

## **TEACHER ACTIVITY GUIDE FOR AGES 7-11**

## WHAT IS CLIMATE CHANGE?



The word **climate** means the long-term weather patterns for a particular area. On Earth we have different climates depending on how far away you are from the equator and other factors like the movement of the ocean and the Earth's tilt. Regions closest to the equator tend to have very hot climates whereas regions nearest to either of the poles have very cold climates.

Climate scientists have been measuring the Earth's climate directly for over 100 years by monitoring temperature and rainfall. Climate scientists also use evidence in the Earth's rock layers, fossil record and ice cores to study the Earth's climate back into geological history, 100,000s of years ago!

Climate change (sometimes called global warming) is the process of our planet heating up. Our planet has already warmed by an average of 1°C in the last 100 years and if things don't change, it could increase by a lot more than that. This warming causes harmful impacts such as the melting of Arctic sea ice, more severe weather events like heatwaves, floods and hurricanes, rising sea levels, spread of disease and the acidification of the ocean.





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## WHY IS CLIMATE CHANGE HAPPENING?

Climate change is happening because of human activities. When we burn **fossil fuels** (oil, natural gas and coal) for energy in our homes, to power our cars and factories, we release **carbon dioxide**, a type of **greenhouse gas**, into the atmosphere. We also release a lot of carbon dioxide from our farming practises, making cement and by cutting down forests which would naturally suck up carbon dioxide from the atmosphere.

These greenhouse gases **absorb** heat from sun and **radiate** it back down to Earth. The higher concentrations of greenhouse gases we have, the warmer our planet gets, changing the Earth's climate and

ANISHA - 35

LIVES IN A

affecting every part of our world.

## WHY DOES IT MATTER?

Our **carbon emissions** are trapping in more and more heat and making the Earth warmer, faster than could happen naturally. Climate change is already damaging natural environments across

our planet with many species struggling to cope with the rapid changes. 16 of the 17 warmest years on record have occurred since 2001, extreme and unpredictable weather is becoming more common, and our sea ice is decreasing at a rate of 13% per decade. Scientists estimate that 1 in 6 species are now at risk from extinction due to climate change and it's thought that extreme weather and sea level rise will displace millions of people around the world. Although climate change effects everyone around the world it is the poorest and most vulnerable people who will be hardest hit by climate change, event though they did the least to cause it in the first place.

## WHY IS IT IMPORTANT TO TEACH CLIMATE CHANGE IN PRIMARY EDUCATION?

So many of the world's biggest challenges, from poverty to wildlife extinction, are made more difficult by climate change. Things will get worse if we do nothing, but if we act now we can limit the amount of damage we do to our planet, people and wildlife. By learning more about the science and geography that affects our world, young people can understand what needs to be done, recognise what matters most to them, and take action to help protect people, places, wildlife and things they love.





## WHAT'S IN THIS GUIDE?

This teacher guide provides simple activity ideas based on the topic of climate change. You can use these activities in a dedicated climate change module or as part of related topics.

We suggest that you use our 'Introduction to Climate Change' presentation in a lesson or assembly before running these activities with your students.

Teacher briefings on **Considerations When Teaching Climate Change** and **Climate Justice** can be found in the appendix.

## **CLIMATE CHANGE IN THE CURRICULUM**

If you don't directly cover climate change in your teaching, you can still link it in with other topics and areas of school life:

- Biodiversity, habitats, hot and cold climates, animal adaptations, rainforests, polar regions, oceans, UK nature and habitats
- Renewable and non-renewable energy, natural resources
- Recycling and waste, reducing water use, reducing energy use, carbon footprints, plastic pollution
- Weather and climate, water cycle, coastal erosion, natural hazards (flooding, extreme weather, forest fires)
- Sustainable development goals, food and farming, urbanisation, transport, population



# CLIMATE ACTION CURRICULUM LINKS

#### ENGLAND

#### Geography

- Human and physical geography: describe and understand key aspects of: climate zones, biomes, land use, economic activity including trade links, and the distribution of natural resources including energy, food, minerals and water.
- Place knowledge: understand geographical similarities and differences through the study of human and physical geography of a region of the United Kingdom, a region in a European country, and a region in North or South America

#### Science

• Living things and their habitats: recognise that environments can change and that this can sometimes pose dangers to living things.

