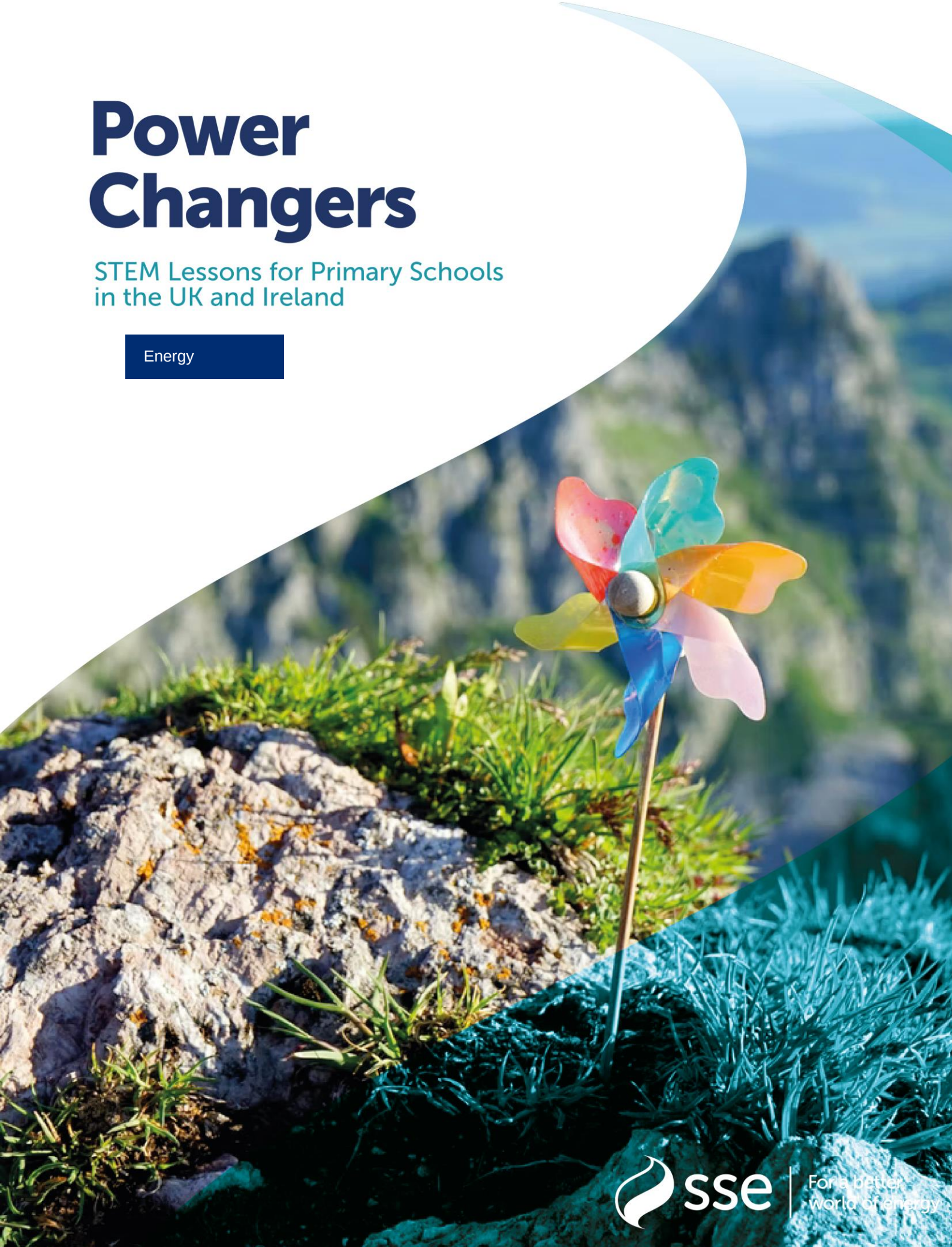
Power Changers

STEM Lessons for Primary Schools in the UK and Ireland

Energy



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INTRODUCTION

Welcome to SSE's 'Power Changers' suite of STEM lessons for primary aged pupils across the United Kingdom and Ireland.

