

Geography - Junior Cert

Energy forms the core of geography and yet it is often overlooked in the race for points. At the Junior Certificate level all the main areas are covered: the means and sources of energy production and the resultant effect on the environment.

Climate Change has become increasingly important and the regional section offers great scope to develop energy awareness. This section provides material that should assist in the development of that awareness.

The content for this section is as follows:

Energy and Fossil Fuels	Fossil Fuels - a more detailed look	Fossil Fuels - the pros and cons
Wind and Coal - a comparison	Wind and Coal - the environmental impact	Primary Energy
Energy and Fuelwood	Renewable Energy - Pros and Cons	The Greenhouse Effect
Quizzes		

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Energy and Fossil Fuels

Energy is all around us and is needed for the growth or formation of almost everything around us. There are many sources of energy in our world. We can get energy from the sun, from wind, and from falling water. We can also get energy from materials that contain stored energy. We call these materials "fuels." The most important sources of energy today are the fossil fuels.



Nearly all other sources of energy originally received their energy from the sun. Organic matter, like plants, convert solar energy into leaves, flowers and fruits. Animals, which eat organic matter, convert the energy into body mass. When the plants and animals die, their energy is broken down and over a long time, becomes stored as oil, natural gas, coal or peat.

Fossil fuels take a long time to form. If we go back in geological history, we find that it took between 350 and 50 million years for our fossil fuels to form. As the fuels take so long to form, and they need special conditions to form, most geologists feel that little or no new fossil fuel is being produced. For this reason, we call fossil fuels "non-renewable" or finite



As more and more fossil fuels are used those that are the easiest to find will be used up first. As time goes on it will be harder to find new reserves of the fuels and the cost of extracting them will increase. Eventually the stage will be reached when it will not be economically viable to extract the fuel and another source of energy will be used. In the 19th Century people stopped hunting whales for whale oil, not

because of concern for the whales but because it became cheaper to use petroleum for their lamps. In Britain, very little coal is now mined because it is cheaper to import the coal from places like Poland.

Questions

1. Name four different sources of energy?
2. Why do you think Fossil Fuels get their name?
3. How long do fossil fuels take to form?
4. Why are fossil fuels said to be non-renewable or finite?
5. What do we mean by renewable energy?
6. Do you think the Earth will use up all its Fossil Fuel resources? Explain your answer.

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Fossil Fuels - a more detailed look

The most common fossil fuels are coal, oil, and natural gas. Peat, a very young form of coal, and oil shale are types of fossil fuel. These fuels were formed millions of years ago from plants and animals that died and decomposed beneath tons of soil and rock. These fossil fuels are not fossils like the bones of prehistoric creatures. Prehistoric fossils are hard and made of stone. Stone cannot burn. Fossil fuels contain the remains of dead plants and animals, not stone, and can burn.

The different fossil fuels formed in different ways. Peat is formed the partially decomposed remains of plants, which has grown in a swamp or marsh. Over a long period of time, peat will form coal. Coal was formed from plant debris. It is thought that 10 feet of plant material is needed to form 1 foot of coal. Natural gas and oil were formed from tiny organisms that settled to the bottom of ancient seas and rivers.

