

Geography: Key Stage 2 Years 3 and 4

Teachers Professional Development Programme

## Enquiry 5: How can we live more sustainably?



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Connecting the curriculum through enquiry based learning

# Key Question: How can we live more sustainably?

## Learning objectives

During the enquiry pupils will have opportunities through the application and analysis of a wide range of geographical skills and resources to:

- **Describe and explain** using examples what living sustainably means;
- **Identify, describe and explain** the differences between renewable and non-renewable resources;
- Undertake an environmental review of different categories of sustainability at their school and draw up an Action Plan to **identify** and **explain** priorities to help the school become more sustainable;
- **Understand** in basic terms how solar panels and wind turbines generate electricity;
- **Identify, describe and offer reasons** for how sources of energy used to make electricity in the United Kingdom are changing;
- **Explain** how electricity is generated in hydroelectric power stations;
- **Understand** why creating new habitats for birds are good examples of sustainable development;
- **Describe, observe, explain and make a judgement** as to why introducing solar cookers in some of the world's poorest countries makes the lives of people more sustainable;

## Purpose of the enquiry

The concepts of sustainability and sustainable development lie at the heart of a geographical world view that sees the subject as the study of the interrelationship of people with the environments in which they live and upon which they depend. Many of those beginning school this year will live to see the next century. The greatest global challenge during their lifetimes will be how to marry economic and personal development with the principles of sustainability. That is, ensuring that everyone can enjoy a comfortable and fulfilling life without undermining the integrity of the lives of others or the environment that sustains them. Because of this it is essential that children and young people have an opportunity to explore the concept of sustainability from a young age.

The main objective of this enquiry, therefore, is for the pupils to understand through the use of a number of examples what sustainability entails and how they might approach applying those principles to their own lives. It is important for young geographers to grasp that sustainability is not just confined to how we interact with the environment. It also has equal relevance to many aspects of their life, especially in the context of personal and social wellbeing.

This groundwork is also important from the perspective of establishing continuity and progression through the curriculum – in Upper Key Stage 2 the concept of sustainability will be central to the pupil's investigation of the causes and implications of climate change.

## Context

Pupils are introduced to the concepts of sustainability and sustainable development through a number of examples that will be familiar to them in their everyday lives, such as recycling and 'bags for life' at supermarkets. From these familiar examples, the pupils progress gradually to reflect upon the concept of a *resource* and how these can be renewable and infinite or non-renewable and finite. From this foundation the pupils are encouraged to consider their own lives and what they currently do as individuals and at home as a family to be more sustainable.

The school community is the next focus of the investigation. The pupils are given the opportunity to survey the school's level of sustainability against a number of categories and to identify priorities for development in an Action Plan. The scale and context of the enquiry then moves to a national level with the pupils considering why the UK Government is looking to massively increase the contribution of renewable energy, such as solar and wind, to the generation of electricity.

The final two ancillary questions enable the pupils to understand the concept of sustainable development. The first focuses on the work of a UK conservation charity. The second turns its attention to the application of appropriate technology to improve the quality of people's lives in one of the poorest countries in the world.

## National Curriculum coverage Geography

Pupils should be taught to:

### Locational knowledge

- Locate the world's countries, using maps to focus on Europe (including the location of Russia) and North and South America, concentrating on their environmental regions, key physical and human characteristics, countries, and major cities.
- Identify the position and significance of latitude, longitude, Equator, Northern Hemisphere, Southern Hemisphere, the Tropics of Cancer and Capricorn, Arctic and Antarctic Circle, the Prime/Greenwich Meridian and time zones (including day and night).

### Human and physical geography

Describe and understand key aspects of:

- Physical geography, including: climate zones, biomes and vegetation belts, rivers, mountains, volcanoes and earthquakes, and the water cycle.
- Human geography, including: types of settlement and land use, economic activity including trade links, and the distribution of natural resources including energy, food, minerals and water.

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- **Recognise and explain** ways in which their lives at home could be more environmentally sustainable.

