s[illegible]ary hazards of an earthquake. Draw a
primary effects and thr[illegible]o[illegible]ary effects of an earthquake, assuming the epice

Underneath[illegible]able, suggest how a city such as Tokyo might plan to reduce the
have discuss[illegible]For this task, you may discuss mapping or zoning the city based o
earthquake drills, building new structures, etc.

Finally, write down three ways in which citizens could protect themselves – for ex

Part 2: Monitoring and prediction

There are different ways in which we can monitor and try to predict whether an e
of these methods are scientific and high-tech, while others are low-tech and more

Write down as many ways as you can think of in which we can monitor and predic
where you would place monitoring equipment. Create a simple key for your symb

Give a brief justification of why you would place equipment in the places you did.

Assume that the proposed earthquake occurred (magnitude [illegible]). Suggest how muc

Part 3: Protection

In this part of the task, you[illegible]n what the city could do to protect itself.

Thinking ba[illegible]he[illegible]ggestions you made in Part 1, draw the locations of your in
add your ch[illegible]ymbol(s) to your key. Examples may include an evacuation cent

After you have plotted the symbols on the map, write a few lines to justify your d
which you have not protected? If not, why not?

Imagine that you have the task of either:

- building a new high-rise office block in Tokyo
- retrofitting one of the existing high-rise buildings in the centre of the city

Write a couple of lines explaining how you would do this.

Part 4: In the event of an earthquake

In this part of the task, you will think of the events which nea[illegible] to happen immedi
earthquake.

Moments prior to the earthquake

Assume that a very short w[illegible]e[illegible]od is possible – perhaps only a couple of mi

- Write dow[illegible]hov[illegible]ld alert citizens (using TV/radio, alarms, web, apps, e
- Write a[illegible]arning message for one of the methods you described above.
  - Inc[illegible]e advice.
  - Keep it short and very clear.

Immediately after the earthquake

Write down the steps that should be taken immediately following a major earthqu

Mitigation and prediction of earthquakes answers

Task 1

- **Planning** – producing procedures and routines, and ensuring services are available, f following an earthquake.
- **Monitoring** – keeping an eye out for any changes which could indicate that an earth involve high-tech equipment.
- **Prediction** – the ability to forecast where and when an earthquake will occur.
- **Protection** – keeping residents safe through building design, zoning, ensuring that

Task 2

Part 1: Plan

- Allow a ary effects, including shaking of the ground, and secondary effects, in earthquake epicentre is offshore.
- Allow any suitable suggestions for how the city might prepare, such as building code
- In the home, residents can prepare emergency kits / grab bags and ensure that obje

Part 2: Monitoring and prediction

- Allow any suitable methods for predicting tremors, from high-tech methods such as low-tech indicators such as observing animal behaviour.
- Allow any suitable recommendations on the map, providing that a suitable key is giv available.
- Possibly very limited warning – if a tsunami is generated, the close proximity to the s warning time.

Part 3: Protection

- Allow any suitable and justified infrastructure, such as frequ shelters in densely p front of key infrastructure, etc. Smaller settlement s of farmland and forest
- Allow any suitable suggestions for building de / retrofitting such as cross-bracing counterweights, etc.

Part 4: In the event of an

Moments pri e earthquake

Allow any su rm – app alert, radio, outdoor siren. Advice may be to duck and take loose objects, etc.

Immediately after the earthquake

Allow any suitable suggestions – such as clear roads of rubble, search and rescue, deploy e the long-term mitigation such as rebuilding.

Mitigation and prediction of volcanic er

	Description
Task 1	Define a series of keywords
Task 2	Plan and consider how a city could be protected from a volcanic

In this lesson you will:

- ✓ define keywords
- ✓ plan how to protect a city from a volcanic eruption

Task 1

Define the following words, in relation to volcanic eruptions:

Planning:

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Monitoring:

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Prediction:

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Protection:

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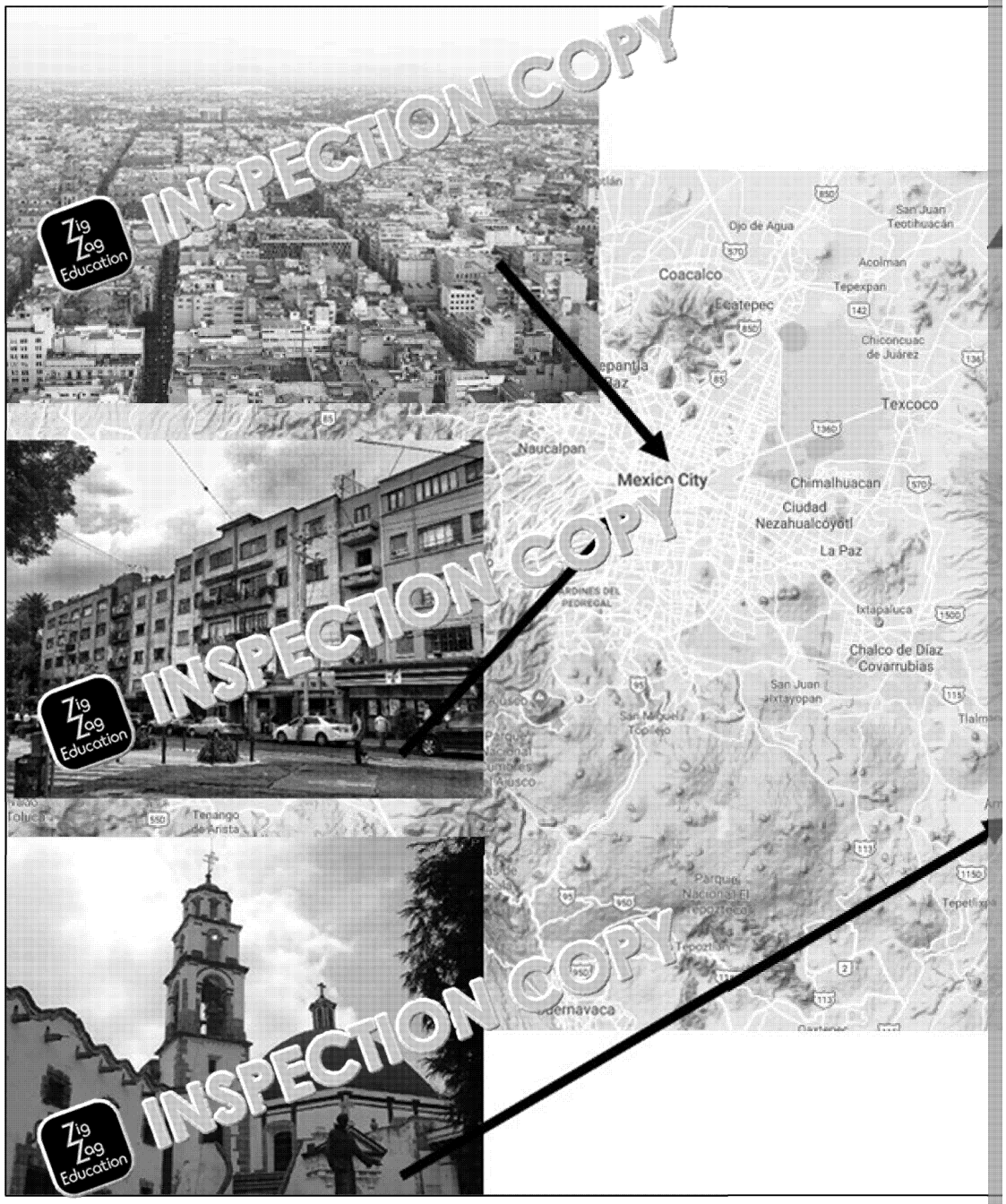
Task 2

In this task you will plan how to protect a city from a volcanic eruption – loosely b

Aim to spend 10–15 minutes on each section.

This will be a pen task – for example, you could divide two sides of A4 paper in of the four sections on half a side. You will also be expected to draw on the map. tasks, or points to write about.



Part 1: Planning

Mexico City has a large population. At the last census (2010), the city had a popul
the wider urban area has a population of over 20 million. The city is affected by e
several volcanoes, of which Popocatépetl is active. Popocatépetl is located a fair
approximately 40 miles away.

For parts of this task, assume that a major eruption of Popocatépetl has occurred
Index (VEI) of 6). The volcano is shown with the following symbol: 

There are a number of primary and secondary hazards of a volcanic eruption. Dra
primary effects and in the table, secondary effects of an eruption.

Underneath the table, suggest how a city such as Mexico City might plan to redu
you have discussed.

For this task, you may discuss mapping or zoning the city based on risk, public aw

Finally, write down three ways in which citizens could protect themselves – for ex

Part 2: Monitoring and prediction

There are different ways in which we can monitor and try to predict whether an e
these methods are scientific and high-tech.

Write down as many ways as you can think of in which we can monitor and predic

Plot on the map where you would place monitoring equipment. Create a simple k

Give a brief justification of why you would put the equipment in the places you did.

Assume that the proposed eruption occurred (VEI 6). Suggest how much warning

Part 3: Protection

In this part of the task, you will plan what the city could do to protect itself.

Thinking back to the suggestions you made in Part 1, draw the locations of your in
add your chosen symbol(s) to your key. Examples may include an evacuation cent

After you have plotted the symbols on the map, write a few lines to justify your de
which you have not protected? If not, why not?

Part 4: In the event of an eruption

In this part of the task, you will think of the events which need to happen immediat

Days and weeks prior to the eruption

Assume that a lengthy warning period is possible – perhaps a couple of weeks.

- Write down how you could remind citizens about how to act during an erupt
  web, apps, etc.).
- The volcano is likely to erupt in the next day or two. Residents in the immedi
  evacuate. Write a brief evacuation message for one of the methods you de
  - Include advice.
  - Keep it short and very clear.

Immediately after the eruption

Write down the steps that should be taken immediately following a major eruptio

Mitigation and prediction of volcanic eruptions answers

Task 1

- **Planning** – producing procedures and routines, and ensuring services are available, fo volcano shows signs of erupting, and during the eruption.
- **Monitoring** – keeping an eye out for any changes which could i dicate that the volcar involve high-tech equipment.
- **Prediction** – the ability to forecast when the v lca io v rupt.
- **Protection** – keeping residents safe - th ou ning, ensuring that shelters are avail

Task 2

Part 1: Plann

- Allow any primary effects (including volcanic ejecta, gases and pyroclastic flows) and and consequences relating to ash fall).
- Allow any suitable suggestions for how the city might prepare, such as building lahar and drills and practices. Also give credit for seismic activity in the region.
- In the home, residents can prepare emergency kits and first aid, and be familiar with as staying indoors and avoiding ash.

Part 2: Monitoring and prediction

- Allow any suitable methods for predicting eruptions, such as seismometers to detect and equipment to monitor the shape of the volcano, gas emissions and stream temp
- Allow any suitable recommendations on the map, providing that a suitable key is give available.
- Some warning may be possible as there will probably be signs that an eruption is imr e.g. earth tremors and emissions from the volcano.

Part 3: Protection

Allow any suitable and justified infrastru , s s frequent shelters in densely popula slopes adjacent to the volcano, el ma settlements or areas of farmland and forest n

Part 4: In th o uption

Days and we r to the eruption

- Allow any suitable form – app alert, radio, outdoor siren. Advice may be to evacuate
- An example of an activity report can be found here: **http://www.cenapred.unam.mx:8080/reportesVolcanGobMX/Procesos**

Immediately after the eruption

Allow any suitable suggestions – such as clear roads of ash, search and rescue, deploy em the long-term mitigation such as rebuilding.

Mitigation and adaptations for climate c

Learning objective: to know how the impacts of climate change can be mitigated

FBS

Brightening lives, bringing smiles

Dear Voter,

Please help us decide how we should award our prize of £100 millio
change mitigation or adaptation technologies. This is your opport
lives of people in the UK or around the world.