We are delighted to align our primary school suite with some of the key elements which our future workforce and consumers can influence and shape on our journey to supporting net zero. We hope these vibrant lessons help pupils understand their role and the exciting possibilities available to them in their future. As an inclusive employer, SSE understands the benefits of inspiring everyone to consider the energy sector and the wide range of green skills we will require.

The change of the scale and nature needed to achieve net zero brings social consequences, impacting people – employees, consumers, communities, suppliers, and wider society – in many different ways. Our Just Transition Strategy provides a framework of 20 principles, helping to guide our decision-making and influence greater fairness for those impacted by the decline of high-carbon economic activity and increase the opportunities of climate action.

We know that STEM-based education for pupils at the primary phase is incredibly important. The lessons found in this booklet teach children much more than science, technology, engineering and mathematical concepts; they also focus on hands-on learning and real-world application, building the essential skills such as Problem Solving and Speaking in order for them to effectively apply these concepts.

We truly hope you will enjoy delivering these interactive lessons and together we can inspire a whole new generation of innovative and inquiring minds.

Sam Greer, Education & Employability Manager, SSE

Facilitators should be aware of the following pieces of information before delivering these lessons:

All lessons in this suite are designed to be delivered in a normal classroom setting, although facilitators could adapt them for use in an assembly.

Each lesson plan contains information about how it can be adapted to suit pupils with SEND provision.

Each lesson plan builds one essential skill step from the Skills Builder Framework for essential skills. This Framework provides a common language for defining and developing eight essential skills. You can explore the Framework here.

Lesson slide decks, worksheets and knowledge organisers for each lesson can all be found in the appendix ready for download at SSE's STEM website.

The lessons can be delivered by an in-class teacher or delivered by SSE volunteers. To contact SSE about this opportunity, please email stem@sse.com. It is suggested that if only one lesson is to be delivered, that this is the first lesson in the topic.

Please share your pupils' work on social media, tagging @SSE on Twitter or @SSEplc on Instagram and using the #STEMatSSE tag.

KS2 ENERGY

AGE 7 – 9 YEARS

Title	Length	Subject Links	Essential Skills
Power to the People	1 hour	Science / Geography / English	**Step 8** – I speak engagingly by using visual aids to support my points
Taking Charge	1 hour	Science / Geography / PSHE / English	**Step 7** – I speak engagingly by using facts and examples to support my points
The Future of Energy	1 hour	Science / Geography / PSHE	**Step 5** – I explore problems by thinking about pros and cons of possible solutions

OVERVIEW OF LESSON SET

The 'Energy' lesson set contains three lessons that firstly introduce pupils to the importance of energy in our daily lives and, in particular, how it enhances and shapes our experiences. Pupils will consider their own energy consumption before understanding more about where energy comes from and the different types of energy, such as renewables and non-renewables. They'll learn more about the challenges facing the energy sector, going into detail about the impact energy has on climate change and global warming and what we can do about it.

OVERVIEW OF RESOURCES REQUIRED

Power to the People	- Interactive whiteboard - Worksheet or familiar daily timetable - Knowledge organiser
Taking Charge	- Interactive whiteboard - Scrap paper or interactive whiteboard - Knowledge organiser
The Future of Energy	- Interactive whiteboard - Worksheet - Knowledge organiser

Delivery materials can be found in the appendix.

Remember to share your pupils' work with SSE and schools across the country on social media!

@SSE

@SSEplc

#STEMatSSE

Would you like a volunteer at SSE to facilitate these lessons? Contact **stem@sse.com** to request delivery support. More information about SSE's Just Transition programme can be found at https://careers.sse.com/homepage.