## Key Subject Vocabulary

Sustainable;  
Unsustainable; Reusable;  
Solar; Turbine;  
Rechargeable;  
Conservation; Recycle;  
Health; Diet; Exercise;  
Resource; Electricity;  
Power station; Transport;  
Community; Wellbeing;  
Social; Interaction; Values;  
Behaviour; Lifestyle;  
Minerals; Energy; Ocean;  
Wind; Tides; Waves;  
Fishing; Forestry; Finite;  
Infinite; Economic activity;  
Waste; Biodiversity;  
Global; Procurement;  
Conduction; Element;  
Resistance; Electrons;  
Energy; Generator;  
Turbine; Gas; Greenhouse gases; Greenhouse effect;  
Carbon dioxide; Pollution;  
Atmosphere; Reflection;  
Space; Infrared; Radiation;  
Fossil fuels; Glacier; Ice sheet; Global warming;  
Sustainable development;  
Government; Community;  
Field; Marsh; Hill;  
Settlement; Scrape;  
Management; Charity;  
Deforestation; Fuel;  
Erosion; Silt; Solar cooker.

## Geographical skills

- Use maps, atlases, globes and digital/computer mapping to locate countries and describe features studied.
- Use the eight points of a compass, four and six-figure grid references, symbols and key (including the use of Ordnance Survey maps) to build their knowledge of the United Kingdom and the wider world.

## Connections to the subject content of other curriculum areas

### Language and literacy

Teachers should develop pupils' spoken language, reading, writing and vocabulary as integral aspects of the teaching of every subject. English is both a subject in its own right and the medium for teaching; for pupils, understanding the language provides access to the whole curriculum. Fluency in the English language is an essential foundation for success in all subjects.

### Spoken language

Pupils should be taught to speak clearly and convey ideas confidently using Standard English. They should learn to justify ideas with reasons; ask questions to check understanding; develop vocabulary and build knowledge; negotiate; evaluate and build on the ideas of others; and select the appropriate register for effective communication. They should be taught to give well-structured descriptions and explanations and develop their understanding through speculating, hypothesising and exploring ideas. This will enable them to clarify their thinking as well as organise their ideas for writing.

### Reading and writing

Teachers should develop pupils' reading and writing in all subjects to support their acquisition of knowledge. Pupils should be taught to read fluently, understand extended prose (both fiction and non-fiction) and be encouraged to read for pleasure. Schools should do everything to promote wider reading. They should provide library facilities and set ambitious expectations for reading at home.

Pupils should develop the stamina and skills to write at length, with accurate spelling and punctuation. They should be taught the correct use of grammar. They should build on what they have been taught to expand the range of their writing and the variety of the grammar they use. The writing they do should include narratives, explanations, descriptions, comparisons, summaries and evaluations: such writing supports them in rehearsing, understanding and consolidating what they have heard or read.

### Vocabulary development

Pupils' acquisition and command of vocabulary are key to their learning and progress across the whole curriculum. Teachers should therefore develop vocabulary actively, building systematically on pupils' current knowledge. They should increase pupils' store of words in general; simultaneously, they should also make links between known and new vocabulary and discuss the shades of meaning in similar words. In this way, pupils expand the vocabulary choices that are available to them when they write.

In addition, it is vital for pupils' comprehension that they understand the meanings of words they meet in their reading across all subjects, and older pupils should be taught the meaning of instruction verbs that they may meet in examination questions. It is particularly important to induct pupils into the language that defines each subject in its own right, such as accurate mathematical and scientific language.

### Numeracy and Mathematics

Teachers should use every relevant subject to develop pupils' mathematical fluency. Confidence in numeracy and other mathematical skills is a precondition of success across the national curriculum.

Teachers should develop pupils' numeracy and mathematical reasoning in all subjects so that they understand and appreciate the importance of mathematics. Pupils should be taught to apply arithmetic fluently to problems, understand and use measures, make estimates and sense check their work. Pupils should apply their geometric and algebraic understanding,

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and relate their understanding of probability to the notions of risk and uncertainty. They should also understand the cycle of collecting, presenting and analysing data. They should be taught to apply their mathematics to both routine and non-routine problems, including breaking down more complex problems into a series of simpler steps.

## Science

### Light

Pupils should be taught to:

- Recognise that they need light in order to see things and that dark is the absence of light.
- Notice that light is reflected from surfaces.
- Recognise that light from the sun can be dangerous and that there are ways to protect their eyes.
- Recognise that shadows are formed when the light from a light source is blocked by a solid object.
- Find patterns in the way that the size of shadows change.

### Living things and their habitats

Pupils should be taught to:

- Recognise that living things can be grouped in a variety of ways.
- Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment.
- Recognise that environments can change and that this can sometimes pose dangers to living things.