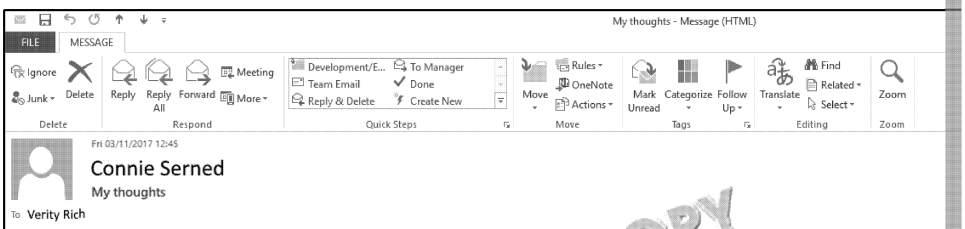
Please say which of our projects you will be supporting and the rea
(you could refer to any information you have already learnt about
of climate change as well as quoting the e
to help you formulate your ideas.

Before we announced our four finalists, I took the liberty of asking
leading
chan
enclos

I look forward to receiving your vote.

Yours sincerely,

Verity Rich
Chair of the Foundation for Benevolent Spending



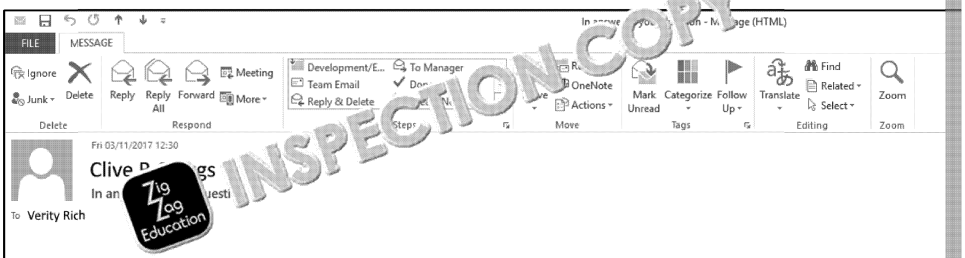
Dear Ms Rich

I was really impressed to hear about this nice opportunity. It's really great to hear about orga involved in the debate about how to bring about change but I wanted to stress the importan getting the world to take the issue of climate change seriously. We have had numerous agreem Kyoto protocol in 2005, the Copenhagen Accord in 2009, the Paris Agreement in 2015. All too commitments from the world's nations to reducing emissions and funding support for poorer adapt to the threats of climate change.

Don't give them an excuse to leave the work up to other countries or to deny their responsibil organisations like your own have the opportunity to support those campaigning for governme economies and drive forward policies that will bring about a reduction in greenhouse gas emis burning fossil fuels. But remember it's not just carbon dioxide that's the problem!

Yours sincerely
Connie Serned

Director of Campaigns
Change the climate of climate change



Dear Verity

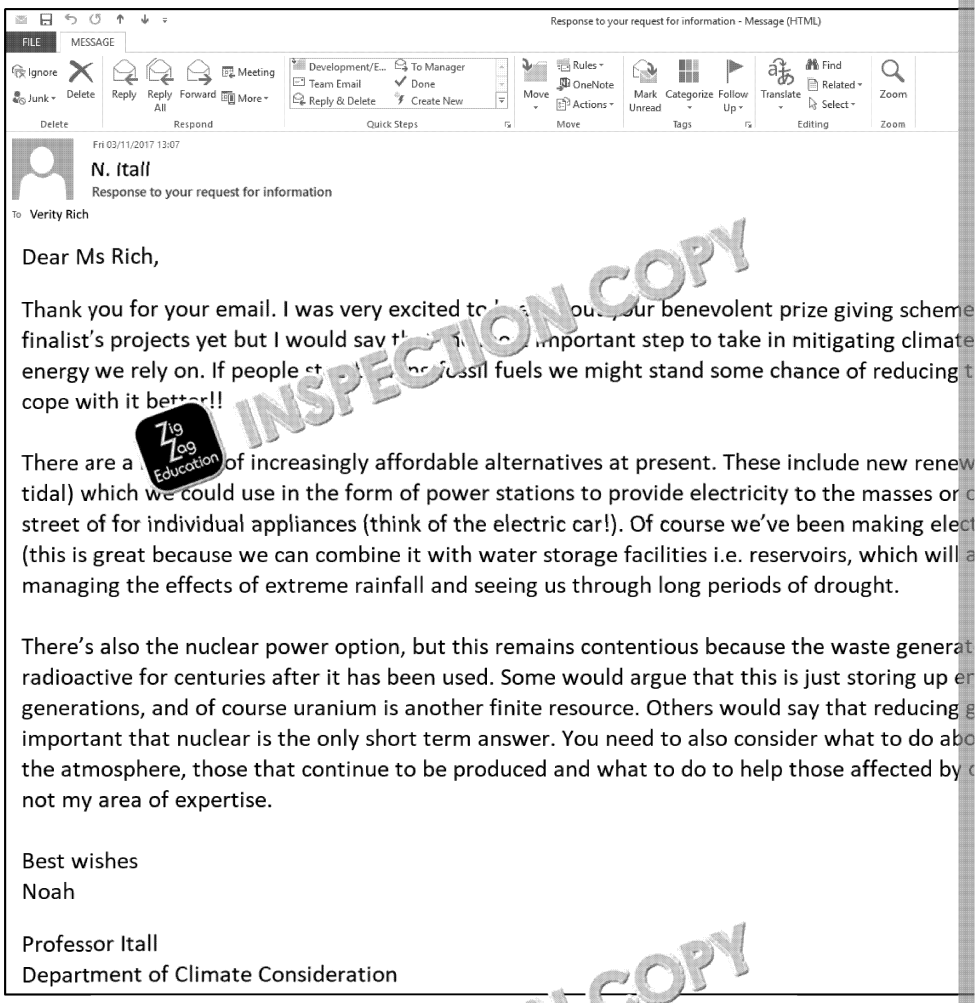
I'm really pleased to see your award got off the ground and that you have 4 great finalists. My which one to give the money to would be to think about the people who are going to be affec business and governments choose to do about reducing greenhouse gas emissions and mitigat changes that need to happen to the way we use water, farm and cope with the rising sea leve even as a result of natural climate change.

Giving people the means to adapt to the changing climate will allow them to continue to feed from extreme weather events and drought. A lot of this comes down to good old education. G important as giving them the resources to bring about change. While the nations of the world do the most to reduce their greenhouse gas emissions and how much they can afford to give t prepare for the impacts of climate change, real people could be helping themselves. We can't ideas to trickle down from the top. It demands a bottom-up approach and that means empow about changes that will make a difference to their futures.

I hope that's helpful,

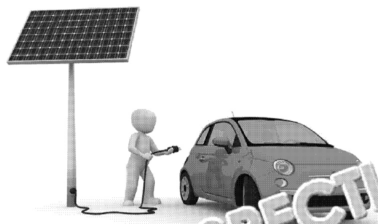
Clive

Dr Clive. R.
Head of Community Enhancement Unit
Help the World – the charity that promotes a community led approach



The FBS finalists

Project 1. Alternative energy

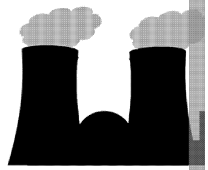


Solar Star, [illegible] developed the 'green car', [illegible]ated a battery capable of storing enough energy to drive a family car 700 miles before recharge.

This is far beyond what current electric cars can manage. The project will develop the battery for use in lorries. Powering HGVs by electricity would revolutionise the transit of goods by road in the UK, helping reduce greenhouse gas emissions.

This project would also help make electric cars more affordable to the many, encouraging people to make the change from older petrol and diesel vehicles to a cleaner and greener alternative.

Project 2. Carb



This project recognises the realit of the energy production we rely gas or coal-fired power stations, a switch them all off and continue l addition, burning coal is still muc energy sources, so how can we d the benefits of burning their rese

The answer is to prevent that pro damaging greenhouse gases that produce: capturing the CO_2 as it is much that it becomes a liquid and underground from which fossil fu

We have the technology to do th would provide the necessary tec at power stations in China and In 70% of their electricity from coal.

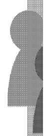
Project 3. Planting trees

This project proposes planting a new deciduous forest across the British Isles over the next 100 years. The forest would eventually see 30% of current agricultural land turned to woodland (that's 21% of the entire land mass of the UK).

Trees absorb carbon dioxide when they photosynthesise. The carbon gets stored in their leaves and branches, and they release H_2O into the atmosphere. Water vapour in the Earth's atmosphere helps keep the Earth cool by blocking out light from the Sun.

Farmers would be paid to be foresters, changing their source of income from subsidised farming to subsidised management of the forest for biodiversity and recreational use by the public. New electrically powered public transport links between major towns and cities and the heart of the forest would enable people from many different backgrounds to access the forest, without creating more greenhouse gas emissions.

Project 4. chang



This project propo and community-le at risk of the effect pay for workers to identify the chang the way they farm area, and most im funds to do this.

The project will op developing and de Examples of work a communities camp defences in areas t rise and building n growing drought-r where the climate

Find out more:

- the real future of electric cars **https://www.theguardian.com/environment/2017/jul/26/electric-cars-everything**
- the impact of planting trees on climate change **https://www.theguardian.com/environment/2012/nov/29/planting-trees-climate-**
- schemes promoting adaptation **http://www.adaptation-undp.org/funding-source/bilateral-finance**

FBS project evaluation form

Name:

Project [illegible]tern[illegible]ve energy	
Advantages of this p[illegible]t	Disadvantages of this project

Advanta	

Project 3. Planting trees	
Adva[illegible] this project	Disadvantages of this project

Advanta	

FBS ballot paper

Name:

My vote is for .....

(name

Please outline how the project of your choice will help mitigate the impacts of clim
adapt to the changes it will bring.

.....

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Describe the advantages of this project over other proposals for the use of the £100

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Explain the disadvantages you foresee in investing in this project and any ways tha

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Mitigation and adaptations for climate change answers

This is a decision-making exercise. Students may choose any of the projects outlined but s argument, outlining both the pros and cons of their chosen project and the reasons they h Award marks based on the level of information given in their ballot paper.

Level 1	1–3 marks	Basic outline of ideas without reference to advantages and
Level 2	4–6 marks	Outline of the relevant inform[illegible] based on information
Level 3	7–9 marks	Detailed suggestions [illegible] vidence from the resourc student rea[illegible]
Level 4	[illegible]	Det[illegible]tions, well reasoned, with additional mat[illegible] dge and understanding. Students should have rec suggested problems can solve the problem and that what approaches and, most importantly, both the commitmen and action by individuals.

Potential advantages and disadvantages that could be considered are outlined below.