POWER TO THE PEOPLE

Power to the People	Key Stage 2 (Lower, Years 3-4)	Science, Geography, English

Curriculum Links

English NC

Science

- Understanding how science has changed our lives
- Identifying common appliances that run on electricity
- Analysing scientific developments and their causes and effects
- Exploring a variety of living things in their local environment

Geography

- Building a fascination about the world and those we share it with
- Understanding the interactions between physical and human processes
- Human geography including land use and the distribution of natural resources including energy

English

- Building competence in speaking and listening
- Making formal presentations

Scottish NC

Sciences

- Understanding that we use energy in our everyday lives
- Recognising the role of creativity and inventiveness in the sciences
- Understanding how science impacts our everyday lives e.g. our wellbeing
- Exploring energy sources

Technologies

- Understanding how technology can extend human capabilities and help satisfy human needs
- Exploring the impact of technology on society
- Embracing the use of technology in all aspects of life
- Being aware of technological developments

Literacy

- Enhancing skills in talking and listening

Welsh Curriculum

- Science
- Geography
- Education for Sustainable Development
- English

Northern Irish Foundation Phase

- The World Around Us
- Language and Literacy

Republic of Ireland

- Social Environmental and Scientific Education
- Primary Language Curriculum: English

Big Picture:

The first lesson of 'Energy' will introduce the class to the importance of energy in our daily lives. Pupils will begin to understand what energy is and learn about scientific developments including electricity and fuel. The lesson will focus on the role technology plays in extending human capabilities and satisfying our needs. Children will explore how energy enhances our everyday experiences and recognise its consumption in a range of contexts, including at home, school and the wider world. For example, pupils will need to be able to identify common appliances than run on electricity and modes of transport which are powered by fuel. This will enable children to embrace the consumption of energy in all aspects of life and appreciate what it allows us to achieve. Children will be encouraged to consider their own energy usage and be invited to present their daily consumption routine to the class.

Lesson Objective:

'To understand why energy is so important in our daily lives.'

To speak engagingly by using visual aids to support my points (Speaking – Step 8)

Pupils will think about all the ways in which we consume energy in our everyday lives.

Assessment:

Pupils' existing knowledge can be assessed in the starter activity where they will discuss what they already know about energy. Facilitators can also assess their understanding through listening to children present their daily energy consumption.

Resources:

Educators will need to have an interactive whiteboard to present the slide deck.

Pupils may use the provided worksheet or a familiar daily timetable to support them.

Knowledge Organiser

Lesson Plan

Key vocabulary for the lesson:

Energy, electricity, electrical energy, appliances, fuel energy, consumption, food energy, solar energy, solar panels, wind turbines, power stations, transmission towers, wood poles, speaking

Child friendly definitions can be located in the glossary towards the end of the slide deck

Additional Adult Role:

An additional adult can assist pupils with understanding technical vocabulary used throughout the lesson, for example those with English as an additional language, special educational needs or a disability. They can also use their knowledge of the pupils' contexts to further support them in identifying their daily energy consumption.

Timing	Facilitator	Pupil
5 mins	**Do Now:** Leave the following question on the board for pupils to engage with: *'What do you know about energy?'*	Pupils will reflect on what they already know about energy – discuss in talk partners before sharing aloud
Check	Ask pupils to share their ideas aloud – the facilitator may refer them to familiar appliances, devices and vehicles that consume energy	
15 mins	**Introduction**: Explain key words used in the lesson Introduce pupils to the concept of energy – describe different types e.g. electrical, fuel, food and solar Explore how energy is generated (e.g. by burning things, spinning turbines or solar panels) Explain how electricity is passed onto us via wires suspended by transmission towers and wood poles – ask pupils to think of places which receive electricity Present a range of familiar contexts including home, school and the wider world for pupils to identify where the energy consumption is – reveal the arrows to show the answers	Pupils should reflect on what energy is and the different types They should think of different places where electricity is transferred to with a partner before sharing aloud They should look at the different contexts and identify the energy consumption with a talk partner before sharing aloud (see notes in slide deck for more details on when to involve talk partner opportunities)
Check	• What are the different types of energy? • How is energy provided to our homes? • How is energy consumed?	
10 mins	**Provide Model:** Explain that pupils will be recording their daily energy consumption Explain that pupils will be presenting their timetables to the class and working on the essential skill of Speaking, in particular focusing on speaking engagingly by using visual aids to support their points. Show the example timetable and discuss the different events in which we consume energy in chronological order e.g. making toast, traveling on the bus to school and using the iPads in the classroom Model drawing out a daily routine using ideas from the class on when *they* consume energy	Pupils will look at the example timetable to look at scenarios where energy is consumed in a day to day life – they will identify different types of energy e.g. electrical to use the toaster and fuel to power the bus – discuss in talk partners first They will then reflect on their own daily routines to identify when they consume energy and contribute ideas as the facilitator draws a new timetable – discuss in talk partners first
Check	• When do we consume energy in our day to day lives? • What types of energy are being consumed? • Does your daily routine differ to the example shown? If so, how?	

