Activity 6-Energy-English Literacy Fossil Fuels

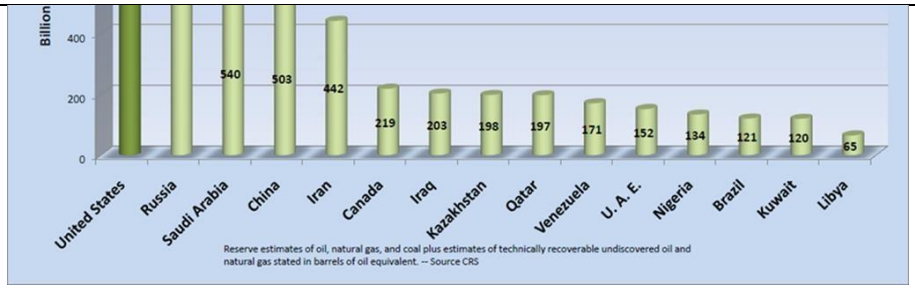
Activity	English Literacy-Fossil Fuels
Objectives	To dig deeper and understand where fossil fuels really come from
Subject	English
Age Group	8-10
Individual or Group	Individual
Classroom or Field Activity	Classroom
Duration of activity	45 mins
Materials	Paper and pen
Method (*find this text as pdf in resources below)*	1)Read this text and answer the questions below Years ago, when prehistoric animals and plants died, layers of rock and dirtslowly buried them. Over millions of years, heat and pressure from Earth's crust decomposed these organisms into one of the three main kinds of fuel:oil (also called petroleum), natural gas, or coal. These fuels are called fossil fuels since they are formed from the remains of dead animals and plants. Today these fuels are found in the Earth's crust and contain carbon and hydrogen, which can be burned for energy. Coal, oil, and natural gas are examples of fossil fuels. Coal is a material usually found in sedimentary rock deposits where rock and dead plant and animal matter are piled up in layers. More than half of a piece of coal's weight must be from fossilized plants. Oil is

	originally found as a solid material between layers of sedimentary rock, like shale. This material is heated to produce the thick oil that can be used to make gasoline. Natural gas is usually found in pockets above oil deposits. It can also be found in sedimentary rock layers that don't contain oil. Natural gasis primarily made up of methane. Natural resources are materials, substances, and organisms found in naturethat are useful to humans. They can be broadly categorized into two types: renewable and non-renewable resources. Renewable resources are those that can be replenished or regenerated naturally within a relatively short period of time. Examples of renewable resources include sunlight, wind, water (hydroelectric power), biomass (plantsand organic matter), and geothermal energy. These resources have the advantage of being sustainable and can be used without depleting their availability for future generations. On the other hand, non-renewable resources are finite in nature and cannot be replenished within a human lifetime or over several generations. Fossil fuels such as coal, oil, and natural gas are prime examples of non-renewable resources. They were formed from the remains of ancient plants and animals over millions of years and are being extracted and consumed at a much fasterrate than their formation. This makes them unsustainable in the long run. Waiting for millions of years for new deposits of coal, oil, and natural gas to form is not a practical solution. Therefore, it is essential to transition towardsalternative energy sources and reduce our dependence on fossil fuels. This includes developing and implementing renewable energy technologies, improving energy efficiency, and exploring other sustainable options such asnuclear power, which is based on a different energy source—uranium. Efforts are also being made to conserve and manage natural resources more effectively, reduce waste, and promote sustainable practices. This involves measures like sustainable forestry, responsible water management, conservation of biodiversity, and the adoption of circular economy principlesto minimize resource extraction and maximize resource reuse and recycling. By adopting these strategies and investing in sustainable alternatives, we canmitigate the environmental impacts of our resource consumption and move towards a more sustainable and resilient future. 1) What are fossil fuels made of? 2) What do we use fossil fuels for? 3) What is CO2? 4) What is the link between fossil fuels and CO2?

	5) How does CO2 contribute to climate change? 6) Are there any other ways we can make energy apart from fossilfuels? 7) What can we do to use less fossil fuels? 8) What does it mean when we say fossil fuels are a non-renewable resource?
Resources	Activity 6 Fossil Fuels.pdf

Activity 7 – Energy- Maths Data Bar Graphs

Activity	Maths Data- Bar Graphs
Objectives	To understand how to interpret bar graphs
Subject	Maths
Age Group	8-10
Individual or Group	Individual
Classroom or Field Activity	Class
Duration of activity	45 mins
Materials	Paper, pens, bar chart on screen
Method	



1)

Fossil fuels are measured in barrels.