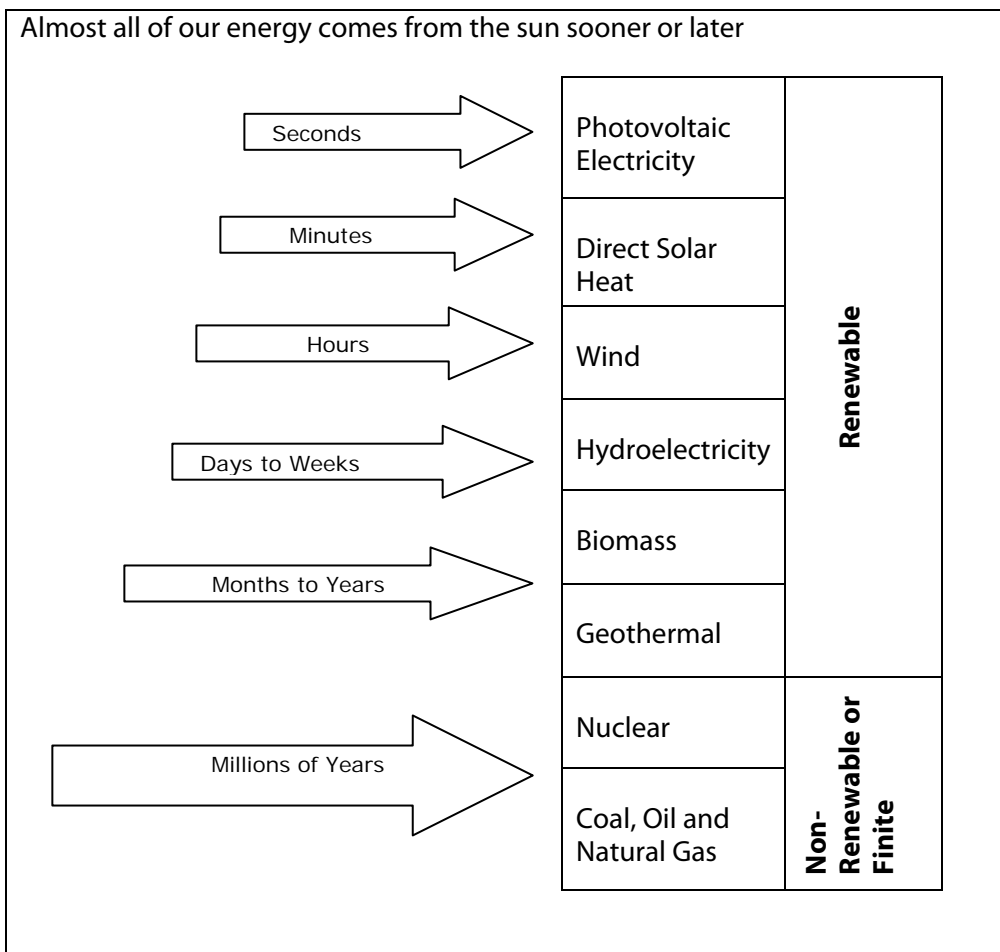
Oil and gas need special conditions to prevent them escaping to the surface. A 'trap' must exist to prevent the upward movement of the fluid. The main feature of the 'trap' is an impermeable cap-rock. This stops the oil and gas seeping to the surface. Fossil fuels are vitally important in today's world. In Ireland, about 98% of our total energy requirements were supplied by fossil fuels. About 93% of all our electricity was generated by fossil fuels.

Fossil fuels can be used to produce more than just energy. Not only can oil be refined into fuels to power engines, it can also be processed into petrochemicals from which plastics, medicines, and paints can be made. The Petrochemical Industry is an industry that makes chemicals from petroleum, another name for oil. Many types of fertilisers that are used to grow our food are made from fossil fuels. Many types of plastic are made from fossil fuels and this plastic is used for many things, eg. glasses, mobile phones. You might be wearing glasses made of plastic. The mobile you should not be looking at is also made of plastic. The synthetic fibres that are used to make fabrics for our clothes are produced from fossil fuels. Photographic film for our cameras is also made from petroleum, as are many medicines.

Questions

1. What are the differences between prehistoric fossils and fossil fuels?
2. Explain how each of the fossil fuels is formed?
3. Make a list of all the different ways in which fossil fuels are used that affect you in your daily life. You might use the following headings: Energy, Plastics, Paint, Clothes, Food.

Fossil Fuels: WorkSheet1



1. Some sources of energy are said to be renewable because they can be replaced in a short period of time. Others are said to be non-renewable or finite because it would take so long for them to form. Which sources of energy are renewable and which are non-renewable?
2. Which fuels are used the most? Are these renewable or non-renewable? Can you see any possible problems with this?
3. Which types of energy do not come originally from the sun?
4. Imagine you are a geographer who has been asked to advise the Minister of Energy about future energy policies. What advice would you give the Minister?
 - Hint: What energy should be conserved and which should be developed?

