

Geography

Renewable Energy is a growing industry in Northern Ireland, in the rest of the UK and throughout the world. Renewable Energy, now and in the future, will provide a solution to the problems of energy demand, fuel security, fuel sustainability and the ability to reduce CO2 emissions. Renewable Energy is the future of energy, today.

Why use these resources?

These teaching ideas and activities for Key Stage 4 Geography are designed to cover topics found within the GCSE specifications.

- They are designed to support Geography teachers as they **up-date** schemes of work and look for **different teaching ideas**.
- They provide **fun and engaging activities for students**.
- The information is provided in a **variety of forms to allow for flexibility** so that they can be tailored to the needs of students.
- There are **up-to-date local, national and global case studies**.
- Activities planned to cover a diverse range of **skills**.

Want more?

If you would like a visit to your school from the Education Officer or help to organise a fieldtrip to see renewable technologies, please get in touch.



Aims of Action Renewables' Post-Primary Education Programme

Knowledge and understanding



Raising awareness – local and global scale



Engaging and Empowering



Decision-making



Leading to Action

- Increasing **Knowledge and Understanding**, facilitating young people to learn more about renewable energy and its related issues.
- **Raising awareness** at a local and global scale. To allow young people to realize the possibilities, the alternatives and how it can be made a reality in their home, in their school, in their neighbourhood, in their city, country and internationally. To make them look beyond themselves and their lives.
- **Engaging and Empowering** – inspiring young people so that they know they all have a part to play. A small action, makes a difference. Empowering people to realize that we are all citizens in this World, whose actions matter – whether young or old – we can all contribute to a sustainable future.
- **Decision-making** – being a part of a decision, so that young people can consider the options, weigh up arguments and form opinions. It allows students to leave school with the ability to make informed choices, to alter behaviour and to be responsible citizens.
- **Leading to Action**. To take action to encourage energy efficiency and use renewable energy in their school or home. To take action in their futures, as they work to provide for a sustainable future for the following generations.

What topics does the Action Renewables' Education Programme cover?

- Energy sources - Renewable Energy & Non-renewable energy
- Global Warming
- Climate Change
- Population & Resources – issues of supply energy to a growing population, energy reserves now and in the future, population and pollution
- Atmosphere & Human Impact – issues of human impact & global warming
- Sustainability - Sustainability in terms of future energy production, fuel security, environmental impact of fossil fuels and use of resources



Outline of Teaching Ideas and Activities

1. Where does our Energy come from?

Focus on the difference between renewable and non-renewable resources, and the different types of renewable and non-renewable resources

2. What is the link between Energy Production and Global Warming?

Considering the influence of CO2 emissions on global warming, leading to Climate Change

3. What are the advantages and disadvantages of different renewable energy resources?

In depth look at the different technologies involved, with case studies at a local, national and global scale

4. Decision-making exercise

An exercise to consolidate knowledge and understanding of renewable technologies: giving opportunities to consider location, availability of resources and sustainability. To enter the decision-making process - weighing up option, viewpoints and coming to a decision.