Project 1. Alternative energy	
Advantages of this project	Disadvantages of this project
• Tackle problem of road transport emissions • Make electric cars affordable to more people • Tackles problems of N_2O emissions as well as CO_2	• Doesn't help those affected by impacts of climate change • Only tackles a proportion of greenhouse gas emissions – emissions also come from industrial processes, agriculture and energy production

Project	
Advantages of this proj	
• Reduces the amoun carbon dioxide reac the atmosphere • Technology exists – need to pay for it to put in place • Allows poorer natio to benefit from chea energy production f fossil fuel reserves • Gives technology to two of the world's fastest developing countries	

Project 3. Planting trees	
Advantages of this project	Disadvantages of this project
• Helps increase biodiversity and opportunities for leisure activities • Can have a positive effect of cooling the atmosphere by the creation of water vapour • Trees also help to slow the movement of water off the land in times of extreme rainfall, reducing flood risk (floods likely to occur as a result of climate change) • Serves a [illegible] ta[illegible] reminde[illegible] ssue of climate change – could help raise awareness of effectiveness of individual actions in reducing greenhouse gas emissions	• Long-term solution – won't be any use if greenhouse emissions continue or increase • Can't guarantee that future generations won't need the land for food production (considering the impacts on agriculture that will occur as a result of clima[illegible] c[illegible]an[illegible] in th[illegible]) [illegible]res[illegible]ed water and we may experience water shortages in parts of the UK as a result of climate change

Project 4. Adap	
Advantages of this pro	
• Could save lives and h people in danger of lo their homes and livelih from the impacts of climate change • Raises awareness of impacts of continuin create greenhouse g emissions – might influence governme in their choice of en sources and policies development	

	Description
Task 1	Contrast CITES and REDD
Task 2	Produce a poster on different forms of rainforest protection
Task 3	Highlight the advantages of different forms of conservation initi their success

In this lesson you will:

- ✓ contra re ways in which international agreements can help protect t
- ✓ design er to explain how a rainforest can be used sustainably
- ✓ identify strengths and weaknesses of different forms of ecosystem protectio

Task 1

There are various ways in which rainforests can be protected through internationa stop deforestation. In this task you will compare and contrast CITES and REDD.

The full name for CITES is 'Convention on International Trade in Endangered Speci REDD stands for 'Reducing Emissions from Deforestation and Forest Degradation'.

Below is a series of statements about the two agreements. Write 'C' for CITES, corresponding boxes. Some might have both 'C' and 'R'.

The older of the two – it has been around since the 1970s (not just the 2000s), so established and has much larger global coverage.
May only cover a few species – if they are not on the list, then they are not prote only the species are protected, not the habitat.
Might be difficult to act e on the ground.
Can help g e money for a country…
… and can country develop.
We don't know whether trees are cut down for domestic use.
Can provide protection in the developing world.
Helps indigenous people.

Task 2

In this task you will produce a poster or a printed advert explaining how rainfores means that the forests are used, but not degraded through intensive exploitation. to help you, such as your own knowledge and what you have learnt in class, and if or the Internet, you can use those too.

Aim to spend around 30 minutes on this task. Aim to fill a side of A4 paper. Yo and include small sketches. But you will need to cts, so don't get too ca

First, you need to choose who you want to direct the poster to. For example, you

- indigenous peoples livin rainforest
- end consumers of rainforest products
- conse sts

Then, you will need to decide on the themes that you could use. For example, yo

- selective logging and replanting
- education
- debt reduction
- any other form of sustainable management

Task 3

In this task, you will look at the benefits of ecotourism, community programmes a

Read the following paragraphs and highlight or underline the advantages of eac

Extract 1 (Sumatra):
Ecotourism is a form of niche tourism where loc[illegible] provide small-scal
accommodation and tours to visitors, wi[illegible] reducing tourists' enviro
tourists to experience village lif[illegible] are sometimes welcomed to stay i
with everyday activities. [illegible] employment is also gained, such as jobs o
Ecotourism is [illegible] alternative livelihood – a substitute for illegal or envi
activities – encouraged by the government. Additionally, ecotourism i
conservation activities.

Extract 2 (Sumatra):
Thirty Hills is a scheme set up in August 2015 with the Orangutan Project and
Its aim is to protect 100,000 acres of forest that would otherwise be defores
safeguarding biodiversity and saving carbon from being released. The area
peoples (with assistance from WWF and provision of alternative livelihoods
will be restored. Protection will be provided by use of drones to map areas
and an 'eyes on forest' unit will be set up, using satellites to monitor for crime
is to work with Michelin, a large rubber-producing company, to reduce the d
plantations on surrounding land, and for indigenous peoples to sell rubber to
produced in the Thirty Hills area.

Extract 3 (Madagascar):
Makira National Park is one of the last remaining large areas of humid fores
highly biodiverse, containing around [illegible] all Madagascar's endemic speci

Protection of the 3,85[illegible] National Park was established in 2005 by orga
Departmen[illegible] th[illegible] Wildlife Conservation Society. The park was given per
2012 when [illegible] designated an IUCN Category 2 National Park, the middl
The Makira National Park was set up to form part of REDD (later being upg

The aim is for half of the money generated by the REDD+ scheme to be distr
Proceeds also provide better and increased levels of local management and
80 communities which live in Makira (with a combined population of 50,000)
managers and provide alternative employment services to logging. The sche
development such as hydro-agricultural dams. Similarly, the aim of ecotouris
fees directly to the indigenous population.

Now, for each of the successes that you have identified, suggest one barrier that
being successful. Either draw arrows on the text box above and annotate the text
on a separate piece of paper.

Tropical rainforests: Sustainable management answers

Task 1

The older of the two – it has been around since the 1970s (no[illegible]s the 2000s), so it is we and has much larger global coverage.
May only cover a few species – if they ar[illegible]e list, then they are not protected – a species are protected, not the ha[illegible]at.
Might be difficult to a[illegible]s[illegible]fo[illegible]e on the ground.
Can help ge[illegible]a l[illegible]of money for a country…
… and can he[illegible]country develop.
We don't know whether trees are cut down for domestic use.
Can provide protection in the developing world.
Helps indigenous people.

Task 3

Students may focus on the level of development within the countries and assess the level the protected status. In terms of ecotourism, barriers may be promotion and advertising conservation in the region may become reliant on continued tourism.

Cost of protection may be an issue in some cases, as may imported technology and money will be there forever, or that companies will continue to work in the region!

Governments change – sometimes new governments have different environmental stance information about REDD from Task 1; for example issues with enforcement and its relativ questions surrounding the sustainability of some of the schemes – dams still flood forests

	Description
Task 1	Types of hard engineering and soft engineering
Task 2	Viewpoints of different 'players'
Task 3	Costs and benefits of coastal engineering

In this lesson you will:
- ✓ sort types of engineering into 'hard' and 'soft'
- ✓ suggest how different players may feel about coastal engineering
- ✓ consider the advantages and disadvantages of coastal engineering options (lo

Task 1

There are lots of types of coastal engineering. They can be divided into 'hard' and forms of engineering.

Sea walls

Beach nourishment or reprofiling

Groynes

Gabions

Dune regeneration

Rip-rap (rock armour)

Revetments

Slope stabilisation

Management

Now answer the following questions:

1. What is the purpose of coastal engineering (there are two!)?

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2. What do hard engineering and soft engineering have in common?

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3. Which form of engineering is more sustainable?

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4. Where might a 'hold the line' approach to coastal management be implemen

.....

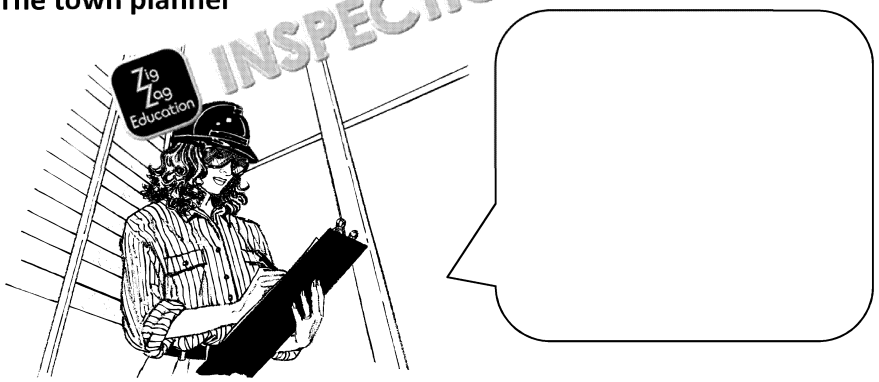
.....

Task 2

Lots of people live, work and have an interest in coastal areas. You might call such
'stakeholders'. Each stakeholder will have a different view of the environment an
should be protected. Some may favour hard engineering, while others may favou
may want their property protected, while others might worry about the environm

For each of the following characters, give a sample [illegible] for their views on coas

The town planner



The homeowners

The clifftop farmers

The coast

Task 3

The image below shows a small settlement on the edge of a cliff.

You are a coastal planner. Your task is to decide how this stretch of the coast sho
to decide whether these houses should be protected (and how). Should nature b
should there be a middle ground?

Some background on the settlement:

- The settlement was once a small fishing village. Houses were originally built a
  later damaged by storms and several were abandoned.
- Development then moved to the top of the hill.
- The surrounding land is farmland, grazed by cows and used for growing crops.
- There are currently about 20 residents at risk of losing their houses from coas
- One of the houses is let as a holiday home.
- Residents are seeking hard engineering works to protect their houses, such as
- The council is opposed to this idea, citing the high costs of doing so when so f

Write a brief report which considers the following point:

1. The attitudes of the different players in this situation
2. The suitable forms of engineering – hard and soft – and considering manage
   line, managed retreat
3. A cost–benefit [illegible] of the best two forms of engineering in this situation
   table to you
4. A discussion of how the proposals might fit into the wider landscape – for exam
5. Your final decision

Human activity and management of coasts answers

Task 1

Soft forms are: beach nourishment or reprofiling, dune regeneration, slope stabilisation, a

1. To reduce the rate of coastal erosion (retreat of the land) and to reduce coastal floo

2. Hard engineering – building concrete, stone or wooden structures. Soft engineering, management.

3. Soft engineering – works with natural processes and can create new habitat.

4. In conju with large settlements such as towns and cities, or important industri

	Description
Task 1	Plan a fieldwork investigation

In this lesson you will:

- ✓ plan a fictional fieldwork enq

Task 1

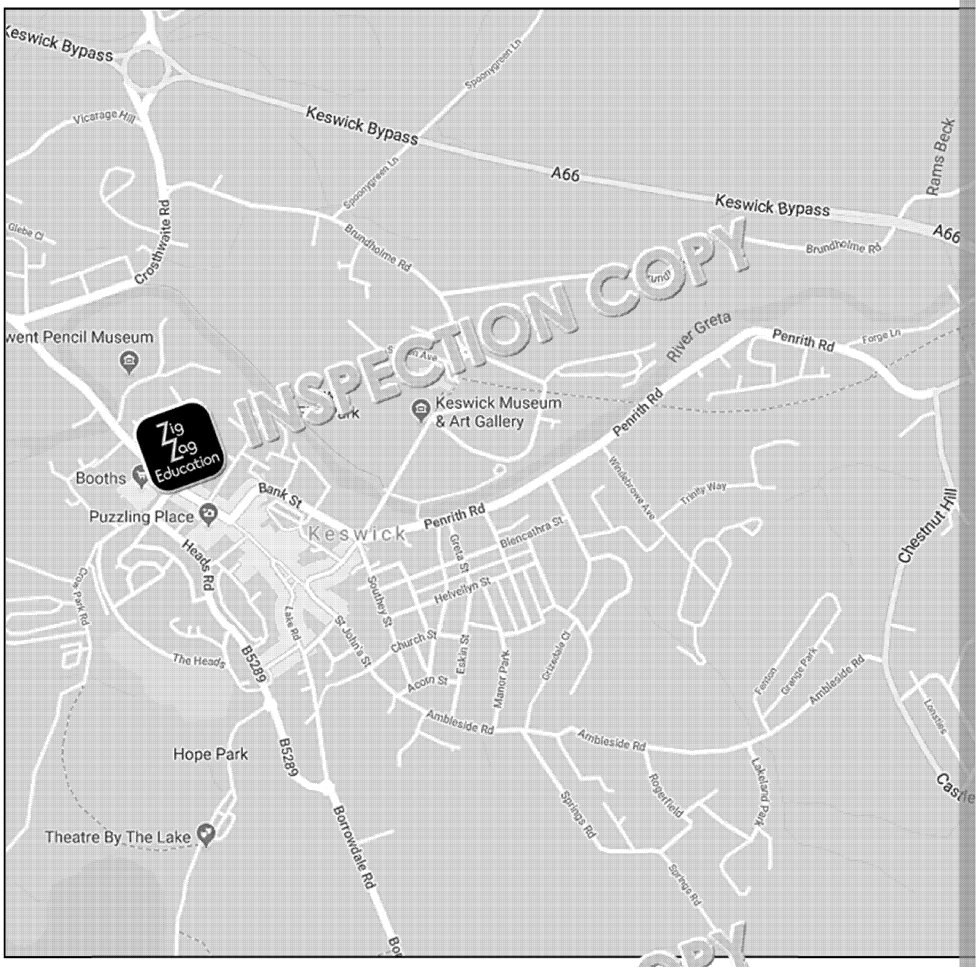
In this task, y re going to plan a fieldwork enquiry. This exercise explores the planning and preparation stages of fieldwork, and, therefore, you will not visit the town, unless your teacher coincidentally chooses Keswick as your fieldwork location. Here, we will focus on the first **two** stages of fieldwork.