- What is a visual aid?
- How does a visual aid help a presentation?

15 mins

Pupil Practise:

Explain that pupils will need to illustrate their own timetable demonstrating their daily energy consumption

Go through the instructions:

1. Think about all the things you do in your daily routine
2. Think about how you are consuming energy
3. Draw a picture of each action and label the energy consumption

Pupils should recall the different things they do throughout the day and identify when energy is consumed

They should illustrate the different events in order and then label what type of energy is being consumed e.g. electrical and fuel

Some pupils e.g. those with additional learning needs may want to refer to a familiar timetable to identify their energy consumption e.g. food energy at snack time

Check

The facilitator can circulate the class while making their timetables and promote reflection on all different types of energy including energy from food and the Sun

15 mins

Review of Learning:

Ask pupils to present their daily energy consumption to the class by referring to their timetables

Refer them to the example sentence stems to promote the use of time connectives

Recognise when pupils are using visual aids well:

- Can listeners see them?
- Are they relevant?
- Are they clear?
- Are they appropriate?

Pupils should present their posters or timetables to the class and use them to explain their daily energy consumption by referring to the illustrations and labels

They should use the sentence stems and time connectives to recite their daily energy consumption with fluency

Pupils should be active members of the audience and think critically to check if their peers have missed out any cases of energy consumption

Check

The facilitator can assess each child's understanding as they recite their daily energy consumption in their own presentations and challenge their peers' deliveries

Ask the pupils how they used their Speaking skills. Open a class discussion around the questions on screen. This will help pupils understand and communicate the skill they have built alongside their knowledge.

Considerations for inclusive and adaptive teaching:

Pupils with additional learning needs or learning English as an additional language may benefit from a pre-teach before the lesson using the knowledge organiser to help understand technical vocabulary and key concepts.

This activity allows for a range of depth when creating their timetable – children's posters may vary from a few simple drawings to sequencing many different examples of energy consumption and labelling them with the different types of energy

Children who do not wish to present their timetables can still participate in the audience of their peers' and think about whether they have missed anything out

Future recommendations – children could choose a more adventurous day e.g. going to the cinema and think about the different cases of energy consumption chronologically.

Pupils could ask friends and family members to complete a similar review of their own consumption for home learning.

TAKING CHARGE

Taking Charge	Key Stage 2 (Lower, Years 3-4	Science, Geography, PSHE, English

Curriculum Links

English NC

Science

- Understanding how science has changed our lives and is vital to the world's future prosperity
- Analysing scientific developments and their similarities and differences
- Recognising that environments change and can pose dangers to living things
- Exploring a variety of living things in their local environment

Geography

- Building a fascination about the world and those we share it with
- Understanding the interactions between physical and human processes
- Human geography including uses of different environments and the distribution of natural resources including energy

PSHE

- Contributing to the community and understanding shared responsibilities
- Exercising personal strengths, skills and interests to problem solve

English

- Building competence in speaking and listening and using discussion as a tool to learn

Scottish NC

Sciences

- Understanding that we use energy in our everyday lives
- Understanding how science impacts our economic future, health and wellbeing
- Exploring energy sources and their sustainability, risks and benefits
- Learning about natural and built environments and how this affects the environment and biodiversity
- Expressing opinions on social, ethical, economic and environmental issues

Technologies

- Understanding how technology can extend human capabilities and help satisfy human needs
- Understanding the impact of technology on society and the environment
- Learning about Scotland's innovation in engineering and the impact of technological developments