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Activity 3 - Fossil Fuels - The pros and cons

Advantages	Disadvantages
Fossil fuels are relatively cheap and plentiful	Fossil fuels will become more and more expensive to extract
Advanced technologies have been developed to allow safe extraction	Extracting fuel will become more dangerous as the mines get deeper or the oil rigs go further out to sea
The technology already exists for their use e.g. petrol-driven engines	Pollution from these fuels is said to be responsible for global warming, acid rain and oil spillage
The means of controlling pollution from these fuels exist	It is very expensive to control the pollution and the price of fuel would have to rise
The income from the sale of fuels can help a country's economy	
At present, no energy source can fully safely replace fossil fuels	

Information Box : Scarcity and Fossil Fuels

A resource is the total amount of something that is economically useful. A reserve is the total amount of that resource that can be economically used. Using today's technology, it is estimated that the Earth's reserves of fossil fuels will last for another 300 years.

As the fossil fuels become harder to find, they are said to be scarce. This means that the price of finding these fuels will increase until they become too expensive to use. Before that happens, people will have developed alternative sources of energy.

The real problem with fossil fuels is not that they will run out. The problem is that they do harm to the environment and issues like Global Warming and Climate change will determine whether we continue to use Fossil Fuels or not

Comparing Wind and Coal

Ireland has some of the windiest weather in Europe. It also has one of the lowest population densities. This means that in some parts of Ireland there are very few people. This is especially true in the west of Ireland where the strongest winds can be found. This makes Ireland a good place to site wind farms. There are only a few wind farms in Ireland at present but more could be built in the future.



Activity

- 1 Look at the two pictures above. Describe each picture and say how they are different.
- 2 Cut out each of the sentences in the table below. Make two piles - one for the coal fired power station and one for the wind farm. Put the sentences into the correct pile. You may also make two headings in your copy and write the sentences below the heading.

It does not produce water or air pollution	Up close, the turbines make a lot of noise.
It wastes energy in the form of heat	It produces a large amount of electricity.
It uses renewable energy	It produces energy all the time.
In the past these were built near areas of high population.	If not built on the coast, these need road and rail links.
The turbines cannot be heard in the power station	It produces water and air pollution.
A large amount of land is needed but it can be used for other purposes	They often have to be built in areas of great natural beauty.
It produces a small amount of electricity.	It only produces energy when it is windy,
These are usually built away from areas of high population	It uses non-renewable fuel
These can be built anywhere but usually near deep water on the coast	It does not produce waste heat energy.

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Environmental Impact

Whenever something is built it has an effect on the environment, which is the world around us. In the past, people did not worry too much about the consequences or effects of their action. If they cut down a forest there was always another one. There was always plenty more fish in the sea.

Today, most people have realised that we must be make sure that the damage or costs of building or using something is less than the benefits of that building or use. To work out if the costs or problems are greater than the benefits, an environmental impact study is carried out.

Using the table below, you are asked to make an environmental impact study. From the two piles or lists you have already made,

1. Decide which of these are costs and which are benefits
2. Write each cost and benefit into the correct space.
3. When you have finished, decide which source of energy has the most benefits and the least costs or problems.
4. You should repeat this exercise for oil, nuclear, biomass, water and geothermal sources of energy

	Benefits	Costs / Problems
Wind Farm		
Coal –Fired power Station		

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Primary Energy

Primary Energy source is one that can release its energy directly upon combustion. When wood is burned heat and light energy are released. Coal, Peat and Natural Gas are used in many homes for cooking and heat while many homes use oil and gas for central heating.

Diagram 1 shows the total energy consumption or use of each Primary Energy source in Ireland in 1998.