5. Action: Every Action makes a difference

6. Puzzles



Key Question	Learning Objectives	Teaching Ideas and Activities	Skills
Where does our Energy come from?	<ul style="list-style-type: none"> To increase knowledge of energy sources To become aware of energy in Northern Ireland 	<p>Starter: Ask students what they have used before coming to school, that need electricity to work.</p> <p>Have some of these items to show, e.g. mobile phone, kettle, shower gel=hot water, torch=light in the house, hairdryer.</p> <p>Ask students to imagine that there had been a power cut this morning – NO Electricity! How would your morning have been different?</p> <p>ASK: Where does our energy for these things come from?</p> <p>WATCH: 'Where does our Energy come from?' Powerpoint & Resource 1.1 for note-making & follow-up questions</p>	Note-making
What is the link between Energy Production and Global Warming?	<ul style="list-style-type: none"> To realize how humans impact the atmosphere To consolidate knowledge and global warming and climate change 	<p>Starter: Ask the students to listen to your question and write down the first thing that comes to mind (don't give much time between questions)</p> <p>Q1 – What is 'Global Warming'?</p> <p>Q2 – Yes or No – Is 'Global Warming' the same as 'Climate Change'?</p> <p>Q3 – A cause of Global Warming?</p> <p>Explain that they are going to find out if they are right</p> <p>WATCH: 'The Global Warming link?' Powerpoint</p> <p>Plenary: Re-visit the Starter questions, discuss and ask students to give their answers.</p>	Note making Thinking Skills
What are the advantages and disadvantages of different types of renewable energy?	<ul style="list-style-type: none"> To develop knowledge and understanding of renewables To work in groups To present information to others To read and consolidate information 	<p>Starter: 'Odd One Out' activity Resource 2.1</p> <p>Activity: Resource 2.2</p> <p>Use the INFO sheets on wind, solar, bio, hydro, geothermal and wave&tidal energy</p> <p>Divide the class into 6 groups</p> <p>Each group is given the information for 1 type of renewable energy and feedback to rest of class.</p>	Managing information Working with others
Focus on wind energy in Northern Ireland	<ul style="list-style-type: none"> To increase awareness of wind energy in Northern Ireland 	<p>Activity: Resource 3.1</p> <p>Followed by a debate, 'This house believes no more wind farms should be built in Northern Ireland'. (material on proposals for future wind energy in NI found with KS5WindBonus resources)</p> <p>Students given a side of the motion, they prepare short speeches and have the debate.</p>	Mathematics Oral presentation Debating
Decision-making Exercise	<ul style="list-style-type: none"> To use knowledge of renewables and think through options To weigh up options 	<p>Teacher's Notes: Resource 4.1</p> <p>Setting the Scene: Resource 4.2</p> <p>Map: Resource 4.3</p> <p>About the people in the village: Resource 4.4</p> <p>TASK: Resource 4.5</p>	Decision-making Thinking skills Problem solving Managing information
Action: Every Action makes a difference. What are you going to do?	<ul style="list-style-type: none"> To realize what they can do to contribute to a sustainable future 	<p>To encourage students to think about what they can do – 'You Decide'</p> <p>Activity: To work individually or in groups to research and come up with a plan for school, home, community centre, local shops OR local church.</p> <p>The Plan: To provide energy more sustainably</p> <p>Ideas could include,</p> <ul style="list-style-type: none"> o Energy Efficiency – good information found on the 'Energy Savings Trust' www.est.org.uk o Adding renewable energy OR o Students may come up with other ideas 	Research Flexibility Initiative Creativity
Puzzles	<ul style="list-style-type: none"> To consolidate knowledge and understanding of material covered and issues involved 	<p>Word search: Resource 5.1</p> <p>Word search answer: Resource 5.2</p> <p>Double Puzzle, instructions, answers & puzzle: Resource 5.3</p> <p>Crossword & answers: Resource 5.4</p>	Use knowledge



KS4 Geography Resource 1.1

Where does our energy come from?

NOTES:

Non-renewable energy is: _____

Renewable energy is _____

COAL _____

OIL _____

NATURAL GAS _____

NUCLEAR _____

LIGNITE _____

WIND _____

SOLAR _____

BIO _____

HYDRO _____

GEOHERMAL _____

WAVE&TIDAL _____



KS4 Geography Resource 1.1

Where does our energy come from?

FOLLOW-UP:

Think and discuss the following questions -

1. What do we use oil for in Northern Ireland?

2. How many wind farms do we have here?

3. Is nuclear energy an option for Ireland?

4. Is gas cleaner/better for the environment than oil?



KS4 Geography Resource 1.1

ANSWERS:

Where does our energy come from?

FOLLOW-UP:

Think and discuss the following questions -

1. What do we use oil for in Northern Ireland?

In our homes for heating. Petrol in cars

2. How many wind farms do we have here?

10, more planned

3. Is nuclear energy an option for Ireland?

Very unlikely.

4. Is gas cleaner/better for the environment than oil?

Gas is better, so 2 of our power stations run on gas which is great. However, gas is transported to Northern Ireland through a European gas pipe. We are at the end of the line – if there are problems in other countries or a short supply – we may have difficulties.



KS4 Geography Resource 2.1

Odd One Out

You need to work out which is the odd one out – which one is different from the others. Be careful! Take your time and get it right.