Literacy

- Enhancing skills in listening and talking
- Explaining thoughts and debating ideas

Welsh Curriculum

- Science
- Geography
- Education for Sustainable Development

Northern Ireland Foundation Phase

- The World Around Us

Republic of Ireland

- Social Environmental and Scientific Education

Big Picture:

The second lesson of 'Energy' will contextualise our energy consumption and explore how energy is generated. Pupils will first revise the ways in which we consume different types of energy e.g. electricity and fuel, and then explore how this energy is generated. Children will be required to analyse the similarities and differences of different energy sources and identify whether they are renewable or non-renewable. Pupils will also explore the impact of these energy sources on the world and assess their sustainability. The lesson will draw on how most of the world's energy is currently generated via non-renewable sources and how companies like SSE plan to change this. Children will also learn about the challenges faced by renewable energy sources and how new technology including artificial intelligence and drones are enabling us to overcome these barriers. The lesson will culminate in a delivering a persuasive speech convincing the local council against the idea of building more non-renewable power stations.

Lesson Objective:

'To evaluate different energy sources.'

To speak engagingly by using facts and examples to support points (Speaking – Step 7)

Pupils will think about the advantages and disadvantages of using different energy sources to generate power. They will also

Assessment:

Pupils' existing knowledge can be assessed in the starter activity where they will recall different ways that we consume energy in our daily lives. Facilitators can also assess their understanding through listening to children deliver their persuasive speeches.

Resources:

Educators will need to have an interactive whiteboard to present the slide deck.

The main activity is verbal however pupils may use a scrap piece of paper or a whiteboard for preparation.

Knowledge Organiser

learn about how technology is being developed to address a range of these problems.

Lesson Plan

Key vocabulary for the lesson:

Energy source, renewable, non-renewable, generate, carbon emissions, finite resources, fossil fuels, power station, air pollution, toxic waste, solar panels, wind farm, off-shore, on-shore, wildlife, puffin colonies, habitat, consumption, electric vehicles, drone, speaking

Child friendly definitions can be located in the glossary towards the end of the slide deck

Additional Adult Role:

An additional adult can assist pupils with understanding technical vocabulary used throughout the lesson, for example those with English as an additional language, special educational needs or a disability. They can also support children with developing their ideas verbally and preparing for formal debate using the provided sentence stems.

Timing	Facilitator	Pupil
5 mins	**Do Now:** Leave the following question on the board for pupils to engage with: *'How do we consume energy?*	Pupils will reflect on the different ways we consume energy in our day-to-day lives – they should discuss in talk partners first before sharing aloud with the class
Check	Ask pupils to share their ideas aloud – the facilitator may refer them to common energy consumption at home or school to prompt them e.g. requiring electricity and fuel	
15 mins	**Introduction**: Explain key words used in the lesson Discuss how our energy consumption requires us to generate energy and how this can be achieved in different ways – go through *some* of the most common methods e.g. solar, wind, hydropower, coal, gas and oil Explain that these energy sources can be sorted into renewable and non-renewable and explain what these mean – discuss their advantages and disadvantages Discuss how developments in renewables require us to think about the effects on the environment e.g. puffin colonies and their habitats on small island Introduce SSE projects: • 'Flying Squad' initiative where cameras can count puffins and monitor their wellbeing • 'iHawk' software which allows engineers to inspect wind turbines virtually using camera drones	Pupils should think about how their energy consumption requires the generation of energy and learn about the different ways this is achieved They should recall the name of each energy source using the visuals to guide them – discuss in talk partners first Pupils should then learn about how energy sources can be sorted into renewable and non-renewable and use this information to decide which group each energy source belongs to – discuss in talk partners first They should then think critically about their advantages and disadvantages and consider the impact they have on the world e.g. the environment, including wildlife and their habitats Pupils should discover how developments in technology can help problem-solve in the field of energy generation and extend human capabilities e.g. the 'Flying Squad' initiative for protecting wildlife and the 'iHawk' software which prevents engineers from working in dangerous conditions (see notes in slide deck for more details on when to involve talk partner opportunities)
Check	• How is energy generated? • What are the advantages and disadvantages of renewables and non-renewables? • How can new technology help problem-solve in the field of energy?	

