Green-Schools
An Taisce

CLIMATE ACTION

TEACHER RESOURCE

CLIMATE ACTION – TEACHER RESOURCE

An Taisce
The National Trust for Ireland

AN TAISCE

The Environmental Education Unit (EEU) of An Taisce is responsible for coordinating Ireland's most successful environmental programmes and prestigious award schemes for over twenty years. The EEU is the National Operator for all international programmes of the Foundation for Environmental Education (FEE) including Young Reporters for the Environment, Learning About Forests and of course Green-Schools, which is currently in operation across 94% of Irish schools. The EEU also operates several national programmes including Climate Ambassador, Clean Coasts, National Spring Clean and Green-Campus, the follow-on from Green-Schools when students move on to third level in Ireland.

FOUNDATION FOR ENVIRONMENTAL EDUCATION

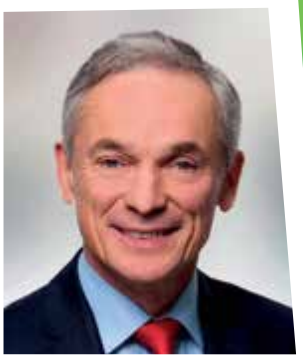
The Foundation for Environmental Education (FEE) is partnered with some of the world's foremost organisations including UNEP, Earth Charter and UNWTO. FEE seeks to promote environmental education by carrying out campaigns and improving awareness. It is composed of a network of organisations which undertake individual projects in their own countries and participate in international efforts. FEE is also recognised by UNESCO as a world-leader in Education for Sustainable Development.

A WORD OF THANKS

An Taisce EEU would like to thank the following individuals, schools and organisations for advice and support in developing this resource: Paula Needham (JCT Geography), Annette Honan (NCCA), Prof. John Sweeney (Maynooth University) and Graham Quinn (Terenure College). Also the following NGO's and projects who shared resources and datasets: Climate Outreach, Met Éireann, Weather Rescue and Weather Stations.

This resource has been printed on Cyclus Offset: 100% recycled, uncoated, chlorine-free paper.

Roinn Cumarsáide, Gníomhaithe ar son na hAeráide & Comhshaoil
Department of Communications, Climate Action & Environment



Richard Bruton T.D.

DEAR TEACHER,

The effects of climate disruption are already visible. If the world continues as it is going the consequences will be catastrophic.

The science is clear. Avoiding dangerous levels of climate change is still possible, but only if we all take action. Ireland is far off course if we are to play our part in this global challenge. Ireland needs to become a leader not a follower. Everybody in Ireland, at all ages, has a role to play. This will require significant effort from Government, businesses and citizens over the coming decades. The actions we take now will shape the world that your students inherit out to 2050 and beyond.

Meeting the challenge will require radical change in the way we think, the way we work and the way we live. This can only happen if every citizen gets involved.

Teachers across Ireland are ideally placed to build awareness and encourage responsibility in relation to the environmental challenges that face Irish society and the wider international community. I am delighted to launch this important new teachers' resource for climate change education developed by the An Taisce Green-Schools team.

This comprehensive guide provides teachers with the resources to educate, encourage and inspire students to take action on climate change, a challenge that faces all of society. I hope this resource will assist teachers in exploring climate science, help to inspire students, and communicate the imperative of action in schools and in the wider community.

This resource has been developed with support provided by my Department under the National Climate Change Action and Awareness Programme. The resource is an important complement to other climate education initiatives such as Climate Action Week, the Climate Action Expo and the Climate Ambassador programme.

I hope that your students enjoy and are inspired by this resource. Educating and empowering the next generation around the climate change challenge will play a key role in enabling the transition to a low carbon future.

I would like to thank Dr. Michael John O'Mahony and all the climate action team in the Environmental Education Unit of An Taisce who helped make this possible.

Richard Bruton T.D.
Minister for Communications, Climate Action and Environment

CONTENTS

INTRODUCTION

Avoiding dangerous levels of climate change is still possible, but will require massive effort and coordination from governments, businesses, citizens and scientists in the coming years.

Climate change is happening, so let's try to understand it and do something about it now. You, as teachers, are perfectly positioned in shaping the young minds and motivations of the current generation of students, so we, at Green-Schools would like to share this resource with you with the aim of motivating students to learn about climate change and take climate action.