### Electricity

Pupils should be taught to:

- Identify common appliances that run on electricity.
- Construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers.
- Identify whether or not a lamp will light in a simple series circuit, based on whether or not the lamp is part of a complete loop with a battery.
- Recognise that a switch opens and closes a circuit, and associate this with whether or not a lamp lights in a simple series circuit.
- Recognise some common conductors and insulators, and associate metals with being good conductors.

## Computing

Pupils should be taught to:

- Understand computer networks including the internet; how they can provide multiple services, such as the World Wide Web; and the opportunities they offer for communication and collaboration.
- Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content.
- Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.

## Design and technology

### Cooking and nutrition

Pupils should be taught to:

- Understand and apply the principles of a healthy and varied diet.

## NOTES

### Ancillary Question 1: What does being sustainable actually mean?

Divide the pupils into small groups and give each group a set of the images in **Resource 1**. Encourage them to look carefully at each photograph to identify and describe what each one shows.

Then ask them to try to explain why what is shown can be considered an example of 'being sustainable'? Encourage discussion and speculation. If all of these photographs include examples of 'being sustainable' then what does sustainability mean? The pupils may describe that all of the images involve 'being green' and 'good to the environment' in some way or another. For example, creating electricity from the wind or the sun rather than from coal or gas, walking to work or travelling by bicycle, bus or train rather than by car. Devote time here to encouraging the pupils to really explore the concept of sustainability and being sustainable in the way people live their lives.

The word 'sustainable' literally means being able to do something for ever without having a negative impact on the environment that supports life on Earth or on people living elsewhere in the world. Living sustainably is essentially about using what we need now to live a comfortable lifestyle and, at the same time, doing what we can to minimise our impact on the environment so that everyone in the future has the same opportunity to live well, wherever they are in the world.

Now give the groups of pupils the images in **Resource 2**. Explain that all of these photographs also show things that are sustainable. How are they different from the images in **Resource 1**? Why are the things we can see in these photographs also about sustainable living? This is about our own personal sustainability. In particular, it is our physical and mental well-being and doing things such as regular exercise, eating sensibly, particularly fruit and vegetables, and having friends to interact with. Can the pupils think of other things that help to make us sustainable in our lives? These things may include having values and attitudes to others such as being trustworthy, patient, kind, a good listener and respectful of the different ways people choose to live their lives, which may be very different from our own.

In **Resource 3** there is a range of images depicting things that can be considered to have a high degree of sustainability (i.e. could continue fairly indefinitely into the future) and activities with a low level of sustainability (i.e. cannot continue in the same way for ever). Divide the pupils into pairs and encourage them to sort the activities into these two categories. Allow sufficient time for the pupils to complete this. Take feedback and reflect upon what they have discussed and decided.

An important objective of this activity is for the pupils to distinguish between the use of resources that are finite and non-renewable, which will ultimately run out altogether, and those that are renewable and infinite. For example, using the land resource for landfill, quarrying for rocks and minerals such as iron ore and coal, drilling to extract oil and gas are all examples of non-renewable and unsustainable activities – the resources in question will ultimately run out.

This contrasts with human activities such as using renewable and sustainable energy that will not run out, such as wind, tides and waves, to generate electricity to light and heat our homes, and to run factories and industry. It will be interesting to see how the pupils categorise fishing, forestry and wood resource use. A phrase that regularly crops up is 'well... it depends'.

Develop the pupils' thinking here as fisheries and forestry are both resources that can potentially be sustainable and infinite or unsustainable and finite depending on how they are used. If we conserve fish stocks by limiting how much we catch and protect breeding grounds then this resource has the potential to be sustainable. The same is true of forestry and wood. If felled trees are replaced with saplings, which will grow into mature trees then this resource and activity is also potentially sustainable.

## NOTES

### Ancillary Question 2: How can we help to make our school more sustainable?

A very effective way of engaging pupils practically in evaluating the present level of sustainability of their school is to register for the free *Eco-Schools* programme at [www.eco-schools.org.uk](http://www.eco-schools.org.uk)

The first stage involves pupils undertaking an environmental review (**Resource 4**) of 11 areas of sustainability – *energy; litter; waste; water; transport, healthy living; biodiversity; school grounds; global perspective; green procurement and pupil participation*. These areas of the survey could be divided up amongst small groups of pupils who then take responsibility for collecting, recording and displaying the relevant data.