Imagine that your teacher has chosen the location of your fieldwork investigation. You will be undertaking work in Keswick – a town in the northern Lake District, wi a population of just under 5,000. The River Greta flows to the north of the town. The river's catchment is mainly rural.

The town has a history of flooding – for example, recently floods have occurred in 2005, 2009 and 2015. In 2015, 515 properties were flooded (including houses and businesses). River levels were high because of high and prolonged rainfall resulting from Storm Desmond, and the ground was already saturat m antecedent event

A number of flood defences 2011–2012 in response to th embankments, flood gates a wall (shown in the photogra the impressive-looking flood December 2015 was too hig result, further defences have

A map of Keswick is provide



Map data © Google 2018

Use the data provided on the previous page and your knowledge to help plan your investigatio

One of the first stages of fieldwork is to select an area of study. In this case, you w town of Keswick. You have chosen that your field of study will be based on floodi

You will need to choose your research question(s) or hypothesis. In choosing the human and physical issues. If you are stuck for ideas, you could focus on resident defences, or assess whether the existing flood defences have made flooding wors

My research question or hypothesis is…

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Next you will need to work out what data you are going to collect. Data is divided collect yourself) and secondary data (which someone else has collected).

Jot down some ideas for the primary data that you could collect to aid your rese you will be able to present this data later in your enquiry!

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Don't forget secondary data! You might be able to find data online, in a library (th
might be able to access local newspaper archives from the days following the floo
and maps are also secondary sources.

Give two potential sources of <u>secondary</u> data.

1. .....

   .....

2. .....

   .....

There are c ly ks associated with collecting data in the field. For example,
Hazards cou ude natural factors, such as hazardous weather conditions and
sunburn!), terrain, hazardous plants and animals, etc. and also human factors such
criminal behavour.

**Choose one of your <u>primary</u> data collection ideas. Come up with one risk, and s
reduce that risk.**

Risk:

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Solution:

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**You will need to use equipment as part o fieldwork. List the equipment th
your fieldwork, based on the da collection technique that you described abov**

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Outline the method that you will take, using your listed equipment.

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And finally, you will need to look at sampling. Sampling is used because you will n
every door in the town and ask residents to fill in a questionnaire! You will have t
of doors in the time you have available.

Outline the method of sampling that you could use.

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Once these stages are co[illegible] have justified your data collection, and you h
teacher, yo[illegible] t[illegible] out into the field and 'do' your fieldwork. Good luck w

Sustainable living in cities

	Description
Task 1	Understanding sustainable urban features
Task 2	Greenfield verses brownfield development

In this lesson you will:

- ✓ discover the importance of sustainable urbanisation
- ✓ learn about greenfield and brownfield development

Task 1

1. Tick the best definition of 'sustainability'.

Definition
Making sure that the environment is cared for and looked after by purposely any new cities or towns on open spaces or green fields.
Creating the most profit possible from transnational corporations so that the used in environmental conservation projects.
Providing for this generation's needs without compromising the needs of future including all aspects of social, economic, political and environmental factors.
Ensuring that people have the things they require regardless of the impact to the natural environment.

2. Why do you think sustainability is important to urbanisation? Write your answer below. If your teacher or supervisor allows you to, you may wish to discuss your answer with the person next to you.

3. Complete the flow chart to show an example of an economic, a social and an
areas face, as well as offering a sustainable solution for each issue.

Issue:

Social

Issue:

Environmental

Issue:

Some cities have historical buildings, spaces or other features that have shaped t
important part of the city's culture. This is often referred to as cultural sustainabi
Bath in the UK has strong links to Ancient Rome with its public bath house and sp
its Bath stone architecture. The City Council ensures new buildings are constructe
architecture, requiring the buildings to be made from Bath stone or similar-lookin

4. Why do you think it is important for a city to retain its history?

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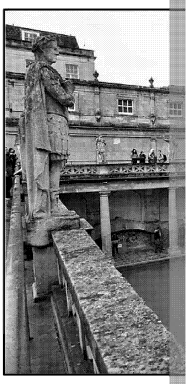
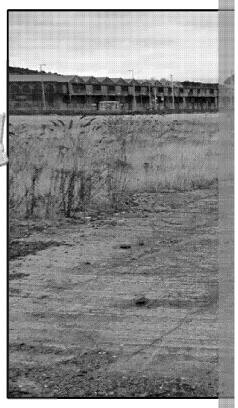


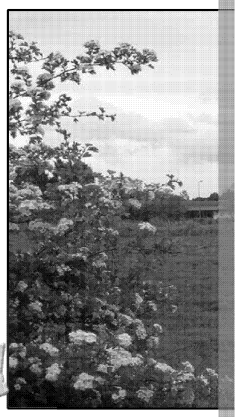
The UK city of
Roman bath

Task 2

When developers make plans to expand or regenerate a city, there are normally two options for building sites: greenfield and brownfield. Greenfield sites are exactly that – green sites. Greenfield sites have not been built on previously and are usually areas in the green belt, just outside the rural-urban fringe. Developing on greenfield sites can lead to urban sprawl, which is not an environmentally sustainable approach to development. Brownfield sites are areas which have been built on before and are usually derelict, degraded or abandoned completely. Brownfield sites are already built on so no more green space is taken away from the city boundaries if they are used as development sites. However, brownfield sites tend to be contaminated through land pollution and need an extensive amount of work before they are made suitable for redevelopment. This makes brownfield sites more expensive than greenfield sites for urban development.



A brown



A green

1. Complete the speech bubbles below to show how people's opinions differ on the suitability of greenfield and brownfield sites for sustainable urban development.

I think greenfield developm… …ho… economically sustain… …ecause…

I think brownfield… environmentally s…

I think there are social benefits to greenfield development, such as…

I think there are soc… brownfield develop…

Sustainable living in cities answers

Task 1

1. Providing for this generation's needs without compromising the needs of future gen social, economic, political and environmental factors.

2. Answers include but are not limited to: to reduce economic inequalities w environmentally friendly, to maintain a sta ecosystem and microclimate within th as contributing to climate change.

3. Answers include but are not limited to:
   - E – issue: economic inequality; solution: minimum living wage
   - So issue: social segregation; solution: encourage diversity, especially in cit places more accessible for a range of people from multiple economic and cultu
   - Environmental – issue: congestion; solution: traffic-free zones, promote cycling more accessible, mitigate pollution by planting more trees

4. Important for cultural sustainability; many people have strong emotional attachmen provides people with a sense of place.

Task 2

Answers include but are not limited to:

- I think greenfield development is more economically sustainable because it is cheap to decontaminate.
- I think brownfield development is more environmentally sustainable because it does on.
- I think there are social benefits to greenfield development such as if housing were t offer a more open green space for residents, which is said to improve quality of life.
- I think there are social benefits to brownfield development, such as many brownfiel centre. If housing were to be built on (or in) the city centre, then people would not have to travel far for cultural outings.

Liuzhou Forest City, China: A case st

	Description
Task 1	Sustainable city case study
Task 2	Build your own sustainable city

In this lesson you will:

- ✓ learn about Liuzhou Forest City, a sustainable city case study
- ✓ create your own design for a sustainable city

Task 1

The Future of Sustainable Cities: Liuzhou F

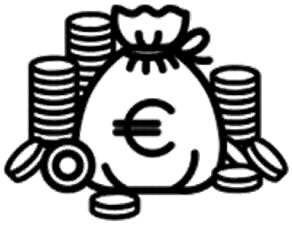
Liuzhou is a city in south-eastern China. Developers, including Milan-based Stefano Boeri Architetti, have made plans to build an eco-city on the outskirts of Liuzhou. Liuzhou Forest City will be mostly made up of vertical towers. These will be built just like normal urban skyscrapers but will be packed with plants, trees and sustainable irrigation and drainage systems.

The Forest City is due to be complete by 2020 and will cover 175 hectares of land. The city aims to be self-sufficient and will have electric cars instead of relying on fossil-fuel-burning conventional cars. Alongside this, the city's energy demand will be supplied by geothermal and solar power. The trees planted will be in a variety of species to encourage and increase biodiversity as well as giving off 900 tonnes of oxygen per year. It is estimated the trees will absorb 10,000 tonnes of carbon dioxide per year, helping to mitigate climate change and global warming.

Developers are also planning to build a hospital and two schools, and to have large numbers of mixed-use facilities, such as residential, recreational and commercial.

A vertical fo
propo

1. Fill in the table to show why Liuzhou Forest City is environmentally, socially a

Factor	Why Liuzhou Forest City is sust
Social 	
Economic 	
Environmental 	

'Liuzhou Forest City will be very expensive to build and since there will no doubt b building a new city from scratch, the city is not worth it.'

2. Do you agree with the statement above? Explain your answer fully.

Task 2

1. In the space provided below, design your own sustainable city from scratch. following factors:
   - Environmental impacts
   - Cost – how the city will be funded
   - Social impacts
   - How the city is going to be soci[illegible]onomically/environmentally sustai
   - Make sure you annotat[illegible]an[illegible]ches

Liuzhou Forest City, China: A case study answers

Task 1

1. • **Social**: proposal to build residential buildings for people to live in, amenities su
places to work in, e.g. commercial office space. Also offers recreational and lei
the city is likely to offer a better quality of life for residents. The city's air will b
significantly less risk of health issues from air pollution and smog, such as breat
   • **Economic**: the city proposes to build commercial office spaces which will not o
also help the economic flow of the city. The hospital, school and other amenitie
Providing residents with jobs will create a positive economic multiplier effect –
more disposable income to spend, so the money is likely to put back into the lo
   • **Environmental**: the trees in the city will increase and encourage biodiversity, a
mitigation for climate change. The trees will also release oxygen, providing clea
irrigation and drainage systems provide a better alternative to energy- and wat

2. Answers will differ between students, but the following should be taken into conside
   - At least two pros (social, economic, environmental)
   - At least two cons (cost, environmental impacts)
   - Analysis of whether or not pros outweigh cons
   - Justified conclusion

Task 2

Answers will differ between students**, but** all factors outlined in the question should be ta

Development strategies and aid (I

	Description
Task 1	Top-down and bottom-up approaches to development
Task 2	What aid is and how it affects development

In this lesson you will:

- ✓ learn different approaches to development, including top-down and bottom-up with ea
- ✓ learn about aid and the impacts it has on developing countries

Task 1

Keywords

Top-down approach: A government led, or intergovernmental organis approach to development. These approaches te and expensive.

Bottom-up approach: A small-scale approach to development, throug community projects and individual people. These funding and may only f on one specific proj

1. Match up the dev projects to either 'top-down' or 'bottom-up'.

A sma ty based in rural Kenya that focuses on building water pumps in remote villages outside Embu. The charity relies on donations from local people and on volunteer builders.
Kate, a young woman living in Sierra Leone, has set up an urban allotment for the community to grow their own fresh fruit and vegetables in the city centre of Freetown.
The World Bank offering US$1 million loans to developing countries that have been hit by natural disasters. The money goes straight to the governments so they can decide what to do.
Max, a British citizen, has moved to Haiti to eac English in local schools, funded b large international volunteerin narily he is one of thousands of peo a similar role.
A sho nd that for every pair of shoes it sells, it donate air to developing regions in South America. The owner flies to the regions yearly using her own money.