15 mins	**Provide Model:** Explain to the class that they will be persuading a member from the local council against building more power stations for non-renewable energy Present the quote as the talking point: "We plan to build more power stations for non-renewables because it doesn't rely on the wind always blowing and the sun always shining!" Model how to verbalise ideas and deliver a persuasive speech using the provided sentence stems Explain to pupils that they will be using their Speaking skills during the speech and focus on speaking engagingly by using facts and examples to support their points.	Pupils should consider the talking point and evaluate the advantages and disadvantages of using different energy sources They should start thinking about reasons why it would be a bad idea to build more power stations for non-renewable energy and what other options the local council could explore Pupils should then start thinking about how they can express their opinions ideas in their persuasive speech using the provided sentence stems e.g. • 'I do not believe in non-renewable power stations because…' • 'I don't think you should build more power stations because…'
Check	• Do you agree with the person from the local council? • Why should we not build more non-renewable power stations? • What other options could he explore? • What are facts? Why can help structure an argument?	
15 mins	**Pupil Practise:** Assign the whole class with the task of arguing against the talking point (what the person from the local council is saying) Encourage them to use the sentence stems to build strong arguments and consider a range of reasons Recognise when pupils are using facts and examples well in their speeches.	Pupils should either work individually or in small groups to think of arguments 'against' the talking point They should practise conveying their opinions and ideas to their peers using the sentence stems SEND pupils can use the simpler sentence stems while higher attaining pupils can use more complex sentence stems and discuss how technology can solve some of the problems faced by renewable energy e.g. SSE's 'Flying Squad' and 'iHawk' initiatives
Check	Circulate the classroom to ensure that children are preparing relevant and plausible arguments for their argument Check pupils can reframe their ideas into arguments using the sentence stems correctly Question pupils' statements and ask them to expand e.g. if a pupil says 'non-renewable energy sources are bad for the environment', ask them to explain why	
10 mins	**Review of Learning:** The facilitator can either refer to the person on the slides or 'hot seat' in role of the local council member and ask pupils to deliver their speeches arguing against building more non-renewable power stations The facilitator can choose when pupils deliver their speeches – specific children may need more encouragement to participate The facilitator can also prompt pupils mid-speech with useful sentence stems to promote stronger arguments	Pupils should take it in turns to deliver their persuasive speeches and use the sentence stems to build convincing arguments Pupils should be actively listening to their peers' speeches and magpie different arguments which support their own speech Higher attaining pupils should aspire to raise points which have not been raised by their peers
Check	The facilitator can assess each child's understanding as they express their arguments in their own speeches and participate in the audience of their peers' presentations Ask the children how they used their Speaking skills. Open a class discussion around the questions on screen. This will help children understand and communicate the skill they have built alongside their knowledge	
	Considerations for inclusive and adaptive teaching: Pupils with additional learning needs or learning English as an additional language may benefit from a pre-teach before the lesson using the knowledge organiser to help understand technical vocabulary and key concepts.	

This activity allows for a range of depth in pupils' expression of ideas – their arguments may vary from simply stating whether they agree or disagree to justifying their perspectives in detail

Those who are unable or unwilling to participate individually can still practise building an argument and verbalising their ideas with their peers in the pupil practise part of lesson

Future recommendations – children could write a simple opinion piece expressing their point of view in light of the speeches using sentence stems and technical vocabulary

THE FUTURE OF ENERGY

The Future of Energy	Key Stage 2 (Lower, Years 3-4)	Science, Geography, PSHE

Curriculum Links

English NC

Science

- Understanding how science has changed our lives and is vital to the world's future prosperity
- Analysing scientific developments and their causes and effects
- Exploring a variety of living things in their local and wider environment
- Recognising that environments change which can pose dangers to living things