Circle your answer

1	Gas	Oil	Wind
2	Solar	Geothermal	Nuclear
3	Hairdryer	TV	Mobile phone
4	Turbine	Water	Generator
5	Water	Wave	Tidal
6	H ₂ O	CO ₂	SO ₂
7	Lignite	Oil	Coal
8	Lights	Computer	Car
9	Nuclear	Coal	Oil
10	Gas	Coal	Solar
11	CO ₂	Global Warming	Music
12	Sea level rise	Less hurricanes	Hotter summers
13	More drought	Less Ice	Climate Change
14	Cars	Wind turbine	Power stations
15	Stormier winters	Glaciers grow	Summers colder



KS4 Geography Resource 2.1

Odd One Out

Answers

1	Gas	Oil	Wind
2	Solar	Geothermal	Nuclear
3	Hairdryer	TV	Mobile phone
4	Turbine	Wave	Generator
5	Hydro	Wave	Tidal
6	H2O	CO2	SO2
7	Lignite	Oil	Coal
8	Lights	Computer	Car
9	Nuclear	Coal	Oil
10	Gas	Coal	Geothermal
11	CO2	Global Warming	Music
12	Sea level rise	Less hurricanes	Hotter summers
13	More drought	Less Ice	Climate Change
14	Cars	Wind turbine	Power stations
15	Stormier winters	Glaciers grow	Summers colder

1. Wind – only one renewable
2. Solar – only one renewable
3. Mobile phone – Hairdryer & TV need to be plugged into electric socket, mobile phone runs on battery



4. Water – turbine & generator are machinery needed to produce electricity. Water can also be used but is not man-made machinery
5. Hydro – wave & tidal only at sea, hydro not
6. H₂O – not a greenhouse gas
7. Oil – formed from decayed animal and plant material. Coal and lignite only formed from decayed plant material
8. Car – electricity is not needed (for the majority for cars)
9. Nuclear – coal and oil formed from decayed animal and plant material. Uranium is not
10. Geothermal – only one renewable
11. Music – CO₂ and global warming are both to do with climate change, music isn't
12. Less hurricanes – not a sign of climate change
13. Climate Change – Is the term given to the changes. More drought and less ice are the changes
14. Wind turbine – only one to create no pollution
15. Stormier winters – only one that is a sign of global warming



KS4 Geography Resource 2.2

Renewable Energy

Select 1 member of the group to READ this to the rest of the group: -

Your TASK

This group is going to become experts at 1 type of renewable energy.

- You will be given an INFO sheet, explaining about 1 type of renewable energy.
- In your group, read the INFO and fill in this sheet.
- Then you will report back to the rest of the class.
- Your teacher will tell you how long you have.
- Good Luck!

Work together as a group to read and note down the information needed. Before you report back to the rest of the class, decide who will say what.



KS4 Geography Resource 2.2

Type of Renewable Energy:

How does this renewable produce electricity?

- _____
- _____
- _____
- _____

Advantages?

Disadvantages?

- _____
- _____
- _____

- _____
- _____
- _____

Local Case Study

Where? _____

What? _____

Other information: _____

National Case Study

Where? _____

What? _____

Other information: _____

Global Case Study

Where? _____

What? _____

Other information: _____



KS4 Geography Resource 2.2

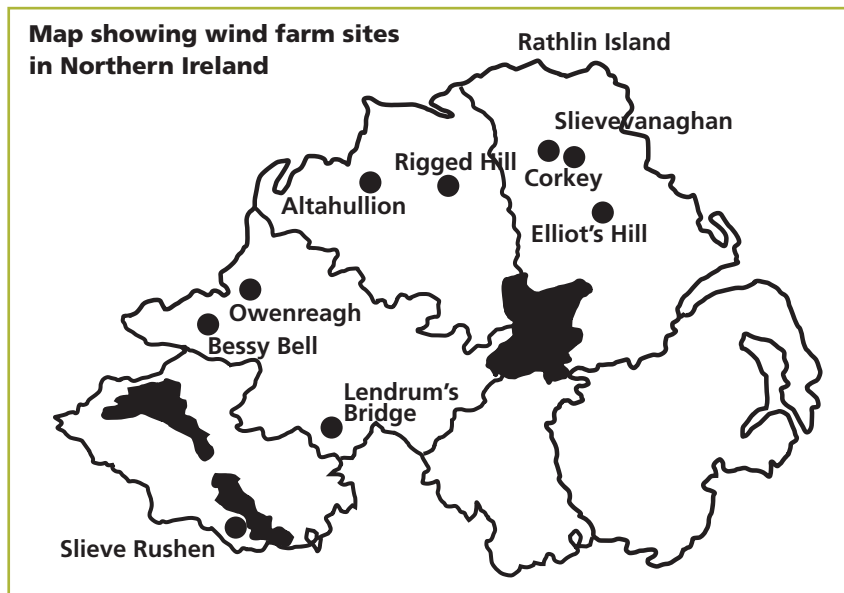
During feedback - complete this sheet about the other renewables