Curriculum

This resource has been developed, piloted and written by Green-Schools, considering the Key Skills of Junior Cycle (NCCA, 2014), and taking into account the Framework for Junior Cycle (DES, 2015). The eight Key Skills of Junior Cycle are; Communicating, Being Creative, Working with Others, Managing Information and Thinking, Managing Myself, Staying Well, Being Literate and Being Numerate. Our hope is that this resource not only develops these key skills in your students but also helps you to utilise the theme of climate change in an integrated and cross-curricular manner, creating a relevant Junior Cycle learning experience as well as the opportunity for professional collaboration across core subject departments. The eight Principles that underpin the Framework for Junior Cycle are; Creativity and Innovation, Engagement and Participation, Inclusive Education, Wellbeing, Choice and Flexibility, Quality, Continuity and Development as well as Learning to Learn. This resource has been designed to incorporate several Statements of Learning (SoL) and owing to the nature of climate change has a particularly strong affinity to SoL 7, 8, 9, 10, 16, 19 and 24.

How To Use This Resource

Work your way from chapter one through to chapter ten, using it as a full unit of learning (i.e. 10 weeks) or pick up the resource for just one or two activities with your class, it's designed to be flexible and help you to build a thematic learning experience across multiple subjects for your students. Some of the strongest subject links and specific Learning Outcomes are detailed in the table below, and also listed in full at the start of each chapter, but there are lots more that you can link depending on your expertise such as Maths, Business Studies, Home Economics, Art, Music, Gaeilge and the Foreign Language subjects.

Learning Outcomes

Chapter	Geography	Science	CSPE	English
1				
2				R10
3	2.6	2.7	2.9	
4			GCSA	W3, OL1
5		1.6, 1.8	GCSA, 3.12	OL8, OL5
6	1.6, 1.8	1.4		
7	1.9, 2.2	1.7, 2.6, 4.8		R2, OL7
8	2.9		GCSA	OL4
9			GCSA, 2.4, 2.10	
10			2.12, 3.13	OL2

Green-Schools

The Green-Schools programme is based on seven essential steps as outlined below. The Green-Schools Committee is a fantastic resource for you to enable peer teaching and overlap extra-curricular groups with your class. This resource can help you with your Green Flag application but don't forget to consult your programme handbook too!

1. Green-Schools Committee
2. Environmental Review
3. Action Plan
4. Monitoring and Evaluation
5. Curriculum Work
6. Informing and Involving
7. Green Code

Themes

Green-Schools covers several themes, beginning with Litter and Waste, Energy, Water, Travel, Biodiversity and then moving on to the Global Citizenship topics of Litter and Waste, Energy and Marine Environment. Climate change is a theme that is enshrined in all of these, so please take this opportunity to link in with your Green-Schools Committee.

www.greenschoolsireland.org/themes

Reflection

Time for reflection is often overlooked, so we have dedicated chapter 10 to four simple techniques we hope you enjoy. Ideally you would also take at least 3 minutes out of each lesson to recap what you have covered together, any interesting questions that came up and any remaining areas to explore further.

Ask your students what impact each activity has on their thoughts or if some new information gained has influenced the way they think or decisions they might make now and into the future.

Questions:

Ask your students to take 3 minutes to reflect internally at the end of each lesson and complete the following sentences:

- **The most important thing I learned was...**
- **The most interesting part was...**
- **I would like to learn more about...**

Have you heard about the Global Goals?

In 2015, world leaders agreed upon 17 Global Goals to end extreme poverty, fight inequality and tackle climate change.

It is up to all of us to work together to try and achieve these goals by 2030. Several of these are signposted throughout the resource so look out for the tiles and use it as an opportunity to focus on a Global Goal or two with your class.

SUSTAINABLE DEVELOPMENT GOALS

The World's Largest Lesson introduces the SDG's to students everywhere and unites them in action.

www.worldslargestlesson.globalgoals.org

CHAPTER 1

SURVEY

Prior to getting started with the activities in the resource, we ask that you take 5 minutes to complete the Pre-Climate Action Student Survey with your class.