2. Match the issues to either 'top-down' or 'bottom-up'.

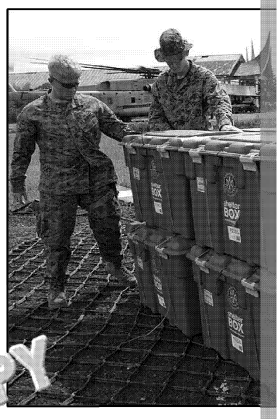
At risk of government corruption – aid (especially monetary aid) may not reach the people who need it.
May lack sufficient funding.
Many charities have highly paid CEOs and large expen[illegible]dgets – this causes controversy as some argue it is unfair and unjust.
Can lead to economic dependency if countries rely on IGOs or large international NGOs for aid money.
Can lead to uneven development depending on wealth and ability of people/charities in different communities.

Task 2

Aid is the name given to either produ[illegible]s, se[illegible]s or money provided by one com[illegible] is usually offered free (paid fo[illegible]h donations) but can come with certain con[illegible] through either top-do[illegible]to[illegible]om-up approaches, although it is more common [illegible] offered on [illegible]ow[illegible] approach.

Case Study: ShelterBox

ShelterBox is a UK-based charity that supplies emergency relief to countries following natural disasters (such as earthquakes, tsunamis, landslides and flooding). Each box contains a number of products that can offer support to displaced persons, such as tents, blankets, cooking equipment and water filters. ShelterBox started out as a bottom-up approach but has grown to such an extent that it now distributes through the large international organisation Rotary.



US soldiers distr[illegible]

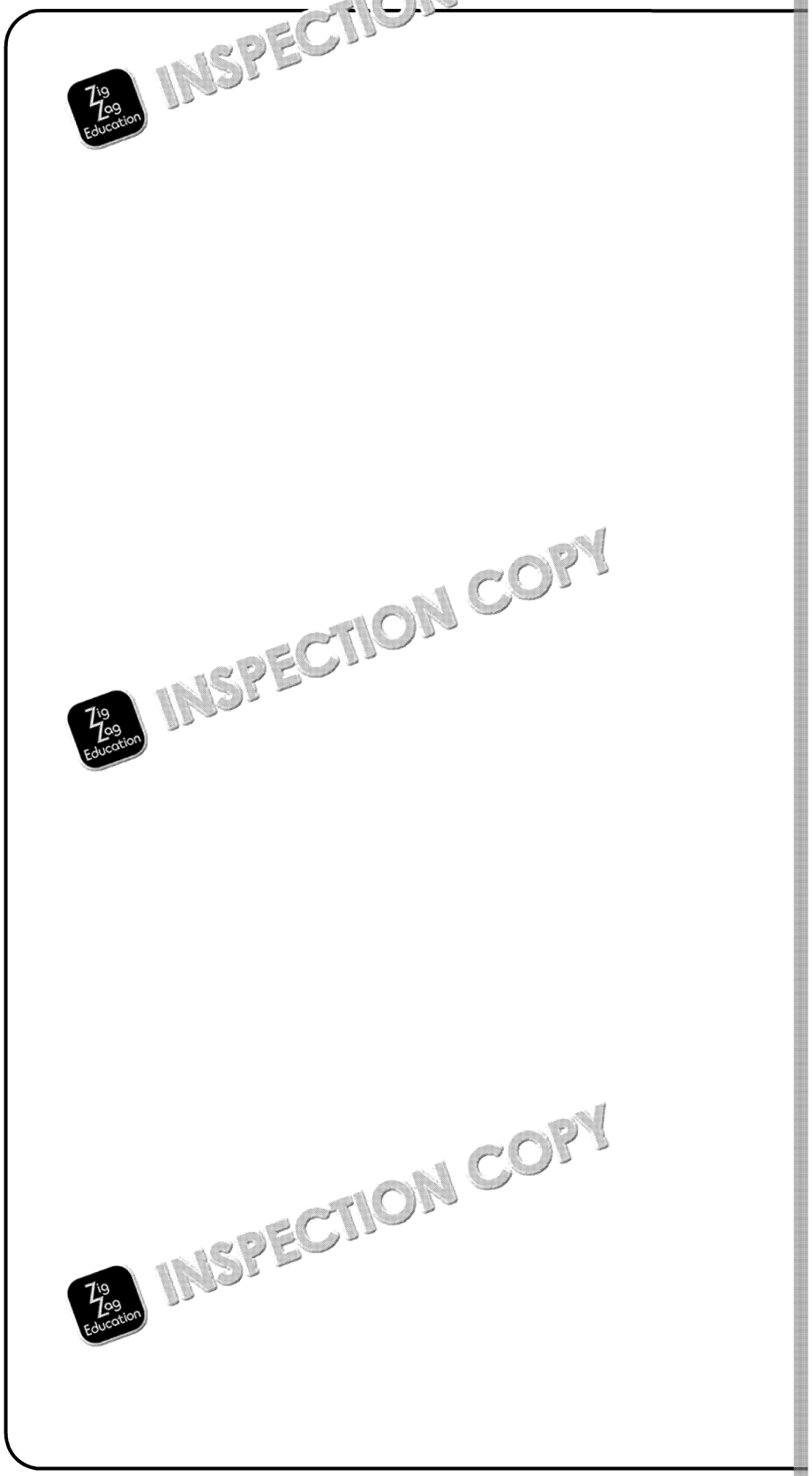
1. How does ShelterBox offer aid to countries in need?

2. What do you think are the issues with the way in which ShelterBox operates? economic and environmental factors.

3. Imagine you are the CEO of a company that provides emergency relief to pe
flooded and caused people to lose their homes.

In the space below, design your own version of a ShelterBox. You will need t

- The needs of the people who have lost their homes
- The transportation and distribution of your boxes
- The safety of your workers and of local people i oded disaster areas
- The environmental impacts of your box, r ga manufacturing, distribu



Development strategies and aid (I) answers

Task 1

1. Top-down: World Bank, Max
   Bottom-up: Kenyan charity, Kate, London shop

2. Top-down: government corruption, highly paid CEOs, [illegible] dependency
   Bottom-up: uneven development, lacking fun[illegible]

Task 2

1. ShelterBox provid[illegible] relief to countries that have been devastated by nat[illegible] tents a[illegible] t[illegible] housing equipment to displaced persons.

2. Answers include but are not limited to:
   - Social: box only provides short-term housing relief and does not support displa[illegible]
   - Economic: boxes and distribution may be expensive – relies on donations and f[illegible] were to stop, there would be a risk to the supply of the aid)
   - Environment: unless equipment is recycled, there will be lots of disposable was[illegible] landfill, which is not sustainable. Transportation of the boxes also contributes t[illegible]

3. Answers will differ between students, although consideration of all points made in the [illegible] shown.

Development strategies and aid (I

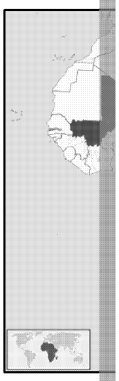
	Description
Task 1	Case study of a developing/emerging country

In this lesson you will:

✓ learn through a case study of a developi[illegible]er[illegible]ging country

Task 1

Devel[illegible]g Country Case Study: Mali



Mali is situated in West Africa. It is a developing country with an HDI of 0.442 (low). Historically, Mali was colonised by the French but it gained independence in 1960. The country has numerous social issues typical of West Africa, such as malnutrition, disease (in particular malaria) and a large wealth gap. In recent times, Mali has been politically unstable, and armed conflict has spread throughout the country. Other issues include famine, droughts and modern slavery.

Yatela Gold Mine in Mali

The main industry is agricu[illegible] di[illegible]ery of natural resou[illegible] [illegible]egion has led to mining b[illegible] growing industry. Despite [illegible] mining industry, Mali is he[illegible] Aid in Mali is largely recei[illegible] international organisation[illegible] International Monetary Fu[illegible] Bank. Mali also receives bi[illegible] countries such as Germany

1. Create a mind map to show some of the issues facing Mali.

The UN's eight Millennium Development Goals were supposed to have been achi
report was given on the MDG Track for Mali:

MDG	
1. Eradicate extreme poverty and hunger	On track to achieve by 2
2. Achieve universal primary education	N on track
3. Promote gender equality and empower wo	On track to achieve by 2
4. Reduce child mortality rate	Not on track
5. Improve maternal hea	Not on track
6. Combat /A malaria and other diseases	On track to achieve by 2
7. Ensur onmental sustainability	On track to achieve by 2
8. Develop a global partnership for development	On track – success

2. Do you think Mali was successful in achieving the MDGs? Explain your answe

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Some people have argued that the MDGS were unrealistic, subject to different int
properly measured in terms of success.

3. Explain why each factor may result in the MDGs being a poor measurement

Factor	Explanation
Unrealistic	
Different interpretations	
Hard to measure	

Emerging Country Case Study: Bra

Brazil is a large country in South America. It is seen as an emerging country due
increasing population, rapidly growing economy and development of tertiary an
quaternary economic sectors. Brazil is the 'B' of the 'BRIC' countries (alongside
India and China).

Brazil's second largest city, Rio de Janeiro

Brazil is a vast country and spans different climate zones, although it most notab
rainforest. The rainforest has been subject to widespread deforestation and illeg
catastrophic consequences for the natural environment. Impacts include loss of
biodiversity and the ecosystem, as well as an increase in CO_2 (as many trees are
and a reduction in the carbon sink. Much of the rainforest has been cleared for
such as cattle ranching and for the growth of cash crops, largely owned by TNCs

Lighter areas highlight deforestation in the Amazon Rainforest, Brazil

Rio de Janeiro, the second largest
its beaches and the statue of Chri
makes the cit a popular tourist d
2.8 m pe ple visit every year
e y of Brazil. However, the
still faces several socio-economic
housing settlements) are commor
particular Rio de Janeiro. Some fa
have managed to develop themse
the city. They have improved infra
business and community projects
tourism industry by offering tours
some ethical questions).

São Paulo is the largest city in Brazil and is the economic hub of the country. The
(knowledge, information, research and development) is increasing in the city an
Brazil's position as a global emerging country. The city's Jardins district is a hub
of luxury brands. The wider São Paulo region has an HDI of 0.829, which is very
comparison) and a GDP per capita of US$39,000, which is also high for an emerg

Brazil's economic hub, São Paulo

4. Create a mind map to show why Brazil is seen as emerging country.

5. What do you think has happened to the birth rate, death rate and infant mor
rapid development?

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6. How have TNCs and globalisation had an impact on emerging places such as
case study in your answer, and refer to social, economic and environmental i

Social impacts of TNCS in emerging countries	
Economic impacts of TNCS in emerging countries	
Environmental impacts of TNCS in emerging c es	

Development strategies and aid (II) answers

Task 1

1. Answers include but are not limited to: malnutrition, disease, land degradation due t
economic dependency, political instability, armed conflict, famine, droughts and slav

2. Answers may differ between students, although the f ng hould be taken into c
   - Only one goal on track and considered a uc ess
   - Multiple goals have extensions t me frame until 2020 (five years more th
   - Three goals are not on t k at

3.