Type of Renewable Energy	What is this?	Advantages	Disadvantages	Case Study - an example
WIND	Using wind			
SOLAR	Using sunlight			
BIO-ENERGY	Using plant and animal waste			
GEOHERMAL	Using heat in the ground			
HYDRO	Using moving water			
WAVE & TIDAL	Using the moving sea			



KS4 Geography Resource 3.1

Focus on Wind Energy in Northern Ireland



TASK:

1. Describe the location of wind farms in Northern Ireland.
2. Use a map of Northern Ireland to help to explain why these locations have been chosen. (Include at least 2 physical and 1 human reasons)
3. Use the data from the table, in Northern Ireland is peak winter electricity demand is about 1800MW. What % of electricity does wind energy generate?
4. In your opinion, do you think Northern Ireland should build more wind farms? Explain your opinion.

Wind Farms, NI	Started	Number of Turbines	Total Capacity (MW)
Altahullion	2003	20	26
Bessy Bell	1995	10	5.0
Corkey	1994	10	5.0
Elliot's Hill	1995	10	5.0
Lendrum's Bridge	2003		5.94
Owenreagh	1997	10	5.0
Riggid Hill	1995	10	5.0
Slievevanaghan	1999		1.0
Slieve Rushen	1995	10	5.0
Total Capacity of all wind farms			62.94



KS4 Geography Resource 4.1**Decision-making Exercise****Teacher's Notes**

This exercise is designed to consolidate knowledge and understanding of renewable technologies: giving opportunities to consider location, availability of resources and sustainability. To enter the decision-making process - weighing up options, viewpoints and coming to a decision.

The Resources include:

- Setting the Scene – background to area and general information
- INFO on people and viewpoints
- TASK: On the map there are marked available sites for renewable energy. Each site gets a score out of 10 for how suitable it would be for different types of renewable energy. Then produce a report outline their recommendations and any concerns for their choice.

This exercise can be completed individually or in groups. The report can be presented orally or in written form.

Answers for TASK:

Site A – Good for wind, hill-top and bio-energy, lots of trees. Solar – ok, if panels not shaded by trees. Hydro – no.

Site B – Good for wind. Solar – good. Bio-energy – no and hydro – no

Site C – Wind – ok, but hillside not good. Hydro – good. Solar – ok. Bio-energy – no

Site D – Hydro – good, 3 tributaries meet. Wind – no, as in valley. Solar – good. Bio-energy – ok.

Site E – Wind – small-scale good but on hillside. Solar – good. Bio-energy – ok. Hydro – no

Site F – Wind – no, as in valley. Solar – good. Hydro – ok. Bio-energy – ok

Site G – Wind – ok, but on hillside. Solar – no, south sheltered by hill. Hydro – no, Bio-energy – good, tree supply and space to grow more trees

Issues that you should encourage students to think about and discuss:

- Impact of decision on local tourism
- Impact of views from people's homes
- Impact on local economy
- Impact on landowners
- What about 'sustainability'? How is the village planning for a sustainable future?
- Responsibility of residents to look beyond themselves and realise their actions make a difference



KS4 Geography Resource 4.2**Decision-making Exercise****Setting the Scene:**

Tully is an imaginary village. Tully could be anywhere in Northern Ireland. It is a typical rural settlement, facing the same problems and issues that people face in reality.

About Tully

Tully is centred on Main Street, with its local shops, take-away, pub, restaurant, church and houses. Tully is famous for the remains of its 11th century Norman stone fort, which over looks the village. The National Trust owns and conserves the fort. The fort is a popular place for day-trippers. On a clear day there are lovely views from the fort and there is a network of footpaths for walks.

On the edge of the village there is a derelict Corn Mill. The mill was built in the 19th century and used the power of the water from the river.

Over the last 10 years, people have moved into the village to live. Some of these people live in new and reinvented houses on Windy Hill Road. The benefits of moving here are the views over to West Hill, lower house prices than the city and a better quality of life than the city.

Farmland around the village is mainly used to graze sheep and in recently times, some farmers have chosen to earn money by planting trees on their land.