#### WALES

#### Geography

- Understanding places, environments and processes: identify and describe natural and human features, identify similarities and differences to describe, compare and contrast places and environments, describe the causes and consequences of how places and environments change, e.g. by season; from past to present; the need for sustainability.
- Range: Living in my world: caring for places and environments and the importance of being a global citizen
- Communicating: express their own opinions and be aware that people have different points of view about places, environments and geographical issues, e.g. about wind farms, fair trade. Make decisions about geographical issues by distinguishing between fact and opinion and considering different arguments

#### Science

- Interdependence of organisms: students should be given opportunities to study: how humans affect the local environment, e.g. litter, water, pollution, noise pollution.
- The Sustainable Earth: students should be given opportunities to study: a consideration of what waste is and what happens to local waste that can be recycled and that which cannot be recycled.

#### SCOTLAND

#### Sciences

- Planet Earth: I can identify and classify examples of living things, past and present, to help me appreciate their diversity. I can relate physical and behavioural characteristics to their survival or extinction. **SCN 2-01a**
- Through exploring non- renewable energy sources, I can describe how they are used in Scotland today and express an informed view on the implications for their future use. **SCN 2-04b**
- Topical Science: I can report and comment on current scientific news items to develop my knowledge and understanding of topical science. **SCN 2-20b**

#### **Social studies**

- People, place & environment: I can discuss the environmental impact of human activity and suggest ways in which we can live in a more environmentally- responsible way. **SOC 2-08a**
- Having explored the ways journeys can be made, I can consider the advantages and disadvantages of different forms of transport, discussing their impact on the environment. **SOC 2-09a**
- By comparing my local area with a contrasting area out with Britain, I can investigate the main features of weather and climate, discussing the impact on living things. **SOC 2-12**

#### Technologies

• I can investigate the use and development of renewable and sustainable energy to gain an awareness of their growing importance in Scotland or beyond. **TCH 2-02b** 

#### **NORTHERN IRELAND**

#### The World Around Us

- Interdependence: how living things rely on each other within the natural world; the effect of people on the natural and built environment over time
- Place: ways in which people, plants and animals depend on the features and materials in places and how they adapt to their environment; features of, and variations in places, including physical, human, climatic, vegetation and animal life; positive and negative effects of natural and human events upon a place over time
- Change over time: how change is a feature of the human and natural world and may have consequences for our lives and the world around us; ways in which change occurs over both short and long periods of time in the physical and natural world; The effects of positive and negative changes globally and how we contribute to some of these changes.
- Movement and Energy: causes that affect the movement of people and animals; how movement can be accelerated by human and natural events such as wars, earthquakes, famine or floods.

## ACTIVITY 1: CLIMATE CHANGE DISCUSSION CARDS

Use the discussion cards below to start a conversation about climate change with your class. Discussion images can be found in our 'Introduction to Climate Change' presentation.



10 minute starter, assembly discussion or full lesson discussion



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Every two seconds an area of rainforest the size of a football pitch is cut down on Earth. This is destroying animal habitats and contributing to climate change.

**Discuss:** Why are our forests important in helping tackle climate change?

What can we do to try and stop our forests being cut down?



Farming animals for meat and dairy takes up a lot of space on our planet. It requires a lot of water and produces lots of greenhouse gases. Scientists say that we one of the best things we can do for our planet is to try to eat less meat and dairy and more vegetables, fruits, beans and grains.

Discuss: What do you think about this?

Are there any ways to reduce the amount of meat and dairy in your school meals?



Climate change is melting our polar ice caps and our sea ice at an alarming rate. It's thought that by the year 2040 there could ice-free summers in the Arctic (North Pole).

**Discuss:** How does climate change affect animals like polar bears, penguins and walruses that live in polar regions?

How might melting ice caps and melting sea ice affect other areas of our planet?



we are aready seeing some of the impacts of climate change. Since 2001 we've seen 16 of the hottest years on record. We are also experiencing extreme weather events like flooding, heatwaves, severe storms, wildfires and droughts across our planet.