A barrel is approximately 159L. (158.9l)
Calculate in litres America's resources.

Look at this diagram. Answer these questions.
(Reading a graph)

a. Which country has the highest supply of recoverable Fossil Fuels?
b. Calculate this supply in litres.
c. Which two countries have a total of 660 barrels of supplies?
d. Calculate the mean of recoverable Fossil Fuels Supplies.
e. Draw a red line to show the mean on the graph (diagram)

Write 1 or 2 things that you notice.

2)

A normal car powered by diesel fuel emits around 170g of CO^2 per Km.

Estimate and calculate the amount of CO^2 if you decide to travel from your house to Valletta?

Use google maps to look at the distance from Valletta to your house.

Xemxija to Valletta there are 21km approx.

170 x 21 = 3,570g of CO2
3.57 kg of co2

Task 2

	It is estimated that one tree produces 100 kg of oxygen per yearOne person needs around 740kg of oxygen per year. One tree absorbs approximately 22kg of carbon dioxide per year.From this information calculate: a. Estimate how many trees produce enough oxygen for you per year? b. Estimate how trees do we need to produce enough oxygen for thewhole class? c. Think of a trip you do by car weekly? (E.g. every Saturday I go to adance class by car). Find out how many kilometres by car is that in a year. Now calculate the amount of CO_2 produced by the car per year.Estimate how many trees are needed to absorb that amount ofcarbon dioxide
Discussion and Conclusion	<u>Reducing emissions from fossil fuels</u> Governments around the world are now engaged in efforts to ramp down greenhouse gas emissions from fossil fuels to prevent the worst effects of climate change. At an international level, countries have committed to emissions reduction targets as part of the 2015 Paris Agreement, while other entities including cities, states, and businesses—have made their own commitments. These efforts generally focus on replacing fossil fuels with renewable energy sources, increasing energy efficiency, and electrifying sectors such as transportation and buildings. But what can schools and households do?Switch off when not using electricity. If we can get to where we need to go by walk we do not use the car. Shopping closer to home can reduce our impact on earth and the use of fossil fuels. Buy what you need. Buy it well. Buy less. Whatever is made − fossil fuels are involved.

Activity 8-Energy-Renewable Energy Cards Game

Activity	Renewable Energy Card game and PowerPoint
Objectives	1)To understand that there are different types of renewable energy 2)To understand that electricity can be produced by different sources
Subject	Science
Age Group	8-10
Individual or Group Activity	Group
Classroom or Field Activity	Classroom
Duration of Activity	45 mins
Materials	Print the game cards, cut them, glue them back-to back at the dotted line. Print one pack for each group
Method	1)First watch the video: Understand Goal 7: Affordable Clean Energy (Secondary) 3)Then play the game Instructions: Guidelines for game:

	1) Create double-sided cards by folding along the dotted line and gluing or laminating each card together. Pupils can play individually or in small groups. 2)Spread cards out picture side up (or bold word up if using the differentiated version). 3)Pupils begin by turning over the 'go' card and reading the description on the other side. 4)They then look at the pictures and words on the other cards and turn over the one that matches the description. 5)They then read the description on the back of that card and continue turning over the matching card until they find the finish sign. 6)If they discover the finish sign before they have turned over all the pictures, then they have made a mistake and must start again. 7) To play the game, choose whether you will use the version with pictures, (easier) or without pictures (harder). Game take around 10 minutes to play Adult Guidance Sheet.pdf
Resources (English)	Energy Cards Without Pictures.pdf Energy Cards.pdf

Activity 9-Energy—Fossil Fuels and CO2 Quiz

Activity	Fossil Fuels and CO2 Quiz
Objectives	Quiz: 1)To understand what fossil fuels are and their uses 2)To understand how fossil fuels were formed 3)To understand the connection between fossil fuels, carbon dioxide and climate change Word Search: 1)To further consolidate teaching on fossil fuels
Subject	English, Science
Age group	8-10
Individual or Group Activity	Optional
Classroom or Field Activity	Classroom
Duration of Activity	45 mins