It is a friendly place – people generally get on very well with each other. There are a few characters:

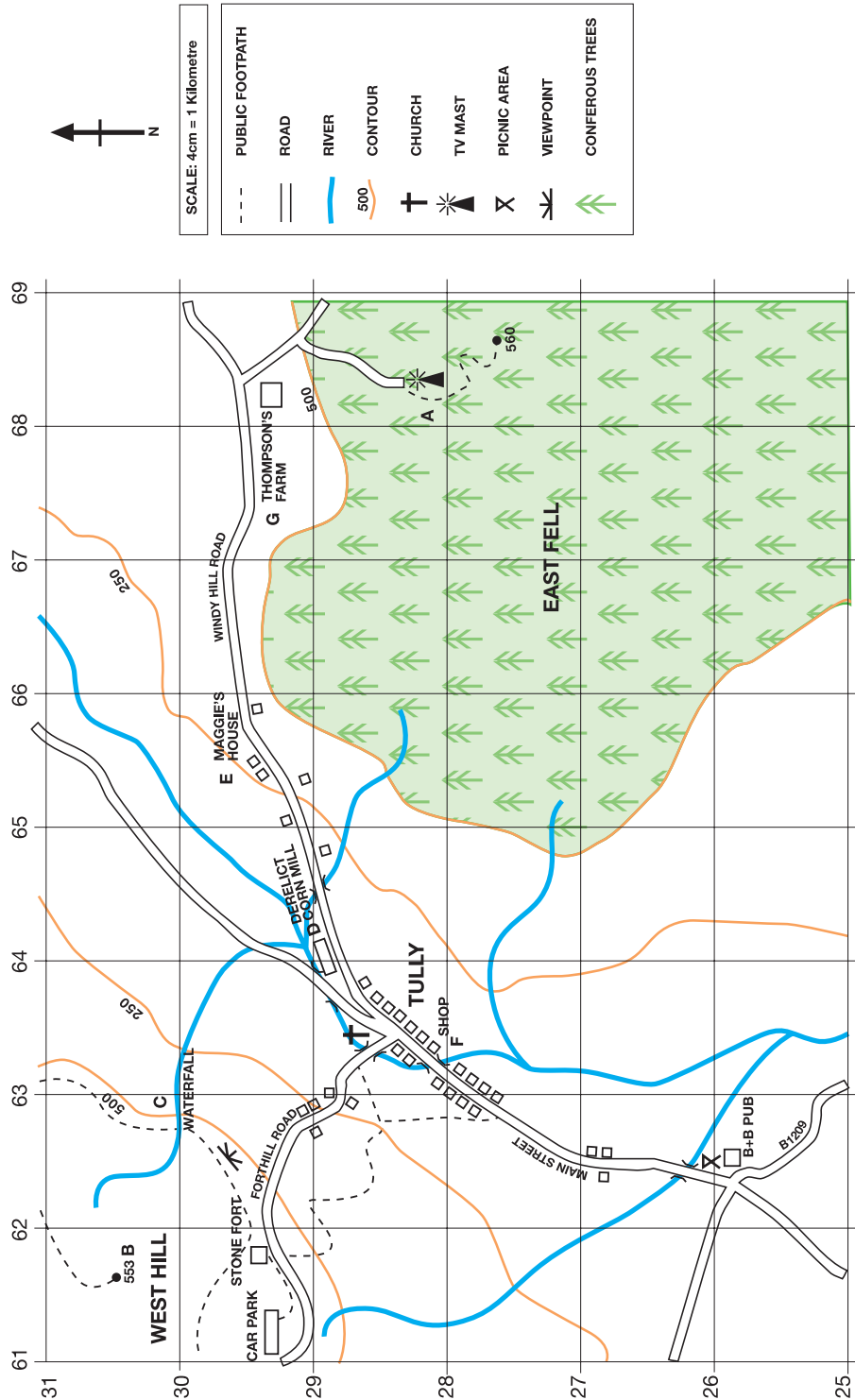
- Rosemary, the shopkeeper – who famously refused to sell anything from her shop to a couple – who had newly moved into a new house on Windy Hill Road!! This was because she didn't like the look of their new house on the hill. However, after a week she had calmed down.
- Rebecca, a 'wanna-a-be' environmentalist who was trying stop all rubbish collection in order to force people to recycle all their rubbish.



KS4 Geography Resource 4.3

Decision-making Exercise

Map of Tully



KS4 Geography Resource 4.4**Decision-making Exercise****About the people who live in Tully****John Thompson** – Farmer

Owens the largest farm in the valley. He mainly grazes sheep, but recently, due to EU grants, he has thought about setting aside some of his land to grow trees. At the moment he is also open to other possibilities, to make good use of his land and to make money. He likes the idea of growing a, 'sustainable forest'.