Fa	Explanation
Unrealistic	e.g. achieving some of these goals, such as completely eradicating considered unrealistic – it can be argued it is unlikely that poverty completely eradicated and probably not in the given time frame.
Different interpretations	e.g. different government officials and people in charge of develo how to achieve the MDGs and what it means to have 'achieved' th may argue empowering women means something different from not this is achieved is subject to interpretation of what it means t
Hard to measure	e.g. due to the nature of the goals being subject to interpretation, that they are hard to measure, as achievement will mean differen

4. Answers include but are not limited to: regions with high HDIs (São Paulo), economic inner-city informal housing (favelas), industrialisation and commercial agriculture, in country status (BRIC), increased energy output, development of tertiary sector throu

5. They will most probably have all decreased. Otherwise, th e th rate may have incre countries, as people are living to an older age so t ere ar ore elderly people who t death rate.

6.

Social im ts emerg nt s	e.g. job opportunities, price local businesses out of t business/jobs
Econon pacts of TNCS in emerging countries	e.g. boost economy, create positive multiplier effect
Environmental impacts of TNCS in emerging countries	e.g. land degradation, pollution, deforestation, incre enhanced greenhouse effect and climate change)

UK & the wider world (I)

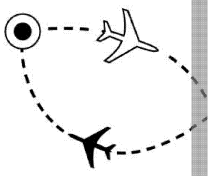
	Description
Task 1	Introducing globalisation and the UK
Task 2	Introducing the UK geopolitics, the Commonwealth

In this lesson you will:

- ✓ learn about how globalisation affects the UK
- ✓ learn about the geopolitics of the UK

Task 1

Globalisation is the general term given to the spread of ideas, information, cultures, economies, politics, goods and people across international borders. The UK plays an important role in globalisation as it has a strong connectivity to the rest of the world. Connectivity can be achieved in many ways: through transport, travel and electronic communication.



1. Complete the mind map below to show how the UK connects to the rest of the world.

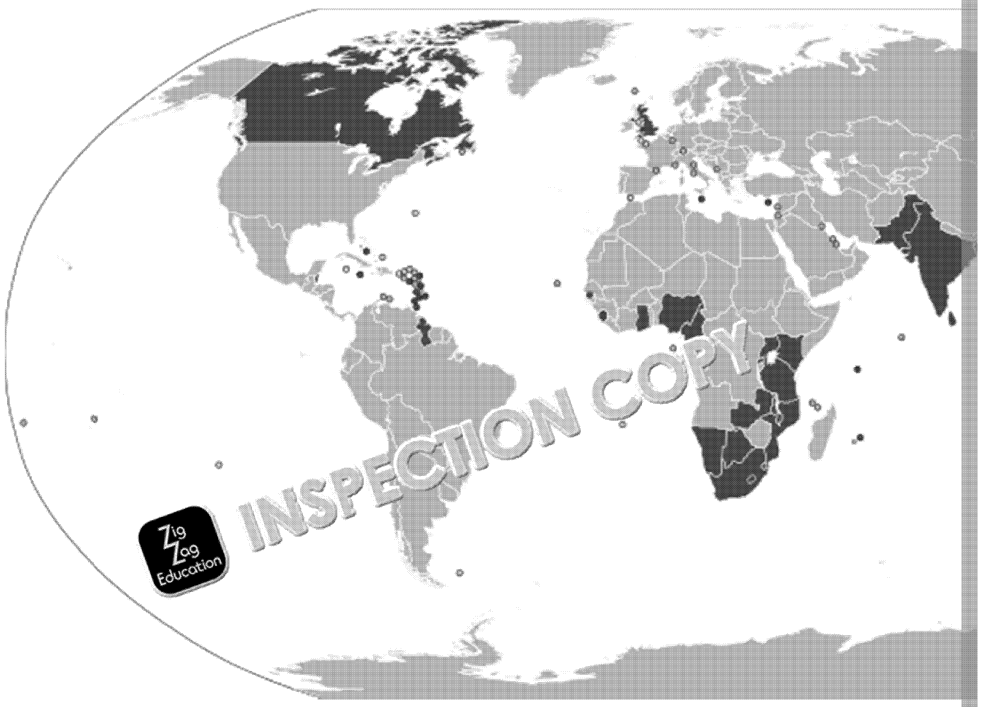
London Heathrow is the second-busiest airport in the world (after Dubai), with four working terminals. Around 80 different airlines fly to over 185 destinations all over the world from Heathrow (often styled as LHR). Heathrow has multifaith prayer room to accommodate the diverse mix of passengers who fly to and from the airport. LHR is heavily safeguarded, with multiple security measures in place. The airport flies passengers and cargo bound for internati[illegible] destinations. There are several p[illegible]port links to LHR, including train, h[illegible] other airport links throughout [illegible]K.

2. Create a poster to highlight why London Heathrow airport links the UK to the [illegible] it is not just about people travelling to London but also the wider social and e[illegible]

Task 2

The UK plays an important role in international politics (also called geopolitics). It organisation the United Nations, as well as being a member of the European Unio of leaving, through 'Brexit'). The UK has also been involved in many international War, the war in Afghanistan and the ongoing conflict in Syria. The UK is an ally of an important part of UK geopolitics as the US is often considered a world leader in

The UK has historical ties to many countries through its past colonialism. Colonial light as British rule in many countries was often in place through force, causing th indigenous and local people to suffer widespread violence and high fatalities. The be seen today. Although in 1931 the UK formalised the British Commonwealth of Commonwealth of Nations, or simply the Commonwealth). The Commonwealth wealth' of the UK and associated countries in a postcolonial world. Not all former the Commonwealth; some became republics that are now self-governed. Howeve Commonwealth countries are former colonies.



1. Above is a map of the Commonwealth countries (shaded). In the box opposite identify as many of the shaded countries as you can.

   You may wish to draw arrows from the names to the countries on the map.

   If your teacher or supervisor allows you, you may discuss it with the person next to you.

UK & the wider world (I) answers

Task 1

1. Mind map should reference air/ship/train/car/bus travel and links to people, trade, a as mobile phone connections, Internet and social media.

2. Posters will differ between students, but they should include facts and figures from t the following: passenger travel (socio-economic factors), trade of goods (cargo), capa world), routes and connectivity, cultural diversity.

Task 2

1. Commonwealth countries:
   - Antigua and Barbuda
   - Australia
   - The Bahamas
   - Bangladesh
   - Barbados
   - Belize
   - Botswana
   - Brunei
   - Cameroon
   - Canada
   - Cyprus
   - Dominica
   - Fiji Islands
   - The Gambia
   - Ghana
   - Grenada
   - Guyana
   - India
   - Jamaica
   - K
   - K
   - Lesotho
   - Malawi
   - Malaysia
   - Malta
   - Mauritius
   - Mozambique
   - Namibia
   - Nauru
   - New Zealand
   - Nigeria
   - Pakistan
   - Papua New Guine
   - Rwanda
   - Saint Kitts and Ne
   - Saint Lucia
   - Saint Vincent and
   - Samoa
   - Singapore
   - Seychelles
   - Sierra Leone
   - Solomon Islands
   - South Africa
   - Sri Lanka
   - Swaziland
   - Tanzania
   - Tonga
   - Trinidad and Toba
   - Tuvalu
   - Uganda
   - United Kingdom
   - Vanuatu
   - Zambia

	Description
Task 1	Introducing Brexit
Task 2	Globalisation

In this lesson you will:
- ✓ learn about Brexit
- ✓ learn about how the UK is [illegible] to the rest of the world through culture and me

Task 1

The European Union (EU) is an organisation made up of 28 countries (including the UK). In 2016, a vote was held in the UK asking the British public whether or not the UK should remain a member of the EU. This is referred to as the EU referendum. The majority was in favour of the UK leaving the EU; this is referred to as Brexit. The UK will formally leave the EU in March 2019.

There are arguments both for and against Brexit, with the referendum splitting opinions in the UK, the vote being 51.89% in favour of leaving to 48.11% in favour of remaining.

The EU offers the UK free trade (meaning no tariffs or trade barriers on imports and exports with the EU) and freedom of movement (meaning people with EU passports may move freely between EU member nations). The EU offers high standards for rules and regulations on the safety of goods and food within the EU.

Some people in favour of leaving the EU argued that the UK should make its own decisions about how it is [illegible] regulated. Some people also argued that the freedom of movement was causing high rates of EU immigration [illegible]

1. Imagine you could have voted in the 2016 EU referendum.

   a) In your head, weigh up the pros and cons of remaining in the EU. When you [illegible] the ballot below. (You may wish to abstain from voting, in which case cross [illegible]

Referendum on the United Kingdom's membership of the European Union

Vote only once by putting a cross ✗ in the box next to your choice

Should the United Kingdom remain a member of the European Union or leave the European Union?

Remain a member of the European Union

Leave the European Union

b) Including reasons for and against Brexit, explain why you voted the way voting, also explain why.

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The UK is often involved in international conflicts. This is largely due to its relation

3. Do you think the UK should be involved in international conflicts just because a close ally of the US? Explain your answer.

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Task 2

Globalisation has largely occurred due to the development and prevalence of tran
TNCs affect international and national economies. On a national scale, when a TN
said to be *foreign direct investment* (FDI), which usually means the TNC has a posi
economy.

Globalisation occurs on a number of different scal[illegible] through various differen
happen through media becoming increasing[illegible] British-produced TV shows
and *Downton Abbey* have become [illegible] overseas.

1. Why do [illegible] British TV shows are popular overseas, and how do they po

   For this question, you may wish to choose one of the aforementioned shows
   TV show of your choice.

   Comment on the following:

   Where you think this show is popular:

   .....

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   How this show portrays British people:

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   How this show portrays the UK as a place:

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   Whether or not the characters a[illegible] representation of the UK's cultur

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UK & the wider world (II) answers

Task 1

1. Answers will differ between students.

2. Answers will differ between students.

Task 2

1. Answers will differ between students.

Food (II)

	Description
Task 1	Methods of increasing food production
Task 2	Case studies

In this lesson you will:

- ✓ learn about technological innovations in increasing food production
- ✓ learn two case studies of increasing food security

Task 1

There are many different methods of increasing food supply, some of which include innovations and non-traditional methods of agriculture.

1. Match the description of each food production method to the corresponding

Genetically modified (GM) crops: Crops can have their genetic make-up altered in laboratories to make them more efficient. This is in relation to making crops grow better under certain conditions, making crops resistant to herbicides, making crops more naturally pest repellent and adding certain health-beneficial DNA.	**A** 
Hydroponically grown crops: Hydroponic technology involves growing crops without soil, usually in large greenhouses in a nutrient and water solvent. It is said that allows crops to be grown in smaller areas than traditional agriculture, and that there is less risk from pests and diseases due to the absence of soil and to the highly controlled environment. Pumps circulate the water solvent to the roots through special containers.	**B** 
Aeroponically grown crops: Aeroponic technology is similar to hydroponic technology but it uses air and mist instead of water solvents to grow crops. Aeroponic crops are usually suspended in the air or grown in large containers with holes in that are specifically designed to circulate the air around the roots. Water vapour from the air/mist can be condensed and reused in the aeroponic cycle.	**C**
Artificial irrigation: Irrigation refers to water supplied/used in agriculture via artificial methods such as using a sprinkler system. Irrigation is a widely practised method, especially in areas with little or unreliable rainfall (natural irrigation). However, it can be argued that irrigation can often be unsuitable as it is not always water-efficient, and some systems require large amounts of energy.	**D** 

Case Study: GM Crops in Nigeria

In Africa, only Burkina Faso, Egypt, Sudan and South Africa currently allow genetic modification practices on crops to be carried out. However, South Africa is the only African country that currently permits GM food production.

Many countries in Africa have seen a rapid inc[illegible] population in recent years. This is larg[illegible] due t[illegible] development and urbanisation in the developing and emerging countries (LICs, MEDCs and NEEs/EDCs) of Africa. There is a n[illegible] in[illegible] food production to cope with populatio[illegible]se and also to improve food security.