The purpose of this is to measure perceptions of climate change, knowledge, values and behaviour change. This data will contribute to a national picture which will be published by Green-Schools and you can access on our website.

The fastest and easiest way to do the survey is by asking your students to scan the QR code with their phones or click the following link and complete the survey online: **www.surveymonkey.com/r/PreClimateSurvey**

For your convenience we have also printed a hard copy of the survey below but please do think of the trees before photocopying! If you don't have access to a computer room in your school, or if your students aren't allowed complete the survey on their phones, you can scan and email the completed surveys to **greenschools@antaisce.org**. Thanks!

1. Do you think climate change is happening?

☐ Don't know ☐ Yes ☐ No

2. Assuming climate change is happening, what do you think is the main cause?

☐ Don't know ☐ Human activities ☐ Natural changes

3. How concerned are you about climate change?

☐ Very concerned

☐ Somewhat concerned

☐ Not really concerned

☐ Not at all concerned

4. Which of the following statements is closest to the truth?

☐ Most scientists agree that human-caused climate change is happening.

☐ Most scientists agree that human-caused climate change is not happening.

☐ Don't know

5. Do you currently take any of the following climate actions? Please tick all that apply.

- ☐ I avoid disposable plastic by using a reusable bottle and/or travel mug.
- ☐ I save energy by turning off the lights and electronics when not in use.
- ☐ I save water by having short showers - 5 minutes or less.
- ☐ I reduce emissions by walking, cycling or getting the bus/train to school.
- ☐ I reduce my carbon footprint by eating less meat and/or dairy products.
- ☐ I consider my global impact by choosing to buy local food, Fairtrade and cruelty-free products.
- ☐ I try to educate and encourage others to take climate actions and protect the environment.
- ☐ Other = please specify

6. Please rate the following values in terms of their importance to you.

	Very important	Important	Not that important	Not important at all
To have an adventure	☐	☐	☐	☐
To keep the peace	☐	☐	☐	☐
To care about nature	☐	☐	☐	☐
To show what I can do	☐	☐	☐	☐
To develop new ideas	☐	☐	☐	☐
To be the leader	☐	☐	☐	☐
To be rich and powerful	☐	☐	☐	☐
To do exciting things	☐	☐	☐	☐
To make others happy	☐	☐	☐	☐
To discover something new	☐	☐	☐	☐
To think about God	☐	☐	☐	☐
To help others	☐	☐	☐	☐
To be safe	☐	☐	☐	☐
To be like everyone else	☐	☐	☐	☐
To be protected	☐	☐	☐	☐

7 Are you (or were you ever) a member of the Green-Schools Committee?

- ☐ Yes
- ☐ No

8. What age group are you?

- ☐ Under 12
- ☐ 12-15
- ☐ 16-18
- ☐ Over 18

9. What is your gender?

- ☐ Male
- ☐ Female
- ☐ Prefer not to say

10. We would like to contact your school in relation to free Green-Schools events, resources and training. Please give us your contact information if you would like us to get in touch with you.

