



May we give them roots to grow and wings to fly.



Our Curriculum – Medium-Term Planning

Term and Year:	Autumn 2
Class:	Year 6
Subject:	Geography
Key Unit Question:	Where does our energy come from?
Key Themes:	Environment
Memorable Experience:	EDF – Hartlepool Power Station

Vocabulary that will be taught:

Contour Lines: A line on a map joining equal heights below or above sea level

Energy Source: Something that stores large amounts of energy

Fossil Fuel: A material formed from the remains of plants and animals over millions of years

Geothermal: Energy derived from the heat of the Earth

Non-renewable: Cannot be replenished and will run out

Power Station: Where electrical power is generated

Prime Meridian: The line of zero degrees longitude that defines all time zones

Renewable: Does not reduce in amount when used

Six-figure grid references: Numbers used to find a particular point in a grid square

Urban Planner: Somebody whose job it is to plan new settlements

National Curriculum Objectives:

- Name and locate counties and cities of the United Kingdom, geographical regions and their identifying human and physical characteristics, key topographical features (including hills, mountains, coasts and rivers), and land-use patterns; and understand how some of these aspects have changed over time
- 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)
- Understand geographical similarities and differences through the study of human and physical geography of a region of the United Kingdom, a region in a European country, and a region within North or South America
- Describe and understand key aspects of 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
- 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
- Use fieldwork to observe, measure, record and present the human and physical features in the local area using a range of methods, including sketch maps, plans and graphs, and digital technologies.

Rationale:

Energy consumption is very relevant to geography, as it is directly related to climate change and global warming. Modern life is heavily reliant upon our use of energy, to heat our houses, power our forms of transport, help our industries work and produce our food and clothes. This is an important topic for children in Y6 to study before they move into KS3 and study this in more detail. This also is an important industry in our local area and therefore is paramount to our Geography curriculum. This may help to prepare our pupils for careers in this industry in the future.

Prior Knowledge:

Children have developed a range of skills in their Primary Geography curriculum. The aim this unit is to help consolidate knowledge by placing them into relevant contexts.

Children have studied different locations around the world and other environmental issues such as biomes and climates. In this unit, they are able to use this knowledge and apply it to their everyday experiences through a simple fieldwork project.

What do we intend pupils to know and be able to do at the end of this unit?

Substantive knowledge:

- I know the different types of energy sources
- I know about the world's use of renewable and non-renewable energy
- I know about human influence on energy sources

Disciplinary knowledge:

- I can map significant energy trading routes
- I can discuss how land use has changed over time
- I can describe similarities and differences between two areas