Maggie Hilary – Recently moved to live in Tully

Maggie and her family have moved from the city to live in a new house along Windy Hill Road. She really likes living in Tully. It is a lot quieter than where they lived before, the people in the village are friendly and the kids love the places they can go to play. In the summer, she likes to sit in her west-facing conservatory – watching the sunset behind West Hill!

Tom Johnston – B&B and Pub owner, at B1209/Main street junction

Tom recently inherited the B&B and the pub from his parents. He has decided to keep the business for a year and see how well the business is doing. Over the last 10 years the business has not been doing well. In the past the business was very busy, especially with day and weekend trippers. Tom would like to up-date the property and improve the business. If more people visit Tully or move to Tully – the business would benefit.

Alex Newbury – Manages the 'Stone Fort' National Trust Property

Alex has worked to conserve the stone fort and encourage visitors to the area. The people who visit are mainly hill-walkers, who like the view and the walks on West Hill. Alex would like to encourage more visitors to the area and has thought about building a play park for children and a nature trail. The property has the main viewpoint area in the valley, which is to its advantage.

Rosemary Wallace – Local shop-keeper

Rosemary has owned the only food shop in Tully. Business is better in the summer mainly because of visitors. She doesn't like all the new houses being built on Windy Hill Road because she thinks it ruins the look of the hillside, but she does like the extra business she is getting from the people who have moved.

Robert Long – Landowner

Robert is the owner of the derelict corn mill. He is considering what to do with it. He has been trying to sell it, but there has been very little interest. Robert has lived in Tully for the last 23 years and would like to see something worthwhile done with the old mill buildings or the site.



Rachel Millar – Chairperson of the village council

Rachel is keen to conserve the environment, economy and sense of community in Tully. She knows the village is changing with people moving in and also young people looking to leave because of lack of jobs in the area. She was interested to know that in another rural area of Northern Ireland, jobs were created at a wind farm and actually encouraged tourists to visit the area because they wanted to see the turbines.

Matt Harvey – Local resident

Matt and his fiancé were both born in Tully and they are now deciding if they should leave Tully to find better jobs elsewhere. They would like to stay because both of their families still live in the village and house prices are cheaper than in the city. If Matt has been working for John Thompson, the local farmer, but he would like to have a new challenge and at the moment there are no other jobs available in Tully.

Rebecca Williams – Local Resident

Rebecca has lived in Tully for most of her life. She shares a house with her husband along the Fort Hill Road. She worked as a teacher at the local school until it was closed 6 years ago. So Rebecca took early retirement and has been involved with doing voluntary work with environmental organisations. She is a member of the village council and has been the leader at promoting environmental issues in the village. Last year she was successful at organising a village recycling bank.



KS4 Geography Resource 4.5**Decision-making Exercise****TASK:**

You are an energy expert and have been asked by Tully Borough to look at the possibilities for renewable energy in the Tully valley. You will need to write a report

on what you decide is the best option for Tully, but first you need to assess each potential site.

Tully Borough wants:

- To encourage visitors to the stone fort: good for local services
- To develop more outdoor activities, considering promoting West Hill and East Fell for mountain bike routes
- To maintain the growth of people moving into the village: good for local services and businesses
- To support the local economy
- To use the funding it has been given by the government to develop renewable energy in its area

1. Complete the table below. Score each site out of 10 for how suitable it is for each type of renewable energy. For example, if site D would be a good place for a wind turbine, give it a high score (8-10), OR if site D would be a bad place for a wind turbine, give it a low score (1-3).

2. Each site needs a recommended type of renewable energy.

The renewable energy with the highest score for each site will be your recommended one.

Site	Hydro Energy	Wind Energy	Solar Energy	Bio-Energy	Recommended renewable energy for each site?
A					
B					
C					
D					
E					
F					
G					



KS4 Geography Resource 4.5**Decision-making Exercise**

Look at the information about the people who live in Tully (resource 4.3). How would they react to what you have recommended?

3. Pick 1 site and your recommendation and select 1 person FOR it and 1 person who would be AGAINST it.

Explain why they would react in that way.

4. Write your report entitled, 'Recommendations for Renewable Energy in Tully'.

- **INTRODUCTION** - Introduce what renewable energy is and why it would be good to develop it in Tully and the benefits it could bring.