Diagram 1

The main use for primary energy sources is to heat water and use the steam to turn turbines to generate electricity. This is done in Power Stations. Water also turns turbines to provide hydroelectricity. Diagram 2 shows how Ireland's electricity was generated.

Diagram 2

Electricity is known as a Secondary Energy source because it is generated by the use of a Primary Electricity source. Electricity is created in Generators by the turning of turbines that are powered by steam or water.

[Primary Energy Worksheet, \(pdf, 22KB\)](#)

Primary Energy Worksheet

1. Explain what a Primary Energy source is.
2. How do Primary Energy sources release their energy?
3. Make a list of the different Primary energy sources that are used in your home and say how they are used.
4. Using the information from Diagrams 1 and 2, complete the following table. Add the percentages for Peat and Coal in Diagram 1 for the Primary Energy requirements. Oil is done for you. Ignore Pumped Storage in this exercise.

	Primary Energy Required	Electricity Generated
Oil	55%	20%
Gas		
Coal/ Peat		
Renewables		

- A Do you notice anything strange about the results? Using information from the Primary energy sheet, try to explain the results for each of the energy sources.
- B In 1998 almost all of Ireland's use of Gas was for the generation of electricity. Do you think the results would be the same today? If not, what do you think has changed?
- C Can you think of any reasons why less Oil is used to generate electricity than Coal, Peat and Gas? Use your textbooks to help you here. What difference has the formation of OPEC in 1973 made?
- D What energy sources does Ireland not have to import from abroad? Are there any sources of energy that Ireland could develop in the future?

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Energy and Fuelwood - environmental impact burning wood

Resources are those parts of the environment that are capable of satisfying various human needs. Trees are a resource. Trees can be used to supply wood for timber and for fuel. In many parts of the developing world, people depend on fuelwood for most of their energy needs.

In rural areas, up to 90% of the energy needed for cooking and heating is supplied by fuel wood. As the population grows, more and more wood is needed. There is no longer enough dead wood to collect. People start using saplings, young trees, and mature trees. This means that wood is being used quicker than it can be replaced by growth. The trees and forests start to disappear. In Africa, 58% of the population face fuelwood scarcity.

The removal of the forests sets up a cycle.

More people need more wood. People removed mature trees and then as people travel saplings are removed. Soil erosion occurs as there are no trees to protect the soil, deserts spread

The removal of trees can cause problems elsewhere. Without the trees to hold water, flooding can take place. It is believed that the removal of forestry in the Himalayas resulted in flooding in the River Ganges destroying crops, homes and killing many people.

Questions

1. If removing trees causes so much damage, why do people continue to use trees for fuel for their cooking and heating?
2. Examine the fuelwood scarcity cycle, can you think of ways to break the cycle? Why are your ideas not being carried out in poor countries?

Renewable Energy - Pros and Cons

During the 1960's and 1970's people began to fear that the main source of energy, the fossil fuels, would run out. Fossil fuels are finite or non-renewable and once they are used they cannot be replaced. In recent years, people realised that there was enough fossil fuels to last for several hundred years. A greater problem was the damage that was being done to our atmosphere. This has led to interest in renewable energy sources that do very little damage to the environment. These are some of the main renewable energy sources:



Hydroelectric Power (HEP)

Dams are built to control fast flowing rivers so that the water can be used to turn turbines to generate electricity. At times when the energy is not needed, the water can be pumped back up to the storage reservoir.

Adv. of Hydroelectricity	Disadvantages of Hydroelectricity
Abundant, clean, and safe	Can have a significant environmental impact
Easily stored in reservoirs	People can lose their homes
Offers recreational benefits like boating, fishing, etc	Can be used only where there is a water supply



Tidal

Barrages can be built across estuaries to use tidal flows to generate electricity.

Advantages of Tidal power	Disadvantages of Tidal power
Abundant, clean, and safe	Not commercially viable at present
Tides are very reliable	Shipping could be disrupted

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Solar

The sun's warmth can be used to heat water and buildings. Solar cells can convert sunlight into electricity.