After the survey the next stage in the programme is to draw up an Action Plan to increase sustainability through addressing those areas of greatest priority identified by the pupils. [www.eco-schools.org.uk/gettingstarted/actionplan](http://www.eco-schools.org.uk/gettingstarted/actionplan)

A wide range of supporting documentation is available for free online. Also freely available online are learning and teaching ideas and also resources to contextualise the environmental survey and action planning. Further support for teachers working with pupils on how to strengthen sustainability in their schools through practical action is available from SEEd (Sustainability and Environmental Education) at <http://se-ed.co.uk/edu/sustainable-schools-teaching-resource-primary/>

## NOTES

### Ancillary Question 3: Why are we seeing more wind and solar farms in the countryside?

Gather the pupils around and fill and boil a kettle of water. Ask the pupils to describe and explain what is happening? Why is the water heating up? Open the lid of another kettle and ask the pupils to look inside. What do they see? All kettles have a coil or disc of metal called a heating *element*. When the kettle is plugged into an electrical outlet or socket and switched on, a flow of *electrons* called electric current flows into the heating element. The element's *resistance* (the tendency of any material to try to stop electricity flowing through it) causes the element to heat up. The element passes its heat by *conduction* to the surrounding cold water, which quickly warms up and eventually boils.

Next show the pupils the images of solar 'farms' and wind 'farms' in **Resources 5** and **6**. What is the connection between these and the boiling kettle? Allow time for the pupils to discuss and reflect. Steer the discussion towards thinking about the link between the wind turbines and solar panels and electricity. How are they connected? It may be that a pupil will say at one point 'they make electricity', which is a fine place to start. How do they make electricity?

Every day more energy (called solar energy) is received from the sun in one hour than all 7 billion people in the world use in one year! We can't use this solar energy directly so we have to convert it into other forms of energy, which we can use much more easily – such as electricity. This is what solar panels do. They convert sunlight into electricity for us. Inside solar panels are lots of solar cells full of electrons. When the sun's light hits the cells the electrons inside begin to move and start to flow as a current of electricity.

So how does a wind turbine make electricity? Wind turns the blades of the turbine, which spins a shaft that connects to a generator to make electricity. The film at [www.youtube.com/watch?v=Zrp0RC3XTpw](http://www.youtube.com/watch?v=Zrp0RC3XTpw) shows how this occurs using a number of homemade windmills.

The data in **Resource 7** shows the sources the United Kingdom used to generate its electricity in 2015 and how this is projected to change by 2020. Support the pupils to draw pie charts with a colour key to show the information for each year. Take time to display the finished pie charts and then discuss with the pupils what they show. Which source will see the greatest drop in percentage points? Coal. Which one will show the greatest increase in percentage points? Renewables.

Both solar and wind power are renewable sources of energy. Revisit with pupils the concepts of renewable and non-renewable sources of energy. Why are solar and wind both renewable and coal non-renewable? Therefore coal is ultimately going to run out and this is one reason why we will be using less of it but the most important reason to cut down the use of coal to make electricity is because when it is burned, it releases a gas into the air. Do any of the pupils know what this gas is? Carbon dioxide.

Geographers call carbon dioxide a *greenhouse gas* – does anyone know why? Show the pupils the film at [www.youtube.com/watch?v=VYMjSule0Bw](http://www.youtube.com/watch?v=VYMjSule0Bw)

When we burn coal what happens to the carbon dioxide? How does it help the planet to get warmer? Why is a warming planet not a good thing? How is the planet beginning to change as a result? Coal pollutes the atmosphere when it is burned to make electricity. In comparison, why is making electricity from the wind and from sunlight much better than using coal? It is because they are both renewable, will never run out and do not produce polluting greenhouse gases. These are the reasons why we are going to see many more wind and solar farms in the countryside in the UK in the future.

As a summative piece for this ancillary question, the pupils could be set the task of researching another renewable source of energy – hydroelectric power (HEP) – and to produce a short PowerPoint presentation that describes and explains how non-polluting electricity is made from this technology.

## NOTES

### Ancillary Question 4: How is sustainable development helping the lapwing out of the red?

Explain to the pupils that, hopefully, they have seen that being more sustainable involves doing things – either as individuals, families, in groups such as people at school or the government – that improve the environment for both people and other living things. When we take action to do this it is called *sustainable development*.