Nigeria's National Biotechnology Development Agency (NABDA) was set up to encourage technological involvement in food production. Its aim is to transform Nigeria into a hub of food security and socio-economic development. It states that biotechnology can also allow for nutrient-rich crops to be grown more viably, which will also have knock-on health benefits for the population. The National Root Crop Research Institute of Nigeria (NRCRI) is examining the possibility of a disease-resistant crop.

However, certain pressure groups, such as Greenpeace, argue that there is little scientific evidence to show that GM is not harmful to the environment. There are also suggestions that more scientific research into the human health impacts of eating GM foods needs to be carried out before GM is used as a large-scale method of food production. Many anti-GM groups have resorted to sabotaging GM crops, increasing media backlash ag[illegible] the practice, and there have been reports of bl[illegible]m[illegible] in the Nigerian media.

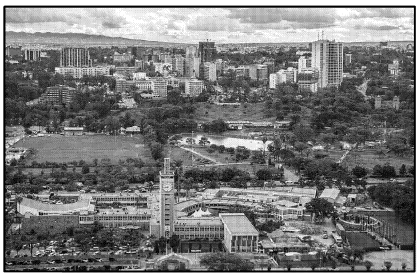
Year	GHI
1992	49.5
2000	40.9
2008	33.6
2016	25.5

Nigeria's GHI

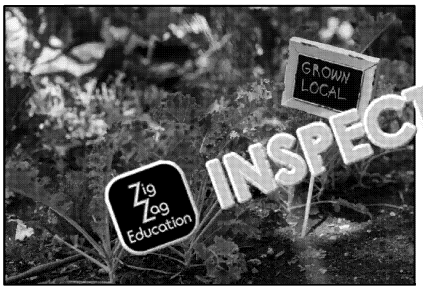
Year	Daily calories available (crop equivalent) per capita
2000	2,610
2001	2,613
2002	2,605
2003	2,608
2004	2,655
2005	2,705
2006	2,725
2007	2,720
2008	2,723
2009	2,683
2010	2,706
2011	2,706
2012	2,665
2013	2,700

Nigeria's daily calories available

Case Study: Urban Gardens in Nairobi



Nairobi, Kenya



Urban gardens can also be called urban farms and may even hold livestock

Nairobi, the capital city of Kenya, has seen r[illegible] years. This has put a strain on the city's food[illegible] those people in the more deprived areas.

In one region to the west of the city, Dagore[illegible] increased by 20 times in just 40 years. Dago[illegible] area with a high proportion of the populati[illegible] insecurity in the area has led to poor health[illegible] associated socio-economic issues such as u[illegible] health.

One way in which the local community is try[illegible] insecurity is being tackled in Dagoretti is through u[illegible] gardening, which when small patches of land in u[illegible] crops, such as vegetables.

Farm Africa has set up an urban gardening i[illegible] alongside the Sustainable Development Go[illegible] is working with Amref Health Africa, which f[illegible] over 3,900 people in the Dagoretti region.

As well as setting up urban gardens, the proje[illegible] healthy and nutritious eating and helps local [illegible] markets.

Read the two case studies carefully before answering the questions below.

1. Of the two case studies, which is the large-scale (top-down) approach and w
up) approach?

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2. Why is there a need to increase food security on local, national and a local s
case studies in your answer.

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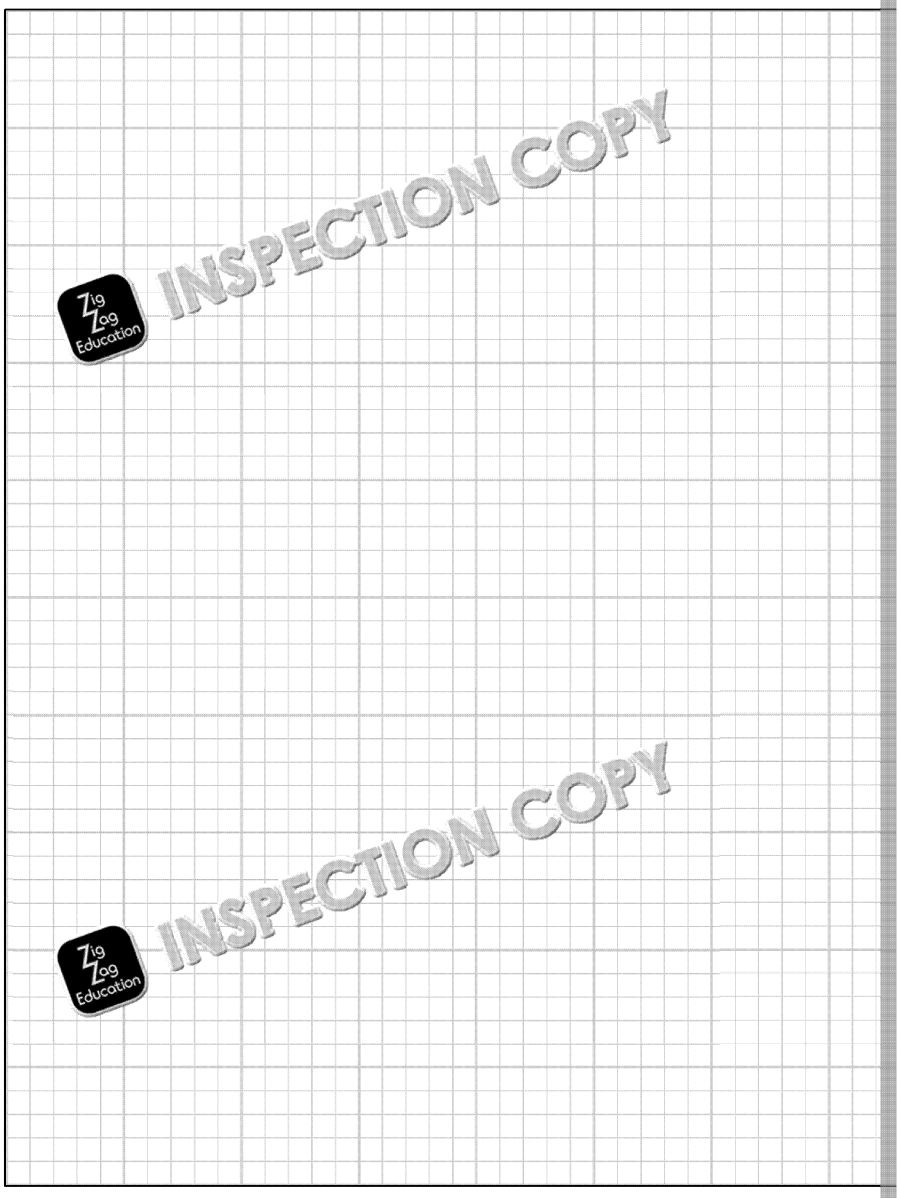
3. On the graph paper below, draw a graph showing the trend of daily availab
equivalent) for Nigeria over time. Remember to include suitable axes and t



4. Describe the trend from your graph from question 3.

5. What is the relationship between the trends of daily calories available per capita

6. Which case study do you think is more sustainable? Explain your answer fully

Food (II) answers

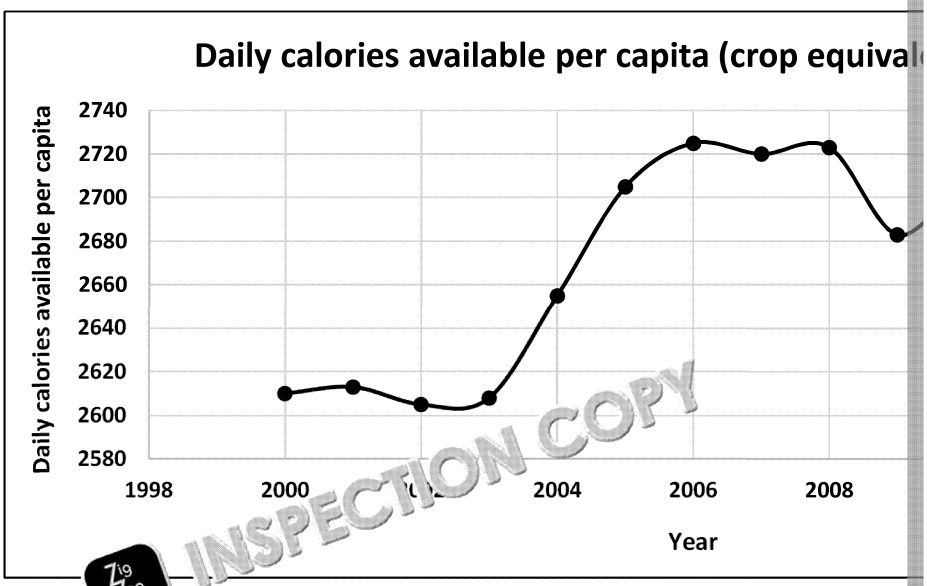
Task 1

- GM: C
- Hydroponics: D
- Aeroponics: A
- Artificial irrigation: B

Task 2

1. GM foods in Nigeria is [illegible]-scale, top-down approach, and urban gardening in N
approa[illegible]

2. National [illegible]e to aid socio-economic development and to reduce reliance on other c
used to reduce famine. Local scale to improve quality of life and reduce poverty, hu

3. 

4. The graph fluctuates, although there is a steady increase between 2002 and 2006. T
and 2013, although between 2012 and 2013 there was an increase. There is no stro
between daily calories available per capita in Nigeria and time.

5. It is too difficult to tell whether there is a relation between daily calories available (D
although GHI decreases over time, DCA per capita fluctuates and does not have a st

6. Answers will differ between students, although the following should be taken into c
   - Definition of sustainability (i.e. meeting the needs of the present without comp
   social, economic and environmental factors)
   - Acknowledgement of differences between the larger scale top-down GM case s
   urban gardening
   - Acknowledgment of cons of GM, such as a lack of sci[illegible]c research into the hu
   GM, which causes controversy and protest
   - Acknowledgment of pros of GM, in[illegible]nal benefits, and environmenta
   pesticide-resistant plants [illegible]ed for artificial pesticides)
   - Acknowledgment [illegible] urban gardening scheme, such as it requires initial
   get [illegible] of
   - A[illegible]dgment of pros of urban gardening such as education on nutrition an
   - A s[illegible] conclusion to justify the argument

Energy (II)

	Description
Task 1	Environmental impacts of renewable energy sources
Task 2	Philippines case study

In this lesson you will:

- ✓ learn about the environmental impacts of renewable energy resources
- ✓ learn a case study of renewable energy in the Philippines

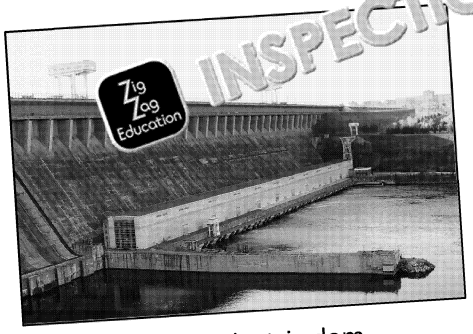
Task 1

It is not just non-renewable energy that impacts the natural environment. Renew requires the set-up and maintenance of infrastructure in order to be utilised.

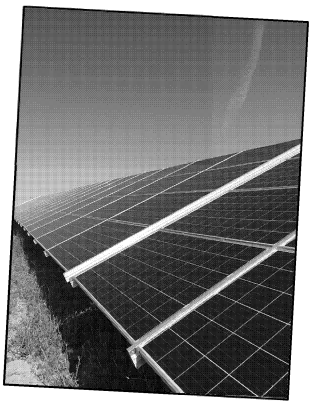
Spend a few minutes thinking about possible environmental impacts caused by re to write down some ideas in the spaces around the photos.