Advantages of Solar power	Disadvantages of Solar power
Unlimited supply	Reliability depends on sunlight
No water or air pollution	Not really cost effective at present
	Storage and back-up are necessary



Biomass

Biomass is the oldest of the renewable energy sources and, in Ireland, its main use is as wood fuel. Another source of Biomass energy comes from the production of biogas. Municipal solid waste, agricultural waste and sewage sludge break down to produce Methane. This methane can be collected in tanks and burned to produce heat.

Advantages of Biomass	Disadvantages of Biomass
Abundant and renewable	Burning biomass can result in air pollution
Can be used to burn waste products	May not be cost effective

Geothermal



Courtesy NREL

Water is pumped through hot rocks under the ground. The hot water can be used to heat buildings and any steam produced can be used to generate electricity. Low temperature geothermal energy, found in Ireland, can be tapped using heat pump technology.

Advantages of Geothermal Energy	Disadvantages of Geothermal energy
An unlimited supply of energy	Best supplies limited to certain areas of the world
Produces no air or water pollution	Start-up costs are expensive
	Corrosion of pipes can be a problem

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Wind

Wind Tall wind turbines on wind farms can use the power of the wind to generate electricity. Eleven wind farms are now operational in Ireland. These have a combined capacity of 68 MW - enough electricity for over 44,000 homes.

Advantages of Wind energy	Disadvantages of Wind energy
Produces no water or air pollution	Constant wind is needed
Farmers can receive an income from any electricity generated and the land can have other uses	The wind farms can have a significant visual impact
Wind farms are relatively cheap to build	Wind farms need a lot of land

Questions on Renewable Energy

1 The renewable energy sources can vary from area to area. This depends on the type of climate found in the area or the underlying geology or the shape of the land. What types of energy could be used in the following areas:

- (a) A wet mountainous region with few people.
- (b) A flat windswept region.
- (c) A dry, hot region without much vegetation.
- (d) A flat agricultural region beside a major city.

2 Study the tables below. What is the most important renewable energy source in Ireland? Why do you think that this is source is so important. Be sure to answer fully using information from the tables.

3 What types of renewable energy could be used in the following countries:

- (a) Mali in West Africa
- (b) Iceland or Japan (Both are on Plate margins)
- (c) The Orkney Islands, north of Scotland
- (d) Norway

4 Look at the advantages and disadvantages of the renewable energy sources and try to decide which have the most benefits and least problems. Why do you think these sources of energy are not used much more than they are?

5 Using the Internet, your textbooks, newspapers and any other sources of information you may have, make a study of renewable energy sources. Are there any in your local area? Many areas have old water wheels or even windmills. What were these used for? Are there any plans to develop renewable energy sources in your area?

The Greenhouse Effect

The Greenhouse Effect has existed as long as the Earth has had atmosphere. The sun radiates energy as ultra-violet or short wave radiation. This energy travels easily through the atmosphere just as light passes through the glass in a greenhouse. When it reaches the Earth's surface some of the energy is reflected back as infra-red or long wave radiation. This energy is not transmitted as easily as short wave radiation and the atmosphere traps some of the energy.

It is the Greenhouse Effect that ensured that conditions were right for human life. Without it, the world's average temperature would be about -18°C, the same temperature as winter in Moscow. The real problem lies with Global Warming. Gases are being released by human activities faster than plants and the sea can absorb these. The more gases that are released the higher the temperature.

Carbon Dioxide

Carbon Dioxide accounts for 55-60% of the warming effect and 85% of the human production of Carbon Dioxide is the result of fossil fuel burning. About 15% is due to the burning of forests, mainly in places like the Amazon. Although the amount of Carbon Dioxide in the atmosphere is quite small, about 350 parts per million parts of air, it has serious climatic effects. Since 1860 the temperature has risen by about 1°C and could rise by 2°C by 2030. And the amount of Carbon Dioxide in the atmosphere is increasing.