**Discuss:** How are extreme weather events affecting people in the UK and around the world?

How might extreme weather events affect our wildlife?

## **ARBON FOOTPRINT CALCULATOR**



Our carbon footprint measures the total amount of greenhouse gases released into the atmosphere as a result of our daily actions. It's measured in the tonnes of carbon we produce each year. Each person's carbon footprint depends on the things they do that impact the planet. It includes the amount of electricity they use and where this comes from, how much they travel, what they eat, where they go on holiday, how much stuff they buy and how much rubbish they throw away.

This activity uses the WWF carbon footprint calculator (https://footprint.wwf.org.uk) to find out how different lifestyles can have different impacts on the planet.



This is a real carbon footprint calculator so it includes some vocabulary children may be unfamiliar with.

Green tariff - the electricity you use comes from renewable energy sources such as wind or solar power.

Offsetting - paying money to balance out the amount of carbon dioxide you produce when taking a flight or other form of transport. This money might be used to plant trees or for other environmental projects around the world.



CHARACTER

PROFILI

JAYDON - 25 LIVES IN A CITY W ENGLANI

HARACTER ROFILE

ANISHA - 35 LIVES IN A Small town

IN SCOTLAND

- 1. Explain what a carbon footprint using the information above or the slide in 'Introduction to Climate Change' presentation
- 2. Go to https://footprint.wwf.org.uk and demonstrate the carbon footprint tool to students. Select one of the character profiles and ask students to help you fill in the questions using the information provided in the character profile.
- 3. After filling in all the questions click 'finish' to find out the character's total carbon footprint.
- 4. On a tablet or computer get students to work in pairs to choose one of the remaining profiles and fill in all the questions on the footprint calculator. Alternatively, as a class use the footprint calculator together to work out the carbon footprint of the remaining characters (recommended for students aged 7-9).
- 5. Make sure to click 'view full results' at the end of the questionnaire for more detailed information and tips for reducing your carbon footprint.

#### ANSWER THE FOLLOWING QUESTIONS AND DISCUSS AS A CLASS:

- What was your character's carbon footprint?
- What area made up the largest part of your character's carbon footprint: food, travel, home or stuff?
- What is one thing your character could start doing to try and reduce their carbon footprint further?

#### ONCE YOU'VE GOT THE CARBON FOOTPRINTS FOR AT LEAST **TWO CHARACTERS:**

- Which character has the highest carbon footprint? Why do you think this might be?
- Which character has the lowest carbon footprint? Why do you think this might be?
- What's one thing you could do as a class to help reduce your school's carbon footprint?

#### **FOOTPRINT ANSWERS**



NYF: 10.76 TONNES: food 33%. travel 32%, stuff 29%. home 6%



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#### 7.42 TONNES: stuff 41%. travel 30%, food 21%. home 9%

ANISHA:



JAYDON: **13.1 TONNES:** travel 28%, stuff 28%, food 21%. home 23%

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\*Students might get slightly different results depending on how they fill in the footprint calculator

## **CHARACTER PROFILES**



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### CHARACTER **PROFILF**

NYF - 18

## LIVES IN THE COUNTRYSIDE **IN WALES**

#### FOOD

- Nye's favourite food is burgers and they usually eat meat as part of every meal.
- They go to a restaurant with their family about once a week and spend around £40.
- Nye and their family probably waste about 15% of the food they buy each week.
- Nye doesn't really worry about where their food comes from.

#### HOME

- Nye lives with their mum, dad and brother in a detached house with three bedrooms
- · Nye's family use wood to heat their home.
- Nye isn't sure if their electricity comes from renewable or non-renewable sources
- · Nye always makes sure lights are switched off when they are not being used.
- In winter Nye keeps their home at 16°C.
- Nye has solar panels on their roof as well as a solar water heater. They have double glazing and good loft insulation.

#### TRAVEL

- · Nye uses a small petrol car for most of their travelling
- They use their car for about 10 hours each week to travel to work.
- Nye doesn't usually use trains or buses.
- Nye goes on holiday in the UK each year with their family and usually drives there so doesn't go on any planes.