You should consider the following:

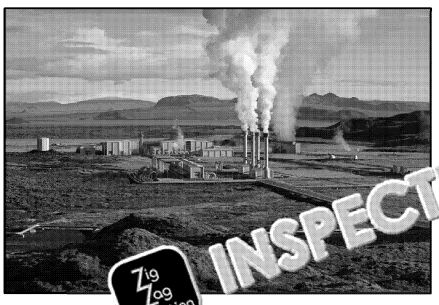
- What is the type of infrastructure required to construct and maintain the diff resources?
- How does this infrastructure affect the natural landscape –is it intrusive?
- Will renewable technology keep improving over time – if so, what do we do v what are the possible impacts of this?
- To what extent is renewable energy better than non-renewable energy?



A hydroelectric dam



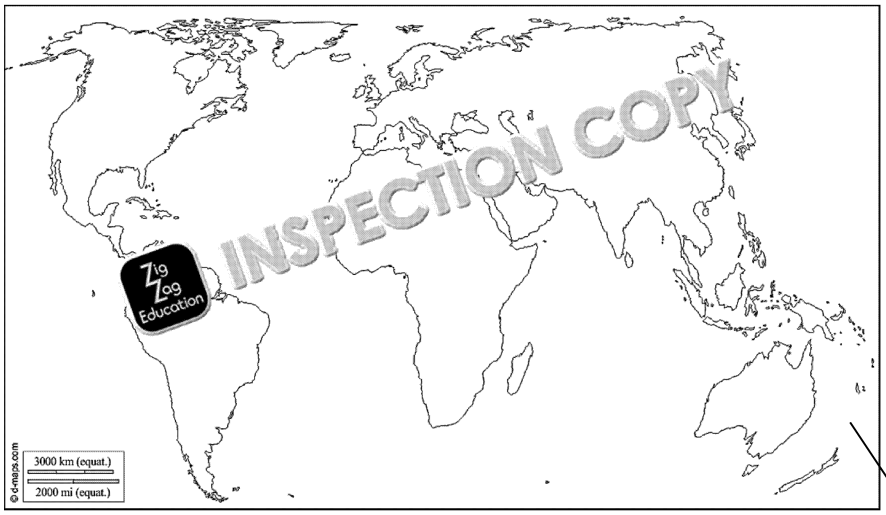
Photovoltaic solar panels



A geothermal power station

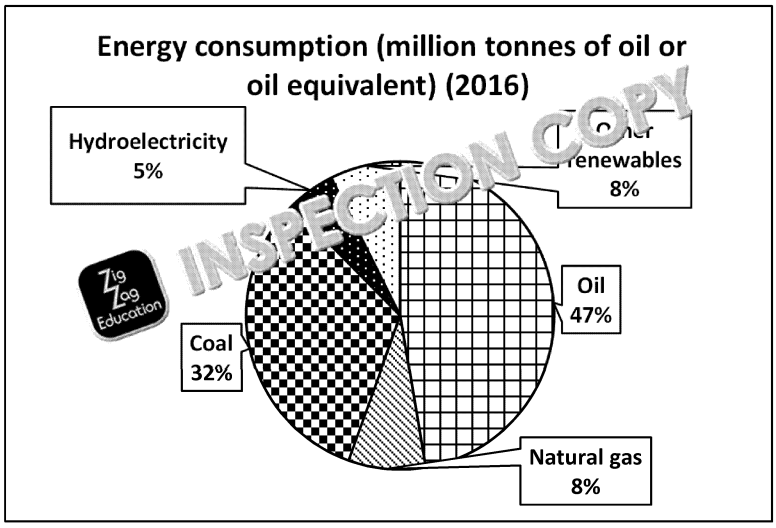
Wind turbines

Case Study: Renewable Energy in the Philip



Loc

The Philippines is an archipelago (made up of several islands) in South East Asia. The Philippines is an emerging country (or an NEE) and has been industrialising rapidly over recent decades. Alongside an increase in industrialisation and development comes an increase in energy demand.



The pie chart shows the energy mix of the Philippines for 2016. An energy mix shows the proportions of different energy resources used in a particular country.

Renewable energy (in particular, hydroelectric and geothermal) is a growing sector i particular, hydroelectric and geothermal. Hydroelectric power is produced from dam energy exploits the Philippines' location on a tectonic hotspot. olar power and wind sources on renewable energy in the country.

Hydroelectric power: There are tional hydroelectric dams used for (HEP) in the Philippines and run-of-the-river systems in place. HEP is a suitab resource for the Phili as the country's climate provides monsoon season and the si de topography provides high-energy river run-off. HEP not o Philippine gy security but can also reduce the country's carbon footprint

However, there are some negative impacts of increasing HEP in the Philippines island in the country), since the construction of the Magat Dam there have bee the local area. This includes siltation of the Magat riverbed, and a rise in illegal burn' techniques (leading to deforestation). In 2014 the refurbishment of the d help stabilise its deteriorating state.

Spend a few minutes to read the case study carefully before completing the activi

1. Describe the 2016 energy mix of the Philippines.

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2. How a wable energy resources affected by the physical geography of t

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3. What are some of the issues with renewable energy sources in the Philippine

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4. Do you he benefits of hydroelectric power in the Philippines outweigh fully, giving examples of each and coming to a justified conclusion.

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Energy (II) answers

Task 1

Answers will differ between students although the following should be considered:

- Environmental impacts of renewable energy infrastructure (land degradation, need f
– particularly in rivers where hydroelectric dams are present – h birds/bats where wi
marine life where tidal power is utilised).
- Also consider that renewable energy infrastructure will need to be maintained and r
the case of photovoltaic solar panels in particular, leads to the issue of hazardous wa
the panels).

Task 2

1. Predom oil (47%), secondly coal – both of which are fossil fuels and non-renew
hydroelectric) make up 8%, the same as natural gas, while hydroelectric is 5%; renew
the Philippines' energy mix.

2. Geothermal – the Philippines is an area of high tectonic activity; hydroelectric – the t
to utilise hydroelectric power due to the steep hills giving rivers a high-energy run-of

3. In Luzon, on the Magat Dam there was illegal logging, slash and burn deforestation a
dam has caused widespread environmental problems and has affected local people.

4. Answers will differ between students, although they should take into consideration b
reduced reliance on fossil fuels) and the cons (environmental and social impacts) bef

	Description
Task 1	Snowy Mountains water transfer scheme
Task 2	Brikama Lefaya, The Gambia case study

In this lesson you will:

- ✓ learn case studies on increasing water supply at national and local levels

Task 1

Case Study: Snowy Mountains Scheme, Aust

One area of water scarcity is the Murray–Darling basin in south-eastern Australia. The basin largely connects two rivers, the Murray and the Darling, along with their tributaries and other minor rivers. The region is home to over two million people and the land is largely used for agriculture.

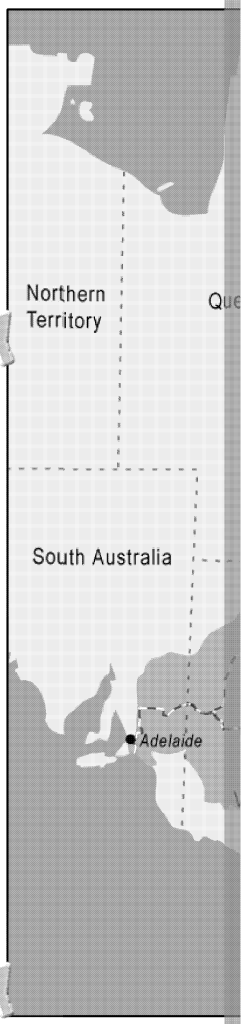
Due to the intensity of irrigation needed to support the large-scale agricultural industry in the area, many of the tributaries have a low run-off. Over time, this has led to the basin becoming dry.

The climate of the basin varies from subtropical to semi-arid. In semi-arid regions the rainfall is low and evaporation is high. This is also a factor in the basin becoming dry.

Water security is deemed important in the area, not only for industry and household purposes but also for Aboriginal people of Australia due to its cultural significance.

A multi-dam and transfer scheme was set up to help improve water security in the Murray–Darling basin. Water is transferred from the Snowy Mountains, South Australia, through a series of diversion pipelines inland towards the Murray–Darling basin.

The Snowy Mountains are a sparsely populated region which has a cool oceanic climate, with higher regions experiencing an alpine climate which often provides snow. Originally, water flowed from the upland regions towards the Tasman Sea, although much of the water is now diverted through the Snowy Mountains Scheme. The scheme also utilises hydroelectric power with seven power stations positioned across the region.



Map of the Murray–D
The star represent

The scheme consists of several dams and pipelines used to transfer and divert the wa engineering project involved the construction of several dams. Some environmental conce implement of the scheme. For example, it was argued that only the socio-econom and that the environmental concerns of impacts downstream were not taken into acco

The scheme cost several hundred million Australian dollars to complete, one of the mo time. The infrastructure was largely built by immigrant workers, with an estimation of workforce during the construction period.

Spend a few minutes reading the case study before completing the activities belo

1. Fill in the grid below to show the pros and cons of the Snowy Mountains Sch
impacts to both the Snowy Mountains region and the Murray–Darling basin.

	Pros	
S		
Economic		
Environmental		

2. Do you think the pros outweigh the cons? Explain your answer fully.

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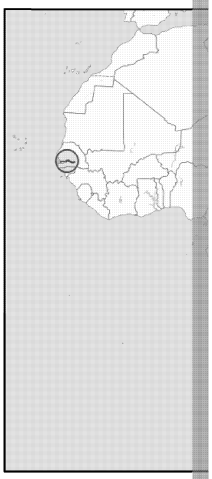
Task 2

Case Study: Brikama Lefaya, The Gambia – Water Hygiene (WASH) Project

Gambia is an LIC. It is estimated to have an overall population of just over two million and has a low [illegible] score. Brikama Lefaya is a small village in the Gambia. Most villagers live a subsistence lifestyle, providing for themselves through small scale farming.



A map of Africa, T

Water for the village used to be mainly collected by women and girls, as there was no running water, although the source they obtained the water from was not clean or potable. Due to the unclean nature of the water, many villagers suffered from diarrhoea, leading to malnourishment and protein deficiencies. Likewise, the unhygienic nature of the water also caused skin conditions for many in the village.

Since the beginning of 2012, not-for-profit organisation Water Charity has bee Peace Corps Volunteer Jeremy Mak to create a more hygienic water situation building small concrete reservoirs, creating a water supply for cattle, for crops community garden. The reservoirs will also connect to water pumps outside t potable water for the community. As well the reservoir project, Water Charity drainage systems in showers, so that water does not stay stagnant and harbou said to be a success so far.

1. What type of solution is the Brikama Lefaya WASH project? Circle the answer

   Top-down **Bottom-up**

2. Do you think this project is sustainable? Explain your answer.

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3. Which do you think is more sustainable, top-down projects or bottom-up pro using the previous case studies as examples.

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Water (II) answers

Task 1

1.

	Pros	
Social	• Delivers water to the two million people living in the Murray–Darling basin region. • The Snowy Mountains region is sparsely populated so there are limited impacts on the population.	• Over 100 p mostly mig tragic occu could be se were very
Economic	• Ensures the agriculture-heavy industry in the Murray–Darling basin has adequate water supply for irrigation – economic security (jobs/food).	• The schem dollars and maintain. • The transfe Mountains the area if
Environmental	• Takes advantage of areas with natural water abundance and transfers it to a place of scarcity.	• There is a r the Tasmar away from • Dams pose occur. • Dams also as loss of h

2. Answers will differ between students

Task 2

1. Bottom-up

2. Answers will differ between students, but the following should be taken into conside
   - Different aspects of sustainability – social, economic, environmental
   - Pros and cons of the project
   - A reasonable and justified conclusion

3. Answers will differ between students, but the following should be taken into conside
   - A brief explanation of what is meant by top-down and bottom-up development
   - A considerable comparison between top-down and bottom-up in terms of econ sustainability
   - A reasonable and justifiable answer