- **RECOMMENDATIONS** - List and explain your recommendations for site A-G. Highlighting the 1 you think would be the best option and why.

- **CONCERNS** - Let Tully Borough know any concerns that locals may have to the recommendations and try to come up with ways of dealing with these concerns.



KS4 Geography Resource 5.1

Word-Search

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

BARRAGE

BIOGAS

BIOMASS

COAL

CURRENT

FOSSIL

FUELS

GASES

GENERATOR

GEOTHERMAL

GREENHOUSE

GROUND

HEAT

HYDROELECTRICITY

MARINE

OFFSHORE

OIL

ONSHORE

PELLETS

PHOTOVOLTAIC

PUMP

SOLAR

SOURCE

TIDAL

TURBINE

WAVE

WIND

WOOD



KS4 Geography Resource 5.2

Word-Search Answers

+ B E N I R A M + + L + + + E + S + + +
 + + I + + + C + + A + + + G + + L + + +
 + + + O + + + I M + + + A + + + E + + +
 + + + + G + + R A O + R + + + T U + + +
 T A E H + A E + N T R + + + + U F + + +
 S + + + + H S S W A L P + + + R + + + +
 + E + + T + H + B I + O M + + B + + + +
 + + S O F O S S I L N + V U + I + + + +
 E + E A R S O L A R + D + O P N + + + +
 S G + E G + + L + + + + + + T E + + + +
 U + + + Y T I C I R T C E L E O R D Y H
 O S S A M O I B + + + + V + T + H + + +
 H + + G + + + O S + + + A + N + + P + L
 N + + R + S + + F T + + W + E + + + A W
 E + + O O + + + + F E + + + R + + D O +
 E + + U + + + + + S L + + R + I O + +
 R + R N + + + + + + H L + U T D + C +
 G C + D + + + + + + + O E C + + + O +
 E + + + + + + + + + + R P + + + A +
 G E N E R A T O R + + + + + E + + + L +

(Over,Down,Direction)

BARRAGE(9,7,NE)

BIOGAS(2,1,SE)

BIOMASS(8,12,W)

COAL(19,17,S)

CURRENT(15,18,N)

FOSSIL(5,8,E)

FUELS(17,5,N)

GASES(5,10,NW)

GENERATOR(1,20,E)

GEOTHERMAL(2,10,NE)

GREENHOUSE(1,18,N)

GROUND(4,13,S)

HEAT(4,5,W)

HYDROELECTRICITY(20,11,W)

MARINE(8,1,W)

OFFSHORE(8,13,SE)

OIL(6,12,NE)

ONSHORE(10,4,SW)

PELLETS(15,19,NW)

PHOTOVOLTAIC(18,13,NW)

PUMP(15,9,NW)

SOLAR(6,9,E)

SOURCE(6,14,SW)

TIDAL(16,17,NE)

TURBINE(16,4,S)

WAVE(13,14,N)

WIND(9,6,SE)

WOOD(20,14,SW)



KS4 Geography Resource 5.3**Double Puzzle**

1. Unscramble the words
2. Copy the letters in the numbered cells to other cells with the same number

Answers

Wind
Photovoltaic
Solar Panels
Ground Source Heat Pumps
Sun
Turbine
Wind Farm
Biomass
Willow
Biogas
Hydroelectricity
Tidal
Marine Current Turbine
Generator
Blades
Offshore
Onshore
Sustainable
Carbon Neutral
Technologies
Geothermal