#### STUFF

- Last year Nye bought a new TV and sofa for their home
- Nye usually spends about £40 a month on clothing and shoes.
- Nye's family have two dogs and spend about £40 a month on their food.
- Nye usually spends less than £10 a month on health and beauty products
- Nye's phone and internet bill costs them about £25 a month.
- Nye recycles glass, paper, plastic and tin cans.



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### CHARACTER PROFILE

### ANISHA – 35

## LIVES IN A Small Town In Scotland

#### FOOD

- Anisha is vegan, she doesn't eat any products that come from animals.
- She doesn't usually spend money on takeaways or eating in restaurants
- Anisha tries not to waste food she probably wastes about 5% of the food she buys each week.
- Anisha mostly buys locally produced food.

#### HOME

- Anisha lives with her aunty and grandma in a terraced house with three bedrooms
- Anisha uses electricity to heat her home. Her electricity is on a green tariff meaning it comes from renewable energy sources.
- Anisha is very good at making sure lights are switched off when they are not being used.
- In winter Anisha keeps her home at 20°C.
- Anisha lives in quite an old house which doesn't have good insulation. She does have double glazing on her windows and energy saving lightbulbs.

#### TRAVEL

- Anisha uses a bike and public transport for most of her travelling
- She travels by bus for 4 hours each week to work and to see her friends.
- Anisha visits family once a year in India. She always tries to offset her flights.

#### STUFF

- Last year Anisha bought a new mobile phone and a laptop
- Anisha buys most of her clothes second hand so she hardly spends any money per month on clothes or shoes.
- Anisha doesn't have any pets.
- She usually spends about £30 a month on health and beauty products
- Anisha loves to watch TV shows online. Her phone and internet bill costs her about £50 a month.
- Anisha recycles glass, paper, plastic, food and tin cans



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### CHARACTER PROFILE

JAYDON – 25

## LIVES IN A CITY In England

#### FOOD

- Jaydon eats mostly vegetarian food but he very occasionally eats meat.
- Jaydon loves pizza and noodles and spends £25 on takeaways each week
- Jaydon probably wastes about 25% of his food each week as he often forgets what he's bought!
- Some of the food Jaydon buys is from local food markets.

#### HOME

- Jaydon lives in a one bedroom flat with his cat Milo
- He uses electricity to heat his home. Some of his electricity comes from renewable energy sources but not all of it.
- Jaydon sometimes accidentally leaves his computer and TV turned on when he's not using them.
- In winter Jaydon keeps his home at 17°C
- Jaydon lives in a modern flat with good wall and loft insulation, energy saving lightbulbs and double glazing on the windows.

#### TRAVEL

- Jaydon uses public transport quite a lot and travels by train for 10 hours each week to get to and from his work.
- Jaydon goes on holiday with his friends twice a year to different cities in Europe.
- He hasn't heard of offsetting so hasn't done this for any of his flights.

#### STUFF

- Last year Jaydon bought a new fridge for his home
- Jaydon loves trainers and usually spends about £80 a month on new shoes
- Jaydon spends £20 on his cat Milo each month
- He usually spends about £30 a month on health and beauty products
- Jaydon loves online gaming, his internet bill costs him about £40 each month.
- Jaydon recycles glass, tin cans and

## CERTIFICATE

If you have run the 'Introduction to Climate Change' lesson and taken part in one of climate change activities, you can download a Climate Hero certificate for your class!



**Step 1:** Run the 'Introduction to Climate Change' presentation as a lesson or assembly

**Step 2:** Take part in one or both of the suggested activities (or come up with your own!)

**Step 3:** Tell us what your school is doing to tackle climate change and receive your downloadable Climate Hero certificate!

#### Our Climate, Our Future (www.wwf.org.uk/get-involved/ schools/cop26)

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The Our Climate Our Future pack allows students to explore the COP26 Climate Change conference, understand how it relates to their lives and have the opportunity to be a part of this landmark moment in the fight against climate change.

#### Shaping our future (www.wwf.org.uk/get-involved/ schools/school-campaigns/shaping-our-future)

Three climate themed lessons which can be taught either as standalone lessons or as a series of cross-curricular linked lessons to help young people understand what climate change is and what they can do to help tackle it.