Show the pupils the photographs in **Resource 8** and ask them to describe what they think is going on and why? Take feedback – is something going to be built perhaps? What is the piece of machinery being used? What does it do? Ask them to draw a quick sketch of what they think is going to be the end result of what is happening.

Now show **Resource 9** – the completed thing – what is it? All that effort to create an area of shallow water called a ‘scrape’, which looks like a puddle! Who or what do they think it will benefit? Before moving on, ask the pupils to reflect on what sort of environment (surroundings) all of this work is happening in. What is the landscape like? It is mostly flat fields with gentle hills in the background and also some evidence of a settlement of some kind where people are living.

Next give out copies of **Resource 10**, which shows a vertical aerial photograph of the area where the work is being done and, at the same time, project this area on the screen from *Google Earth*. (Search for *Exminster* and it will zoom in). Divide the pupils into pairs and encourage them to look very closely at the aerial photograph.

Next give them a sheet of A3 plain paper and get the pupils to stick the aerial photograph in the middle. Now can the pupils annotate (label around the edge and show the location of features by arrows drawn in) the following? (The information in brackets is for teachers and not the pupils, in the first instance.)

- River Exe (the largest river to the east)
- Railway (very direct and straight line unlike a road running SE to NW through the centre)
- Exeter Canal (adjacent and just to the west of the River Exe)
- Fields with many scrapes, such as the one they saw being constructed in the images in **Resource 9**
- Exminster golf course (to the south of Exminster – look for tell-tale 3–4 sand bunkers and light green closely-mown fairways)
- Roundabout on main road A379
- Land cleared to build more housing (area of brown earth to the north of Exminster)
- The settlement of Topsham on the east side of the River Exe
- Large lake in field
- Ploughed fields (coloured brown)
- Trees (dark green and looking rather like broccoli tops – mostly singly or in small clumps)

After the pupils have had an opportunity to do this, switch on the *View in Google Maps* layer (click the first icon on the right along the top tool bar). This will provide the answers for you to check off with the pupils.

Next distribute copies of **Resource 11** also from *Google Earth*. This shows the centre of the area and of the image in **Resource 10** at a much smaller scale. The scrape filled with water in the photograph in **Resource 9** is in the middle of the photograph. What surrounds it? It is in fact, one of many scrapes that have been created in the middle of the fields. Do the pupils have any more ideas about why this is being done in the fields? Why would the owner want to create shallow depressions deliberately to collect and hold water?

The answer is in **Resource 12**. A Northern Lapwing chick, which grows up to become a beautiful British adult bird sometimes also called the Green plover or Peewit (after its characteristic call) – see **Resource 13**.

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Pupils can go online at [www.rspb.org.uk/wildlife/birdguide/name/l/lapwing/](http://www.rspb.org.uk/wildlife/birdguide/name/l/lapwing/) and find the answers to these questions.

- *Listen to the audio of the lapwing's call – why is the lapwing also called a peewit?*
- *Watch the video of the lapwings nesting – what kind of environment do they prefer to nest in?*
- *What do they eat?*
- *What are their nests like and how many clutches of eggs do they lay?*
- *What is the 'red list' and why are lapwings on it?*

Lapwings used to be found on farmland throughout the United Kingdom but their numbers have fallen drastically during the past 30 years. An important reason for this is that the places they prefer to nest in are disappearing. Lapwings nest from March until early June, in scrapes in the ground with short vegetation so that they can get a good all-round view of possible predators such as crows or foxes – they can see them coming from a long way off. They also like to be close to areas of shallow water with muddy edges where insects and worms are available for their chicks to eat independently within two to three hours of hatching. They are not fed by their parents!

The problem for the lapwing is that the places they prefer to nest in during the breeding season, such as bare (fallow) ploughed fields; crops of wheat and barley that have been planted in the spring (so only short plants at the time of nesting); and areas of wet grassland (meadows) are to be found less and less in the UK.

The land at Exminster Marshes is owned by the Royal Society for the Protection of Birds (RSPB) – the United Kingdom's largest conservation charity – which works with many partners to protect threatened birds and wildlife by setting up nature reserves. The RSPB is creating shallow hollows or 'scrapes' in the fields, which collect water. As the water rises and falls, muddy edges form. This is the ideal feeding ground for young lapwing chicks. Today, the Exminster Marsh is the only place in Devon where lapwings nest!