The Future of Energy Today



WIDN
20

PILCHOTVOOAT
19

SRLAO PAESNL
9

NURDOG RUOSEC TAEH PSPUM
5

UNS
7

NEUTIRB
6

NIWD RAFM
4

SMBAIOS

LOWLIW

BAGSOI
16

RIHLEIDTCOERYTCY
22 12 17

ALDIT
18

AREMNICUTNERR TEBUIN
13

REGNERTAO
10

DELSAB
14

ROSFOHFE
11 2

SOHRONE
3

SILSABNETAU
21

CANROB TAURENL
15

HOOEGNICLEST
1

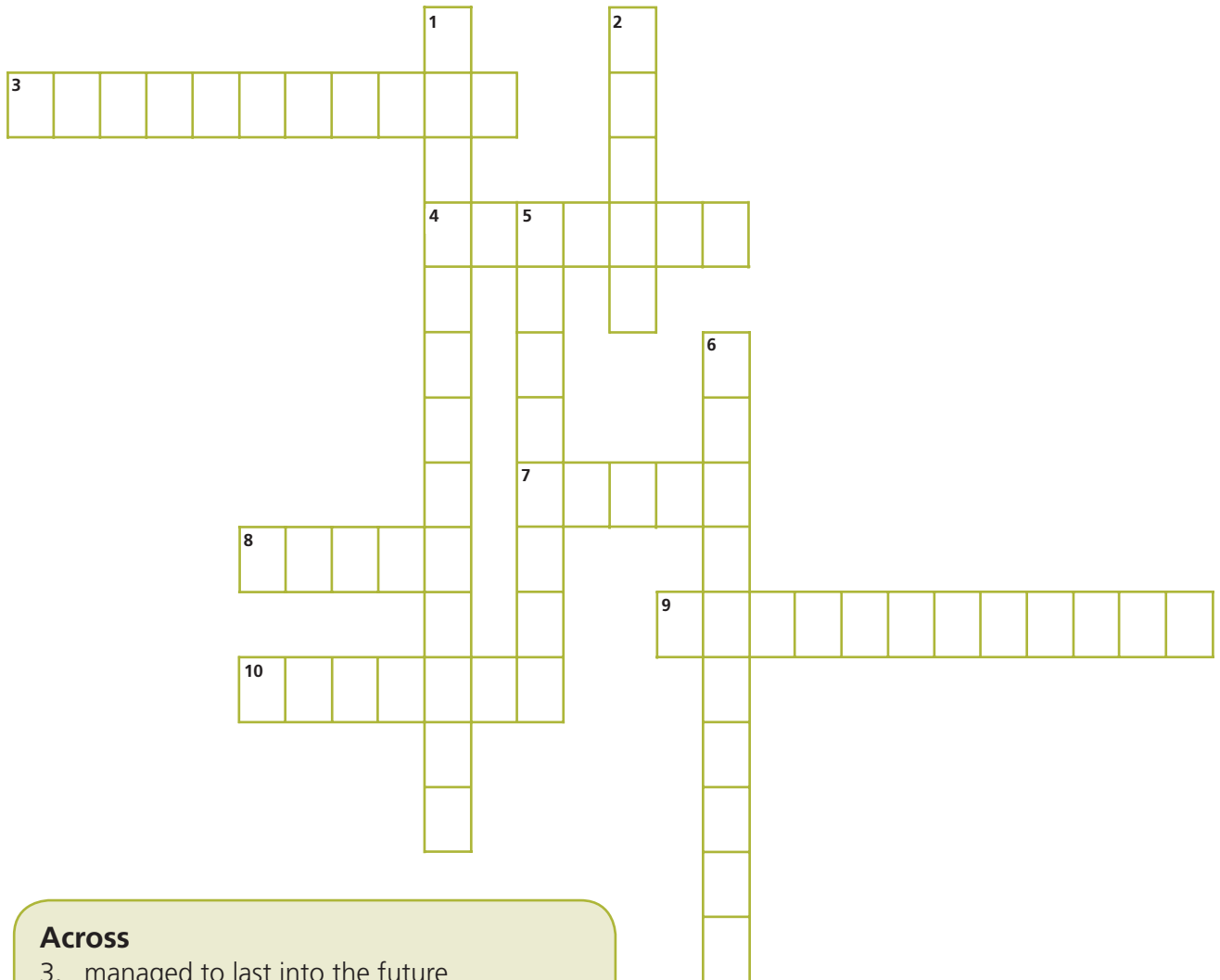
MARTEGOHEL
8

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22



KS4 Geography Resource 5.4

Crossword

**Across**

3. managed to last into the future
4. animal and plant matter
7. uses energy from moving water
8. uses energy from the sun
9. converts sunlight to electricity
10. drives a generator

Down

1. rise in global temperatures
2. uses movement of the sea
5. wind farm located in the sea
6. heat from the ground



KS4 Geography**Crossword****Answers****Across**

3. managed to last into the future sustainable
4. animal and plant matter biomass
7. uses energy from moving water hydro
8. uses energy from the sun solar
9. converts sunlight to electricity photovoltaic
10. drives a generator turbine

Down

1. rise in global temperatures global warming
2. uses movement of the sea tidal
5. wind farm located in the sea offshore
5. heat from the ground geothermal