#### WWF Live lesson (www.wwf.org.uk/get-involved/ schools/calendar)

Sign up to a live lesson with one of our WWF educators to explore climate change, different habitats and other environmental issues with your class.

#### Earth Hour (www.wwf.org.uk/get-involved/schools/ school-campaigns/earth-hour-schools)

Get your school to take part in Earth Hour this year to raise awareness of environmental issues and stand up for our planet

#### Fundraise for WWF (www.wwf.org.uk/wear-it-wild)

Take part in Wear it Wild, adopt one of our WWF animals or come up with your own way to raise money for important WWF projects to help protect our planets biodiversity.

#### Sign up for our newsletter (www.wwf.org.uk/getinvolved/schools#register)

Join thousands of teachers and pupils across the UK taking action for our world. We'll keep you informed of new classroom resources, activities, events and CPD courses. Plus you'll also have the opportunity to participate in our teacher panels, share your experiences and help contribute to our future education work.

### APPENDIX

## TEACHER BRIEFINGS

## CONSIDERATIONS WHEN TEACHING CLIMATE CHANGE

Climate change can be a frightening thing for students to learn about and discuss. There is a big focus in campaigns and the media on the scale of the threats and the urgent need for action.

This can make students feel anxious or give them a sense of helplessness in the face of such big problems – especially when the focus is just on what needs to be done in the next few years when students may feel they have no power to help make the changes needed.

To avoid causing anxiety and hopelessness, don't just talk about climate change.

### Think HEAR:

- Hope
- Empathy
- Action
- Relevance



**Hope:** it is important to focus on hope to avoid eco-anxiety but also because there is cause for hope. That message is much more engaging and motivating for young people and gives them a better sense of how they can be part of shaping the future.

**Empathy:** consider the particular circumstances of your students. They may be prone to anxiety or may identify aspects of their family's lifestyle that are not conducive to sustainability. Don't focus on individual responsibility or blame – especially if this might cause some students to feel guilty or ashamed for family behaviours that they have no control over.

Action: one of the best ways to make hope feel grounded in reality, and to counter feelings of helplessness, is to show what can be done. It's fine to give some examples of lifestyle changes if they are within your students' power to change but don't shy away from saying that it is leaders who need to act. Remind children that their voices can be drivers of change, especially when they are in unison. Changes to school practice, or having an influence via your local decision-makers, are most effective.

**Relevance:** the issues can seem far off and the actions, therefore, irrelevant so ensure you stress that climate change affects everyone and everyone has a role to play. Our children's future will be this new world and by being prepared now, they can have the best possible opportunities.



## **CLIMATE JUSTICE**

Climate change affects us all, but it will hit the poorest people and the least developed countries on our planet the worst. This means that those who did the least to cause climate change are the ones who will suffer most from its effects.

People in less developed countries who make a living farming the land or fishing in coastal waters are most directly affected when climate change causes harvests or marine ecosystems to fail. They often have no savings that allow them to cope with one bad year or change to their livelihood. Likewise, rising temperatures can lead to the spread of diseases, and poorer families are less able to afford medication or equipment that protects them such as mosquito nets.

Unfairly, it is estimated that the 50 least developed countries on our planet have only contributed about 1% of the greenhouse gases that have caused climate change. Richer nations that did more to cause the problems will be affected less, unless they choose to take some responsibility for ensuring the health and wellbeing of those affected by climate change in poorer nations.



In most cases the more prosperous countries have strong economies in part because of activities which caused climate change. They can now use their wealth to protect their populations from the effects of climate change

while poorer nations are less able to do so. At the same time these poorer countries could find it harder to develop because they have to focus on addressing the challenges caused by climate change.

It is essential when planning how to tackle climate change that the rights of the most vulnerable people on the planet are respected and protected not only because they will face risks from the effects of climate change, but also because they could be missed out when support is provided for people in society to overcome the challenges it brings.

Help children and young people to see that the world of the future can be rebuilt to allow for social justice, diversity, equality, respect for nature and for life.



For a future where people and nature thrive | wwf.org.uk

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