Key lesson questions		Activities/Key points
Lesson 1	Why is energy important? - I can describe what we use energy for - I can give examples of different sources of energy - I can map significant energy trading routes	- Starter: Energy Timeline - ask the pupils to order them from when they were first widely available to use, the oldest to the most recent and discuss what energy is used for (to light and heat buildings; to provide electricity to make appliances work and to power most modes of transport and machines). - Show the children the global population graph with the sources of energy plotted. Is there any relationship between when energy sources were developed and population growth? (As various energy sources became available, the population began to rise, as did the energy demand, hence more being researched, developed and made available.) Why do you think this could be? (Better access to a wider variety of food through transport importing, exporting and maintaining conditions for food powered by fuel. Services and buildings could access electricity and gas, including houses and medical facilities, creating more favourable conditions for population growth.) - Give a brief overview of different types of energy sources and introduce the idea that we have to trade energy/ - Show an example of a significant global trading route (Indonesia exports coal to India and China). Children to label countries and draw arrows from the exporting to the importing countries to show which countries are providing energy to others. They should use a different colouring pencil for each source of energy and create a key to show this.
Lesson 2	What is renewable energy? - I can state the difference between renewable and non-renewable energy - I can describe the benefits and drawbacks of an energy source - I can discuss what to consider when deciding which energy source to use	- Explain to the class the meaning of renewable (does not reduce in amount when used) and non-renewable (cannot be replenished and will run out) energy - Children to group energy sources into sources that will eventually run out (non-renewable) and those that will not (renewable). - children to read the information about the energy source and write about its benefits and drawbacks in the table provided. <i>Diamond nine</i> - ask the children to think about what is the most important consideration when choosing the best energy source to use. They should order the cards from most important to least, in the shape of a diamond.
Lesson 3	How does the United States generate energy? - I can explain the significance of the Prime Meridian and time zones - I can use a digital map to identify land use - I can discuss how land use has changed over time	- Starter: Ask the children to find out the time of three major cities around the world (Sunderland, New York and Canberra) What time is it in each city? Why do you think they are different? (The times are different in each city as they are in different time zones.) Explain that time zones roughly follow the lines of longitude, although sometimes they curve to fit around a country's border. - Use a globe and a torch to show how some countries experience daytime (those facing the torch) and other countries facing away from the sun experience night time (those facing away from the torch). Therefore, it makes sense that they have different times. The most significant line of longitude is the Prime/Greenwich Meridian. It is called this as it is the line upon which all other time zones are based; therefore, the 'prime' line is also based in Greenwich, London. These names are interchangeable. Show the children the link: Introducing time zones on BBC Bitesize (https://www.bbc.co.uk/bitesize/topics/zvsfr82/articles/ztmq7yc) to further explain the concept of time zones. - Explain to the class that one of the largest consumers of energy in the world is the United States, which predominantly gets its energy from non-renewable sources, such as crude oil, coal and natural gases. The US produces around 20% of the world's crude oil but consumes around 21% of it. - Explain to the class that Texas is the largest producer of both oil and wind energy in the United States. Allow the children to explore the map and ask the children to answer questions about the railway, settlements, energy sources used in Midland and how transportation developed.
Lesson 4	How does the United Kingdom generate energy? - I can locate cities in the UK - I can use grid references on an OS map to locate human and physical features - I can describe similarities and differences between two areas	- Starter: Children to label UK cities on a map and write down which renewable energy these cities produce. - Explore the energy consumption in the UK and compare it to energy consumption in the United States. - Children to explore the 'Port of Blyth' on https://maps.walkingclub.org.uk/os/explorer/ - Children to search a number of six-figure grid reference using the link: Ordnance Survey Legend and answer questions regarding the OS map - Discuss and note down the similarities and differences between where the energy comes from and land use in Midland, Texas and Port of Blyth. Points to discuss include: - Both places are investing in wind energy through wind turbines. - Port of Blyth uses offshore wind turbines, whereas Midland only uses onshore turbines. - Midland generates energy using oil and there is evidence of pipelines that may contain oil in Port of Blyth. - Midland has a railway through its central city but Port of Blyth is based around a harbour. - Port of Blyth has evidence of coal mines but Midland does not.



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Lesson 5	What is the best way to generate energy? • I can discuss the benefits and drawbacks of an energy source • I can justify the location of an energy source • I can make considerations when planning new energy source facilities	• Class receive a message from an urban planner, who is planning a new city. He wants to know the source of energy the children would recommend to generate energy for his city. • Children to create a letter explaining the energy source they think would work best in this new city. Pupils should aim to include: - The name of their chosen energy source. - A benefit and drawback of their chosen energy source. - Where they would set up their energy source and why. - An example of where their energy source has previously been used successfully (optional). • Children may wish to draw and annotate a map of their proposed town, including the human and physical features the urban planner mentioned were in the town. • There are no right or wrong answers and the children should choose what they feel would work best as long as they justify their answers.
Lesson 6	Where is the best place for a solar panel on the school grounds? • I can use interview questions to collect qualitative data • I can draw a sketch map using contours where needed • I can use data collected to justify a proposed location for a solar panel	• Introduce the children to contour lines. Explain that these lines join points of equal land height. They are: - Drawn on OS maps to show where hills, mountains and slopes are located. - Usually five or ten metres apart. - Marked by the number on the line which shows the height above sea level so the larger the number, the higher up the contour lines are. - Useful if you are planning a walk or where to build something. • The closer together the lines are, the steeper the slope is. They can be represented slightly differently on alternative maps. Show the video on VideoLink. (https://video.link/w/4i_6eToM3X8) • Introduce the class to the enquiry question for this lesson: 'Where is the best place for a solar panel on the school grounds?'. Ask the children to draw a simple sketch map of their school grounds. • As the children are walking around the school grounds exploring their proposed sites, encourage them to add approximate contour lines onto areas that may be sloped. These do not need to include numbers to indicate height above sea level. The children can mark on their sketch maps where they believe a solar panel would work best on the school grounds. They should consider more than one location. • Children can then ask their interview questions to people relevant to the location they have decided on as these are the people that will be impacted. Children to present their results, justifying their reasons for choosing their location.
Lesson 7	Where does our energy come from? End of Unit Assessment / Knowledge Harvest	