Table 1

Year	1860	1990	2050
Carbon Dioxide parts per million(ppm)	280 ppm	350 ppm	680 ppm (estimated)

Other Greenhouse Gases

Until recently, chlorofluorocarbons (CFC's) accounted for about 25% of the warming effect. In addition they are responsible for the destruction of the Ozone Layer. It is hoped that CFC's will soon be completely phased out.

Methane accounts for 15% of Global Warming. The main sources of this gas are the burning of forests, the flatulence of livestock, coal mining and decomposing rubbish. The fact that Ireland has large herds of cattle will make it difficult to reduce the amount of methane it produces. However, if the amount of grass and silage that is fed to the animals is reduced, so will the production of methane. The problem is that this will cause the price of food to rise.

The Possible Effects of Global Warming

No one is entirely certain what the result of Global Warming will be. Some scientists believe that Ireland will be about 1°C warmer. This would mean that Ireland could also be wetter because warmer air can hold more moisture. The change in temperature would benefit farmers because every 1°C increase in average temperature increases the growing season by about two weeks. Crops like wheat and corn could be grown in more areas. But it is not all good news. As the sea level rises due to melting ice coastal areas could be flooded and coastal erosion could increase. Increased rainfall could cause flooding along many rivers. As most of Ireland's people live along the coast or beside rivers this could be a serious problem in the future. Other problems are shown in Table 2.

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Table 2

Some scientists believe that cold water flowing from the melting Arctic ice could disrupt the North Atlantic Drift and Ireland could suffer severe cold winters	Melting Ice will cause sea levels to rise at about 30cm a century. Increasing temperatures will increase the melt rate and flood many lowland and coastal areas
The hot areas will get hotter and deserts will spread	Mediterranean Europe could become a desert. People will have to move elsewhere
Our heating and energy needs will be lower and power stations could close	Tourism would improve in as the temperatures rise
Climatic Belts and Vegetation types will move towards the poles	Rainfall could increase and the weather conditions could become unstable

Questions

1. If the sea level rises 1 metre for every 0.5°C, how far has it risen since 1860? How much will it rise by the year 2030?
(a) Ireland (b) Western Europe (c) The Pacific Islands (d) Africa
2. Study Table 2. Divide the possible effects in those that are good and those that are bad. Decide whether the benefits of Global Warming are greater than the problems. You should then decide whether we should continue to use fossil fuels based on your decision.
3. If the amount of Greenhouse Gases continues to rise, Global warming will become worse. Working in pairs, decide how the amount of these gases can be reduced
4. One way that each of us can help to reduce the production of Greenhouse Gases is to conserve energy. Try to make a list of the different ways that you can conserve energy in your home and at school.

Quizzes

- Energy Revision, (PDF, 21KB)

Word Searches:

- Word Search, Level 1, (PDF, 22KB)
- Word Search, Level 2, (PDF, 25KB)
- Word Search, Level 3, (PDF, 19KB)

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Energy Revision

The s_____ is the source of almost all the energy on the Earth. There are only two types of energy that do not come from the sun. These are n_____ and g_____ energy. The rest come from the sun and all take different amounts of time for that energy to be stored.

Some types of energy take very little time to be replaced and these are said to be r_____. This means that they will never run out. Other types of energy take many m_____ of years to form. This means that they will become scarce and too e_____ to find. There is only a certain amount that can be used. Once that amount is used there will be no more. These types of fuel are said to be n_____ or f_____.

P_____ electricity is formed when sunlight hits solar cells. The sun's energy is converted into electricity. Space s_____ have been powered using solar cells. Recently NASA has been experimenting with a solar powered a_____.

If you get into a car that has been sitting in the sun you will experience the heat energy of d_____ s_____ h_____. Greenhouses are designed to use this heat. Solar collectors are used in many countries to trap this energy and to heat water.