Year _____

School _____

Address _____

City/Town _____

Postal Code _____

Email Address _____

ONE WORD

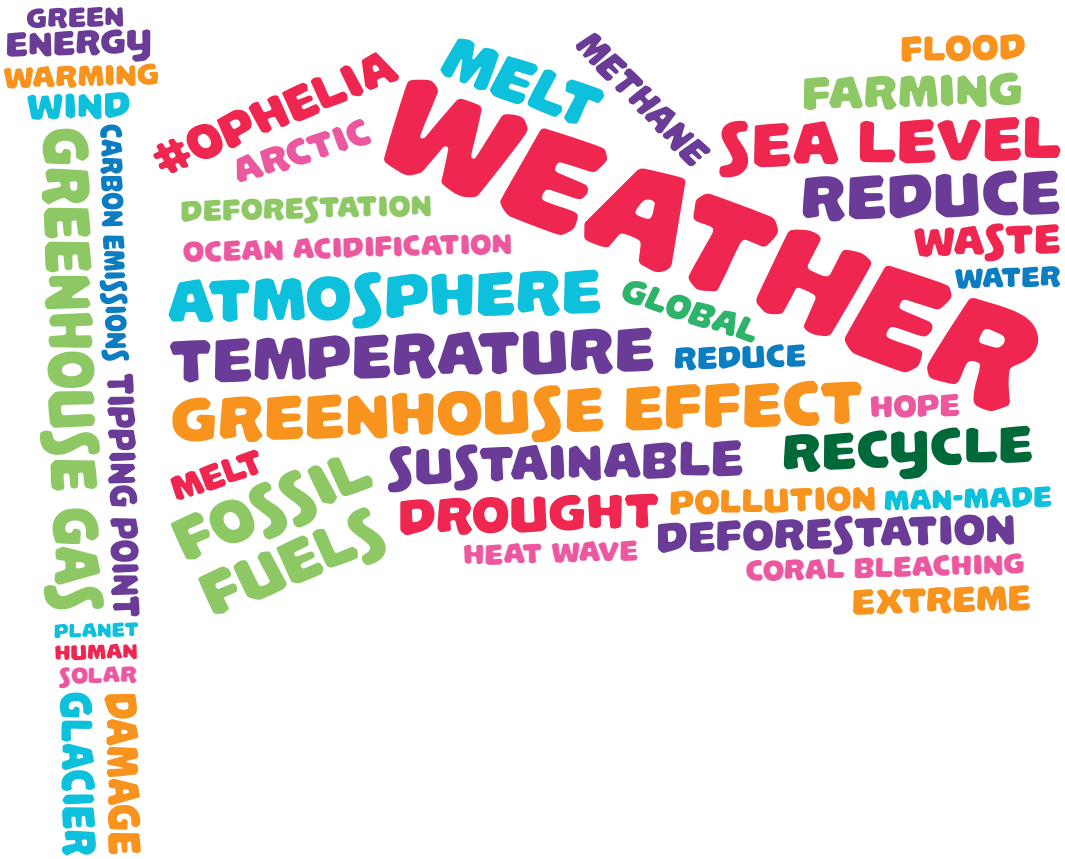
Before exploring the topic of climate change in class, it's important to acknowledge and share any existing impressions and