Explain to the pupils that the RSPB has asked them to design an information and interpretation panel such as the ones in **Resource 14**, which will go in the car park of the RSPB reserve at Exminster Marsh. An interpretation panel helps visitors to understand things that are going on in the reserve and what to look out for during their stay. Tell the pupils that the new interpretation panel for Exminster will be all about what the RSPB is doing there to help out the lapwings. On an A3 plain paper sheet the children will design their interpretation panel following this design brief:

*Title: Helping the Lapwing at Exminster to get out of the red*

Key requirements to include in the panel:

- *How to identify a lapwing; its song; food and habitat requirements particularly for nesting.*
- *An explanation of why the lapwing is in decline and flagged as 'red'.*
- *Clear and simple diagrams/photographs to demonstrate what the RSPB is doing at Exminster to help the lapwing – how it is managing the environment to create a more suitable habitat.*
- *Why what is happening is a good example of sustainable development.*

## NOTES

### Ancillary Question 5: How are solar cookers helping Sunita and her family to live more sustainably?

Without mentioning solar cookers introduce the pupils to Sunita and her baby daughter Shristi (**Resource 15**). Explain to the pupils that something has happened recently to Sunita to help her and her family to live much more sustainably, i.e. being able to do something for ever without having a negative impact on the environment which supports life on Earth or other people living elsewhere in the world. Do the pupils have any ideas what this might be? Do they think they might know where she lives?

In **Resource 16** there are images of women and men involved in a range of activities in the country in which she lives. Working in pairs support the pupils to examine all of the images and to identify and describe what the women and men are doing. Based on these images alone what judgements can the pupils make about what life is like in the country in which Sunita lives? What are our first impressions? How does what we see compare with where we live and the kind of activities we see people engaged in? Allow plenty of time for this and for feedback around the group. Maybe compile a summary list on the board. Also think about the development of subject vocabulary here e.g. *agriculture*.

**Resource 17** comprises a set of photographs that illustrate the kind of physical geography the country has in which Sunita and her family live. Again encourage and support the pupils to identify and describe the features they can see and extend vocabulary e.g. *mountains; valley; river; gorge; forest; terrace*.

Sunita lives in Nepal, which is one of the very poorest countries in the world – it is ranked 166th poorest out of the 198 countries in the world – see maps in **Resources 18** and **19**. Only 24 per cent of people in Nepal have electricity and Sunita is not one of the lucky ones. What do the pupils think she relies upon to provide heat to cook meals, to provide light and to keep her home warm? **Resources 20** and **21** tell us the answer.

Every day Sunita has to spend hours walking to the forests to cut and collect firewood to bring back to her home. It is a very exhausting activity that she does seven days a week. She is out of her home before light in the morning and often does not return until midday. Carrying so much weight means that she often has to bend double which injures her back. However, something happened recently, which has transformed her life completely. She received something from an aid charity that works to improve the lives of people living in Nepal.

Show the pupils the images in **Resource 22**. What is it? How do the pupils think it might work? Encourage discussion and then show the two films at [www.youtube.com/watch?v=6P522CaJe04](http://www.youtube.com/watch?v=6P522CaJe04) and [www.youtube.com/watch?v=jnwzJE1MwVw](http://www.youtube.com/watch?v=jnwzJE1MwVw)

It is a solar cooker. It is not the sun's heat that cooks the food or boils the water. It works in just the same way as the highly technical (and very expensive) solar panels that the pupils studied in Ancillary Question 3 – by converting the sun's rays of light to heat energy.

Now challenge the pupils to think of as many ways as they can, how this solar cooker could be making Sunita's life more sustainable, i.e. improving the quality of her life and protecting and conserving the environment? Allow the pupils to work in small groups to consider and then summarise the feedback on the board. Develop the pupils' thinking to be as broad as possible by encouraging them to think about these points.

- Sunita will not have to spend so much of her day travelling miles to cut and collect wood. Her health will improve through not having to carry so many heavy loads.
- She can cook outside in the fresh air and not have to spend as long inside a smoke-filled room with open fires of burning wood – this will also be good for her health.
- She will have more time to spend with her children during the day – playing and helping them prepare for school. This will be much better for family life and not only her own happiness but also her children's.