The sun heats the earth and the reflected energy heats the air close to the earth. This air rises and cooler air from nearby areas rushes in to take its' place. This moving air is known as w_____. This energy has been used to sail ships, turn w_____ that pump water or grind grain, or to generate electricity.

In the w_____ c_____, the sun heats water on the Earth's surface. Some of this water evaporates, condenses to form clouds and eventually precipitates as rain or snow. As the water makes its way to the sea along rivers, its energy can be used to turn t_____ that will generate h_____.

Plants trap the sun's energy in the process of photosynthesis. This energy can be used as food or fuel. A fuel is something that stores chemical energy. W_____ releases this energy when it is burnt. Plant energy is called b_____.

G_____ and n_____ energy do not get their energy from the sun. Most of their energy comes from a_____ reactions within the Earth.

The most important form of energy used today comes from the remains of dead plants and animals that have formed over millions of years. These are known as the f_____ f_____ and the most common are p_____, o_____, c_____ and n_____ g_____.

Word box

aeroplane, atomic, biomass, coal, direct solar heat, expensive, finite, fossil fuels, geothermal, hydroelectricity, millions, natural gas, non-renewable, nuclear, peat, photovoltaic, renewable, satellites, sun, turbines, water cycle, wind, windmills, wood

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Energy – Wordsearch 1

W N T A L I A L O O P L O B T L S Y S C P M L X
 E L I O S W W T L D P B C F C I Z T I R Z B G K
 D P N S W A E G I D M E C H E E V R E S E R A E
 G R O M R F L U W V W T C Y L H A A Y C Y W S T
 U F O M V A E I A B E V Z D E H L P H U W W O D
 O G I F D Z N F E E N E A R E L B A W E N E R P
 O N E I R D U C R S J C N O B O R D N A M O N A
 G U T O N E R R I F H E M E M X Y T I U L M B I
 J D X G T U T N G F R L N L R Q Z X N U O F D Z
 E G W N O H P A B M B O E E Z G D D D N T Y H K
 R K O S I A E Y W K V H V C W B Y C E T K R K H
 J H E A C I D R A I N E S T J J R Y G V E K Z N
 O R L C U P K L M P H N I R E O P L X P I V F C
 U F N E S J M Y S A U O G I A O R K C N O E B Z
 U B T A L E P L U K L Z U C I K W I S F W P Z C
 Y C F D X P F E Y A M O Y N G T M A I X J H Q H
 N O I T A V R E S N O C T L K L L S C D D Z J B
 M X Y N P G H V Z L V G B M K E R P W G B V D V
 A B F D E X C Q S O E S N O Y R B T N T N B N R
 K L Z U I T F C O A L J G O T G I P M H X M A A
 I B T P E P I R N E I L O T I R O E S X G T T L
 B N Y E K L D N U K O Z I R C T M A D D C S U O
 B Q H L R C W F I B V S G V I P A T A W L K R S
 Q A K I Q N L O A F D C P G R I S T R X K Q A K

Find the missing words.