thoughts. Ask your class to close their eyes and think:

WHAT IS THE FIRST WORD, IMAGE OR PHRASE THAT POPS INTO YOUR MIND WHEN I SAY 'CLIMATE CHANGE'?

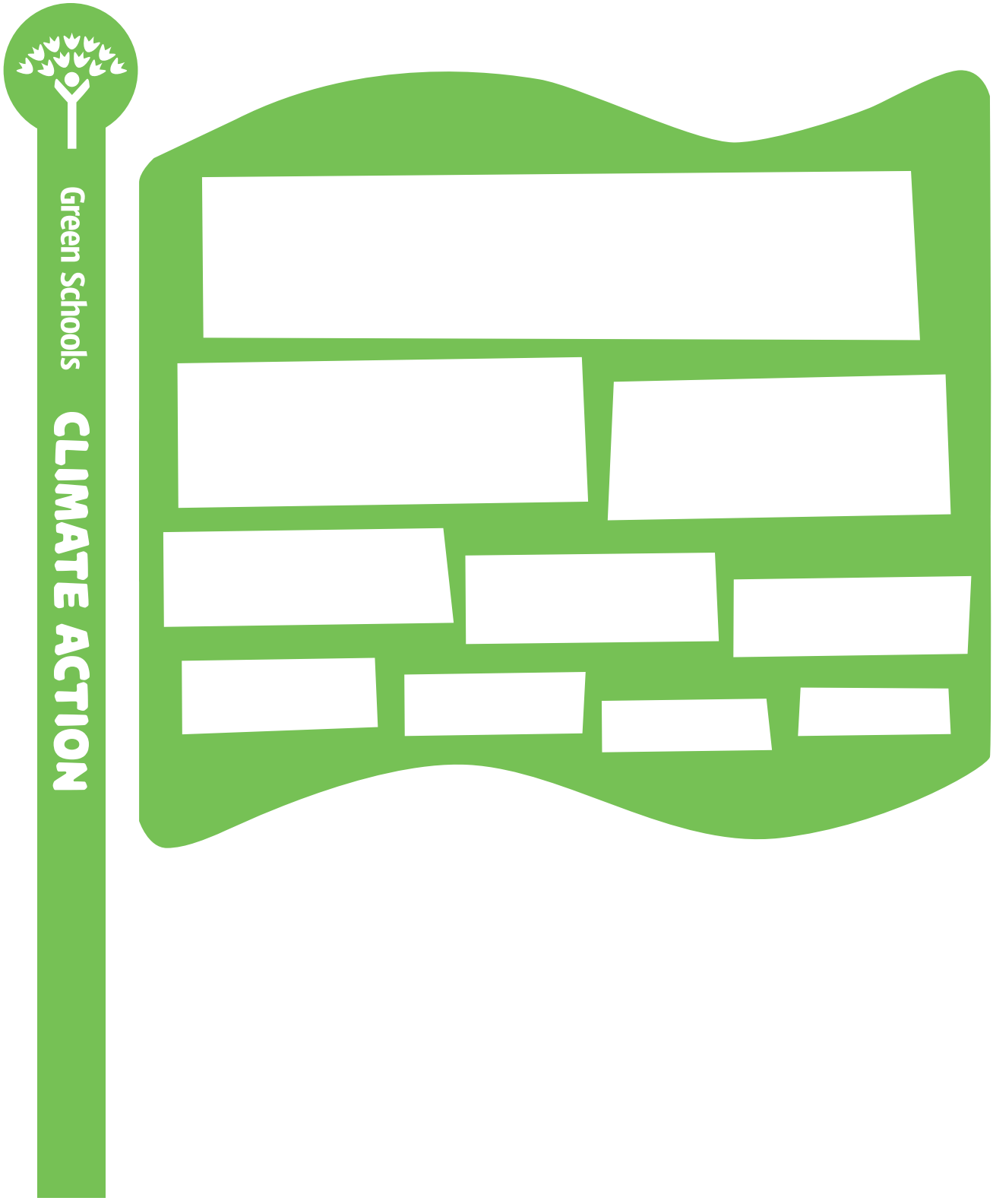
Let your students know that there is no wrong answer and try not to give hints!