Materials	Questions for Quiz, (these questions can be inputted in the teacher's chosen online quiz platform or it can be done as an oral class activity) 1) What are fossil fuels made of? 2) What do we use fossil fuels for? 3) What is CO2? 4) What is the link between fossil fuels and CO2? 5) How does CO2 contribute to climate change? 6) Are there any other ways we can make energy apart from fossil fuels? 7) What can we do to use less fossil fuels?
Method	1)Watch the videos on the topic. (below) 2)Start a discussion 3)Do the quiz (questions above), online or in class format
Video	Fossil Fuels and CO2 | Our Climate Our Future, Chapter 3 https://www.youtube.com/C02 and climate change

Activity 10-Energy-Fossil Fuels Word Search

Activity	Fossil Fuels Word Search
Objectives	1)To learn terminology related to fossil fuels 2)To further consolidate teaching on fossil fuels
Subject	English, Science
Age group	8-10
Individual or Group Activity	Individual
Classroom or Field Activity	Classroom
Duration of Activity	45 mins
Materials	t-g-1651045028-fossil-fuels-word-search_ver_1.pdf Print out the pdf above for each student (Fossil Fuel Word Search)
Method	1)This is a follow-up lesson to the quiz above. 2)Upon completion of the word search, create a discussion about the use of fossil fuels and possible alternatives to fossil fuels. 3)For alternatives watch below videos
Video	Types of Energy for Kids - Renewable and Non-Renewable Energies Also watch: Solar Energy | Science for Kids

	(This video will be a good lead-in to the solar cooking lesson- next activity)

Activity 11-Energy-Solar Oven

Activity	Solar Oven
Objectives	Children will understand how the sun's rays hit the earth at an angle and when reflected onto the right surface can be used to cook food.
Subject	Science
Age group	8-11
Individual or Group Activity	Optional
Classroom or Field Activity	Field
Duration of activity	Making the solar oven:45 mins Cooking in the solar oven: 1-2 hours

Materials	Cardboard pizza box (the kind delivered pizza comes in) Box knife or scissors Aluminum foil Clear tape Plastic wrap (a heavy-duty or freezer zip lock bag will also work) Black construction paper Newspapers Ruler or wooden spoon Thermometer An adult to help with cutting
Method	**1.** Use a box knife or sharp scissors to cut a flap in the lid of the pizza box. Cut along three sides, leaving about an inch between the sides of the flap and the edges of the lid. Fold this flap out so that it stands up when the box lid is closed. **2.** Cover the inner side of the flap with aluminum foil so that it will reflect rays from the Sun. To do this, tightly wrap foil around the flap, then tape it to the back, or outer side of the flap. **3.** Use clear plastic wrap to create an airtight window for sunlight to enter the box. Do this by opening the box and taping a double layer of plastic wrap over the opening you made when you cut the flap in the lid. Leave about an inch of plastic overlap around the sides and tape each side down securely, sealing out air. If you use a plastic bag, cut out a square big enough to cover the opening and tape one layer over the opening. **4.** Line the bottom of the box with black construction paper. ***Black absorbs all known wavelengths of light and converts them to thermal energy (heat).*** The black surface is where your food will be set to cook. How much you need will depend on the size of the pizza box you're using to make your solar oven. **5**. To insulate your oven so it holds in more heat, roll up sheets of newspaper and place them on the bottom of the box. Tape them down so that they form a border around the cooking area. It may be helpful to also tape the rolls closed first. The newspaper rolls should

	make it so that the lid can still close, but there is a seal inside of the box, so air cannot escape **6.** The best hours to set up your solar oven are when the Sun is high overhead—from 11 am to 3 pm. Take it outside to a sunny spot and adjust the flap until the most sunlight possible is reflecting off the aluminum foil and onto the plastic-covered window. Use a ruler to prop the flap at the right angle. You may want to angle the entire box by using a rolled-up towel. **7.** You can make toast by buttering a slice of bread then letting the Sun do the rest. Cooking a hot dog or making nachos with chips and cheese are also fun treats to make in your solar oven! It would also work great to heat up leftovers. So the paper at the bottom doesn't get dirty, put what you would like to cook on a clear plastic or glass plate. A pie plate would work well. Place the thermometer inside your oven before you close it, so you can check the temperature. **8.** To take food out of the oven, open up the lid of the pizza box, and using oven mitts or potholders, lift the glass dish out of the oven.