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- The environment will benefit because there will no longer be a need to cut down so many trees for firewood. This will conserve the forest-dwelling wildlife and also the forests themselves.
- When trees are cut down from the sides of hills and mountains (this is called deforestation), the soil gets easily washed away (eroded) which silts or blocks up rivers causing them to flood. This will now occur less frequently.
- The cookers use a free and renewable source of energy (the sun) that does not release any greenhouse gases into the atmosphere, unlike burning wood, which releases carbon dioxide gas.

There are 30 million people living in Nepal and 76 per cent of them rely on fuelwood for all of their energy – 640 kg per person is used every year. This results in 1000 sq km of forest being cut down annually. Whilst people still need to cut some wood to use when the weather is poor and the sun doesn't shine, this now amounts to about 200 kg a year – which is a saving of almost 500 kg of wood per person.

At the end of this enquiry the pupils could produce an A3 poster entitled: *Living more sustainably: Solar cookers in Nepal* to describe and explain how solar cookers work and why they are improving the quality of life for people such as Sunita and also helping to conserve the environment.

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### Assessment

This enquiry presents several opportunities to evaluate at different stages how the pupils are progressing in geography through the mastery of key geographical skills and outcomes. It is not necessarily intended that all of the following learning activities should be assessed. Rather the list can be used as a general guide for selecting perhaps one or two assessment opportunities relevant to individual pupils rather than on a whole group basis.

Ancillary Question	Learning Activity	Possible source of evidence of achievement
1	<b>Describe</b> and <b>explain</b> using examples what living sustainably means	Oral
1	<b>Identify, describe</b> and <b>explain</b> the differences between renewable and non-renewable resources	Annotated diagrams Poster
2	Undertake an environmental review of different categories of sustainability at their school and draw up an Action Plan to <b>identify</b> and <b>explain</b> priorities to help the school become more sustainable	Range of graphs and charts Short report to governors Action Plan completed
3	<b>Understand</b> in basic terms how solar panels and wind turbines generate electricity	Oral
3	<b>Identify, describe</b> and offer <b>reasons</b> for how sources of energy used to make electricity in the United Kingdom are changing	Pie charts
3	<b>Explain</b> how electricity is generated in hydroelectric power stations	Short PowerPoint presentation
4	<b>Understand</b> why creating new habitats for birds is a good example of sustainable development	Annotated satellite image of Exe Estuary Interpretation panel
5	<b>Describe, observe, explain</b> and make a <b>judgement</b> as to why introducing solar cookers in some of the world's poorest countries makes the lives of people more sustainable	A3 explanatory poster
Homework	<b>Recognise</b> and <b>explain</b> ways in which their lives at home could be more environmentally sustainable	Personal Sustainability Action Plan

### Homework possibilities

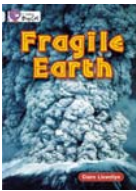

Ancillary Question 2 supports pupils in evaluating how sustainable their school currently is against a range of criteria suggested by the Eco-Schools programme. It then supports pupils in drawing up an Action Plan to help the school to increase its level of sustainability. Following this each pupil could be supported to consider the question: *How can my life at home be more sustainable?* Pupils could be asked, in collaboration with adults at home, to survey the areas of *energy; waste; water; transport; biodiversity; healthy living* and *green procurement* using the Eco-Schools documentation. Based on this information they could then draw up a personal Action Plan (**Resource 4**), which identifies one priority for change and explains why this change will improve sustainability for each of the seven surveyed areas.

# Key Question: How can we live more sustainably?

## Further reading



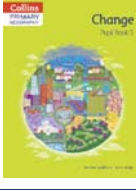



Collins *Big Cat* has books for every child in the classroom with a wide variety of genres, top authors, relevant topics and a range of engaging formats and illustrative styles. Listed below is a selection of from the Big Cat list to support the enquiry topics in Connected Geography for KS1. Find out more at Collins *Big Cat* – [www.collins.co.uk](http://www.collins.co.uk)

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ISBN: 978-0-00-742834-2	<i>What if we run out of oil?</i>	Nick Hunter	

## PRIMARY GEOGRAPHY

Collins *Primary Geography* provides a progressive, skills based scheme for primary school pupils.

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ISBN: 978-0-00-756361-6	<i>Primary Geography Pupil Book 5 Change</i>	Stephen Scoffham and Colin Bridge	
ISBN: 978-0-00-756362-3	<i>Primary Geography Pupil Book 6 Issues</i>	Stephen Scoffham and Colin Bridge	
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