When you have your word, image or phrase, jot it down on a scrap of paper and keep it to yourself. After a minute, ask someone to share just one of the words they wrote down. Take a quick poll of raised hands to see who else also had that word and record it. Continue until at least 10 words, images or phrases have been shared by your students. Using the template on the page 12, create your Climate Change Green Flag, using the biggest box for the word with the most votes, down to the smallest box for the word with the least votes. If your class is particularly artistic why not make your own word shape, it doesn't have to be a flag!

Alternatively, you could always create online word clouds using **www.mentimeter.com** see our climate change example by using the vote code 430349 here: **www.menti.com/4101ba18**



ONE WORD FLAG TEMPLATE

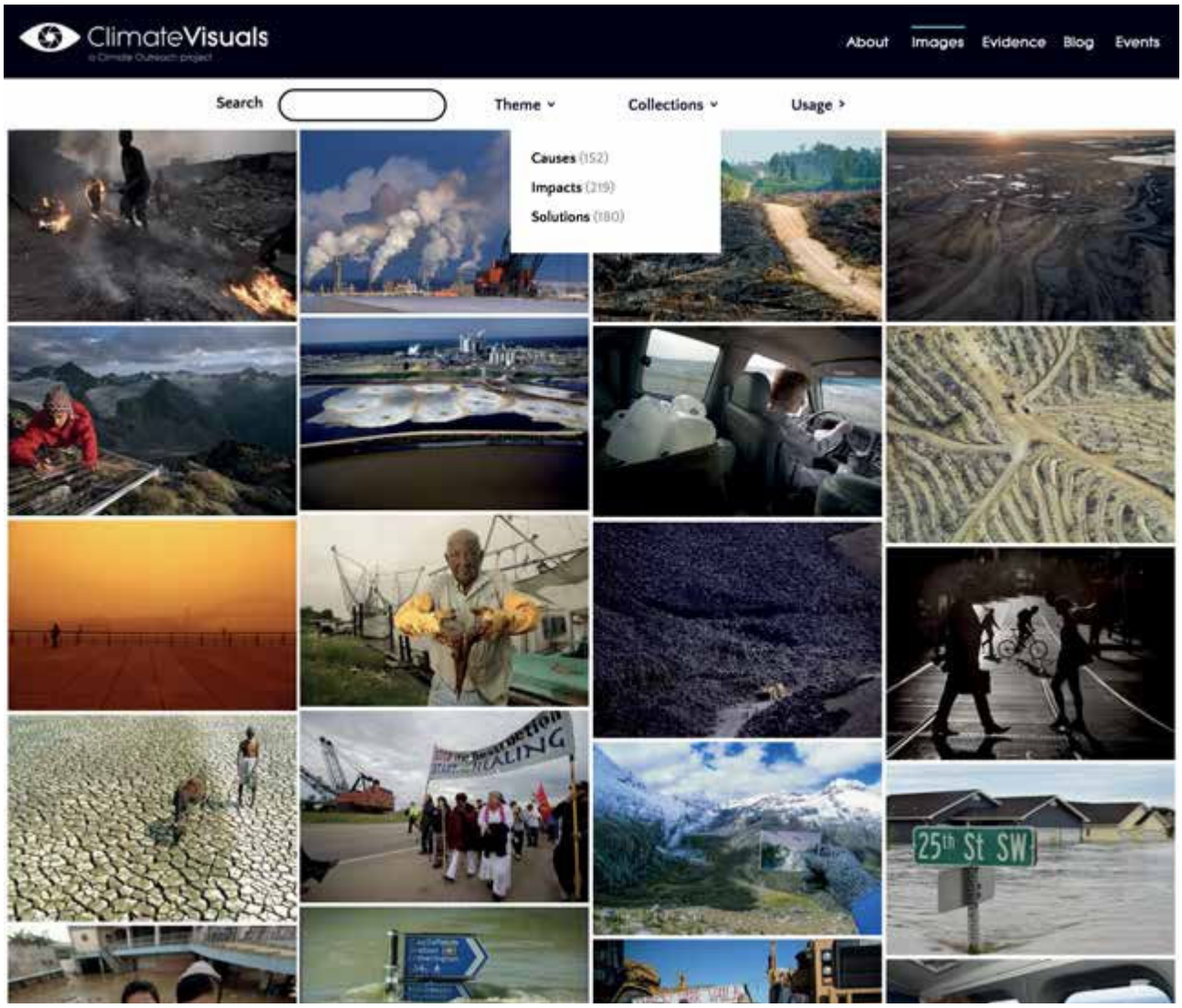


ONE VISUAL

Choose 3 images on the Climate Visuals website from each of the following themes: Causes, Impacts, Solutions. Briefly discuss the captions and what it shows with your class.

Ask your students to explore the Climate Visuals gallery in their own time and choose an image that speaks to them personally and bring it to class the following day to share their reasons for choosing it.

www.climatevisuals.org/images – A project by Climate Outreach



CHAPTER 2

Learning Outcomes

English R10: Know how to use language resources to assist their vocabulary development

CARDS AGAINST CLIMATE CHANGE

This game works best with tables of 6 to 8 people. Use smaller groups if they are distracted easily or larger groups if they can concentrate or have played this game before. It can also be played in pairs if you have a really big class and not enough cards for everyone to play individually. Be sure to print the cards double-sided!

1. Decide who will be the Dealer at each table and deal 5 white cards per person.
2. Stack the green cards and spare white cards side by side in the middle.
3. Dealer starts the game by turning over a green card and reading aloud to their table.
4. The rest of the table chooses a white card to complete the sentence.
5. Dealer collects the chosen white cards, mixes them up a bit and then reads out each sentence in full (start & end!) and chooses a winning card (it could be the funniest, most grammatically correct, the one that makes the most sense to them etc.).
6. Put all the used white cards to one side (careful not to mix them up with the spare cards!) and give the green card to the winner.
7. Dealer gives everyone a replacement white card from the spare pile in the centre (you must have 5 in your hand at all times) and the game moves clockwise to the next player who turns over a green card and becomes the new Dealer...

The aim of the game is to win as many green cards as you can!

It's okay if they don't understand every card, as it's not really about knowing the 'right' answer at this stage, but having fun, getting engaged and hopefully interested in climate change.

As you're walking around the tables, you could follow up with the current Dealer by asking them to explain why they chose the winning card; if it's a person who do you think they are, what is their job or if you could finish the sentence in any way, what would it be?!