Geography

- Building a fascination about the world and those we share it with
- Understanding the interactions between physical and human processes
- Human geography including uses of different environments and the distribution of natural resources including energy

PSHE

- Contributing to the community and understanding shared responsibilities
- Exercising personal strengths, skills and interests to problem solve

Scottish NC

Sciences

- Understanding that we use energy every day in our lives and need to be responsible users to maintain the Earth's resources and carbon cycle
- Understanding how science impacts our economic future, health and wellbeing
- Exploring energy sources and their sustainability, risks and benefits
- Learning about natural and built environments and how this affects the environment and biodiversity
- Expressing opinions on environmental issues

Welsh Curriculum

- Science
- Geography
- Education for Sustainable Development

Technologies

- Understanding how technology can extend human capabilities and help satisfy human needs
- Understanding the impact of technology on society and the environment, now and in the future
- Learning how to build a better future by taking responsible ethical actions to improve the lives of others
- Learning about the impact and sustainability of technological developments

Northern Ireland Foundation Phase

- The World Around Us

Republic of Ireland

- Social Environmental and Scientific Education

Big Picture:

The final lesson of 'Energy' will encourage pupils to understand the impact of carbon emissions on the planet and what we can do to decarbonise the environment collectively. The lesson will begin with showcasing some of the effects of climate change and global warming and children will express how this makes them feel. Pupils will then explore how the generation and consumption of energy contribute towards these examples of climate change through causing carbon emissions. The lesson will revise some of the ways in which energy is generated how some are more sustainable than others. Children will then learn about what climate change is and how it affects all living beings, from animals including humans to plants. The lesson will draw on what we can do as a society to combat climate change, from changing the way we live to implementing ground-breaking developments including carbon capture plants and smart technology. Pupils will be tasked to demonstrate how we can achieve Net Zero through balancing the scales with things that produce carbon emissions and things which help decarbonise the environment.

Lesson Objective:	Assessment:	Resources:
'To understand how to achieve Net Zero together.'	Pupils' existing knowledge can be assessed in the starter activity where they will look at examples of	

To explore problems by thinking about the pros and cons of possible solutions (Problem Solving – Step 5) Pupils will think about the ways in which we cause carbon emissions and the effect this has on the planet. They will then learn about how we can decarbonise the environment together.	climate change and global warming and express how this makes them feel and why.	Educators will need to have an interactive whiteboard to present the slide deck. Pupils should use the provided worksheet to complete the independent activity. Knowledge Organiser

Lesson Plan

Key vocabulary for the lesson:

Energy, consumption, carbon footprint, non-renewable, fossil fuels, finite resources, carbon emissions, air pollution, climate change, global warming, Net Zero, renewable, decarbonisation, carbon capture plant, problem solving

Child friendly definitions can be located in the glossary towards the end of the slide deck

Additional Adult Role:

An additional adult can assist pupils with understanding technical vocabulary used throughout the lesson, for example those with English as an additional language, special educational needs or a disability. They can also support children using the additional resource to prompt their ideas on which things release carbon emissions and which things decarbonise the environment.

Timing	Facilitator	Pupil
5 mins	**Do Now:** Leave the following question on the board for pupils to engage with: *'How does this make you feel and why?'*	Pupils will look at the examples of climate change and reflect on how this makes them feel and why
Check	Ask pupils to share their ideas aloud – the facilitator may ask them how they would feel if they experienced flooding, a fire or drought themselves	
20 mins	**Introduction**: Explain key words used in the lesson Revise how we consume energy e.g. electricity and fuel in our daily lives and how this causes carbon emissions (carbon footprint) Explain that the more energy we consume, the more energy needs to be generated – this can be achieved using renewable and non-renewable sources Discuss the impact of carbon emissions on the world and how we can remove carbon from the environment (decarbonisation) to achieve Net Zero Explain the different ways we can decarbonise the environment collectively e.g. changing the way we live, planting trees and developing new technology including carbon capture plants and devices to help monitor energy use in the home	Pupils should begin to understand the concept of 'carbon footprint' and think about how their energy consumption releases carbon emissions into the environment They should understand how the more energy we consume, the more energy needs to be generate, which also contributes towards carbon emissions Pupils should understand how we mostly rely on fossil fuels currently and recall which sources are used most commonly to provide energy to the world – discuss in talk partners first They should then learn about different effects of climate change and global warming – discuss in talk partners first Pupils should understand how the environment is removed naturally and what we can do as a society to further decarbonise the environment and minimise the risks of climate change (see notes in slide deck for more details on when to involve talk partner opportunities)
Check	• What causes carbon emissions?	