RESOURCE

RESERVE

FINITE

CONSERVATION

RENEWABLE

ELECTRICITY

POWER STATION

GLOBAL WARMING

OZONE HOLE

ACID RAIN

FOSSIL FUELS

COAL

OIL

NATURAL GAS

PEAT

BORD NA MONA

KINSALE

MONEYPOINT

OPEC

WATERFORD

ALTERNATIVE ENERGY

BIOMASS

FUELWOOD

GEOTHERMAL

HYDROELECTRIC

SOLAR

TIDAL

WIND

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Energy Wordsearch 2

N T A L I A L O O P L O B T L S Y S C P M L X
 W
 E L I O S W W T L D P B C F C I Z T I R Z B G K
 D P N S W A E G I D M E C H E E V R E S E R A E
 G R O M R F L U W V W T C Y L H A A Y C Y W S T
 U F O M V A E I A B E V Z D E H L P H U W W O D
 O G I F D Z N F E E N E A R E L B A W E N E R P
 O N E I R D U C R S J C N O B O R D N A M O N A
 G U T O N E R R I F H E M E M X Y T I U L M B I
 J D X G T U T N G F R L N L R Q Z X N U O F D Z
 E G W N O H P A B M B O E E Z G D D D N T Y H K
 R K O S I A E Y W K V H V C W B Y C E T K R K H
 J H E A C I D R A I N E S T J J R Y G V E K Z N
 O R L C U P K L M P H N I R E O P L X P I V F C
 U F N E S J M Y S A U O G I A O R K C N O E B Z
 U B T A L E P L U K L Z U C I K W I S F W P Z C
 Y C F D X P F E Y A M O Y N G T M A I X J H Q H
 N O I T A V R E S N O C T L K L L S C D D Z J B
 M X Y N P G H V Z L V G B M K E R P W G B V D V
 A B F D E X C Q S O E S N O Y R B T N T N B N R
 K L Z U I T F C O A L J G O T G I P M H X M A A
 I B T P E P I R N E I L O T I R O E S X G T T L
 B N Y E K L D N U K O Z I R C T M A D D C S U O
 B Q H L R C W F I B V S G V I P A T A W L K R S
 Q A K I Q N L O A F D C P G R I S T R X K Q A K

Answer the following clues to find the words in the word search

1. A soft fossil fuel found in bogs.
2. Energy that blows around us.
3. Something that has an economic use.
4. Ultra-Violet radiation passes through these.
5. Energy not from fossil fuels.
6. A liquid fossil fuel.
7. There is a certain amount and no more.
8. Heat is trapped by various gases in the atmosphere causes this.
9. Energy from hot rocks.
10. A hard black fossil fuel.
11. The name given to the area where Irish gas was discovered.
12. Energy originally from dead plants and animals.
13. Once used there is no more.
14. Energy that is easily useable in the home, e.g. to switch on the lights.
15. Energy from plants.
16. Fossil Fuels are burned here to produce electricity.
17. Energy from water.
18. In charge of Irish peat.
19. Energy from the sun.
20. The organisation that sets oil prices.
21. Looking after the Earth's resources.
22. Oil was found off this Irish town.
23. A resource that never runs out.
24. Many fires and ovens use this gas.
25. The over-heating of the Earth's atmosphere.
26. Energy from water moved by the moon and sun.

For further information on SEAI Schools Programme contact:

Education Executive, Sustainable Energy Authority of Ireland, Wilton Park House, Wilton Place, Dublin 2

Phone: 01 808 2049, email: schools@seai.ie, web: www.seai.ie/schools

Energy Wordsearch 3

K H Y Z C P P P K W M Q J B N G W S
 P D Y W E O D E Y O I H F P O C U A
 B C U D U L F A Q O C V I D N G A G
 A L T E R N A T I V E E N E R G Y L
 G Y D C G O C S R S P D C T E W V A
 X K T D O U E E N L D O I I N A T R
 H D K I O A S L A I N Z X N E T O U
 R O K I C O L M E S K M U I W E H T
 O E N U U I R E E C D C A F A R O A
 C M N R V E R R X D T F A P B F P N
 T U C E H D V T T J Y R L W L O H V
 L E V T W A E D C X P S I I E R C K
 F N O I T A T S R E W O P C O D Z K
 M E E I O I B A T M L S S A M O I B
 G C O P F Q L L T B H E T I D A L S
 O N E R V O G W E E C C S X J F O S
 Y C R B S D K J D N I W W I I M A N
 B O R D N A M O N A A Z H R O G Y M

Word Box

ALTERNATIVE ENERGY	NON-RENEWABLE
RENEWABLE	FINITE
BIOMASS	COAL
GEOHERMAL	OIL
HYDROELECTRIC	WATERFORD
PEAT	OPEC
BORD NA MONA	NATURALGAS
SOLAR	KINSALE
TIDAL	POWER STATION
WIND	ELECTRICITY
CONSERVATION	RESOURCE

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