- What are the effects of global warming and climate change?
- How can we decarbonise the environment?

10 mins	**Provide Model:** Explain to the class that the process of carbon emissions being released and removed from the environment is called the carbon cycle and that we need to keep it balanced to prevent climate change and global warming Discuss what things cause carbon emissions and how these need to be counteracted with things which remove carbon from the environment Model filling in the balancing scales yourself using ideas from the class: placing things which cause increased carbon emissions in one side and things which remove or minimise emissions on the other. Explain to pupils that they will be developing their Problem-Solving skills as they explore problems by thinking about the pros and cons of possible solutions Optional: Create flashcards out of the additional resource and show how real-life balancing scales can be balanced by putting things that release and remove carbon emissions on either side	Pupils should learn what the carbon cycle is the reasons why it needs to be balanced They should think of things that cause carbon emissions from their own actions e.g. using electricity to the generation of energy – discuss in talk partners first They should then think of things that remove carbon emissions from changing the way they live to new technologies e.g., walking to school and monitoring energy use in the home – discuss in talk partners first
Check	• How can we change our everyday lives to cause less carbon emissions? • What new technology has been developed to help decarbonise the environment? • Why do we need to balance the carbon cycle? • What is meant by pros and cons? • How can these be used to make a decision?	
15 mins	**Pupil Practise:** Explain the following steps: 1. Draw things which cause carbon emissions on the left 2. Draw things we can do to decarbonise the environment on the right Recognise where pupils are thinking about pros and cons of possible renewable solutions well.	Pupils should use their ideas to fill in the balancing scales themselves They should start off by drawing and labelling things which cause carbon emissions on the left Then they can draw and label things which decarbonise the environment on the right They should try to ensure that each side is the same to balance the carbon cycle so that Net Zero can be achieved SEND pupils can use the additional resource to cut and stick the pictures onto the correct side of the balancing scales depending on whether they think carbon is being released or removed
Check	The facilitator can refer pupils to their ideas from the shared balancing scales or the pictures on the slide for additional ideas	
10 mins	**Review of Learning:** Ask pupils to present their carbon cycles to the class by referring to their balancing scales Refer them to the example sentence stems so children can share how we can help decarbonise the environment as a community	Pupils should present their carbon cycles to the class and explain the different things they thought of which release and remove carbon emissions They should use the sentence stems to help share how we can decarbonise the environment together Higher attaining pupils should think about how some things will make more of an impact e.g. implementing carbon capture plants is likely to make a bigger difference than planting one tree
Check	The facilitator can assess each child's understanding as they present their carbon cycles to the class	

Ask the children how they used their problem-solving skills. Open a class discussion around the questions on screen. This will help children understand and communicate the skill they have built alongside their knowledge

Considerations for inclusive and adaptive teaching:

Pupils with additional learning needs or learning English as an additional language may benefit from a pre-teach before the lesson using the knowledge organiser to help understand technical vocabulary and key concepts.

This activity allows for a range of depth when filling in the balancing scales – children may use their own ideas or cut and stick the example pictures from the additional resource onto the correct side

Children who do not wish to present their carbon cycles can participate in the audience of their peers' presentations and challenge them on specific things if they believe they are on the wrong side

Future recommendations – children could create a persuasive poster featuring their top tips on how to save energy and help decarbonise the planet

APPENDIX

LESSON MATERIALS

You can access all lesson materials, including PowerPoint presentations, worksheets, and knowledge organisers at SSE's careers website below or by scanning the QR code.

https://careers.sse.com/sse-stem-primary