Download your complete deck of Cards Against Climate Change here:
www.greenschoolsireland.org/resources

CLIMATE DICTIONARY

Start a Climate Dictionary with your class by asking students to share a word or phrase that came up in Cards Against Climate Change.

It could be a new word they had never heard of or something they aren't quite sure what it means in the context of climate change. Ask the class to work in groups and try to figure out what the words mean; they could use their school books, dictionaries, library or search online if they have access.

The Climate Ambassador website is a good place to start: **www.climateambassador.ie**

WORD/PHRASE	DESCRIPTION
Weather	
Climate	
Climate change	
Global warming	
Fossil fuels	
Emissions	
Renewable energy	
Greenhouse gases	
Greenhouse effect	
Climate Ambassador	
Adaptation	
Mitigation	

CHAPTER 3

Learning Outcomes

Geography 2.6: Examine the causes and implications of climate change.

Science 2.7: Illustrate how earth processes and human factors influence Earth's climate, evaluate effects of climate change and initiatives that attempt to address those effects

C.S.P.E. 2.9: Analyse one global issue or challenge, under the following headings: causes, consequences, impact on people's lives and possible solutions

CLIMATE CHANGE 101

Step 1: Access the Green-Schools prezi on 'Climate Change, Science and Action' here:

https://tinyurl.com/y87pck8j

Step 2: Download the full teacher notes to accompany each slide here:

https://tinyurl.com/ybl4toqx

Content

- Introduction to Climate Change
- Climate Science
- FAQ's
- The Goldilocks Zone
- The Greenhouse Effect
- The Carbon Cycle
- Greenhouse Gases
- The Proof!

Introduction to Climate Change

1. How might climate change affect you? What's important to you and how could climate change affect that?
2. How might climate change affect your school community? E.g. extreme weather.
3. How might climate change affect Ireland? E.g. warmer summers and drought, wetter winters and more frequent extreme weather events such as storms or hurricanes.
4. Where in the world is contributing most to climate change?
5. Where in the world is feeling the worst effect(s) of climate change?
6. Who is at risk of climate change?

Climate Science

Before we delve into climate science, we're going to have a quick look at some of the most frequently asked questions. Then we'll consider why the Earth is so special and take a look at some of the scientific proof of anthropogenic (human-caused) climate change.

FAQ's

1. So what's the difference between weather and climate?

Weather is what we are experiencing NOW (minutes to weeks) and climate refers to an average of weather patterns over a much longer period of time (years to centuries). Scientists are often asked how they can accurately predict the climate 30 years from now if tomorrow's weather forecast is wrong. Well, we know that summers are always hotter than winters, but we don't know if we'll get 6 weeks or 6 days of sunshine in Ireland next year. **The weather is constantly changing whereas climate is much more gradual and easier to predict.**

2. Are global warming and climate change the same thing?

The short answer is no! Global warming refers to the increasing average surface temperature of Earth, whereas climate change encompasses global warming, changing rates of precipitation, and evaporation, rising sea levels plus all of the extreme weather events such as flooding, drought and storms or hurricanes. Ireland has had its fair share of flooding in the last decade most notably in 2008, 2009, 2011, 2016 and 2017 with most of the country shutting down, unable to respond to such unprecedented floods. Look at the photo's from; Ballyhaunis, Co. Mayo; Graiguenamanagh, Co. Kilkenny; Douglas, Co. Cork. **It's not that the phrase 'global warming' is wrong, climate change is just more accurately describing what is happening in the bigger picture.**

3. Is there a hole in the ozone layer and does it cause global warming or climate change?

The thinning in parts of the ozone layer is caused by a group of man-made chemicals, the most well-known being CFC's (chlorofluorocarbons). These were banned in 1987 when world leaders first agreed to the Montreal Protocol. CFC's are found in things like refrigerants, solvents, foams and aerosol sprays. The ozone layer has a very important job of protecting us on Earth from too much UV radiation from the Sun. **Thinning in parts of the ozone layer does not cause global warming or climate change. However, global warming could slow down the natural repairing process of the ozone layer** – so it's the opposite to what some people think. While global warming heats the atmospheric layer closest to Earth, it causes the ozone layer to cool and worsens ozone loss.

The Goldilocks Zone

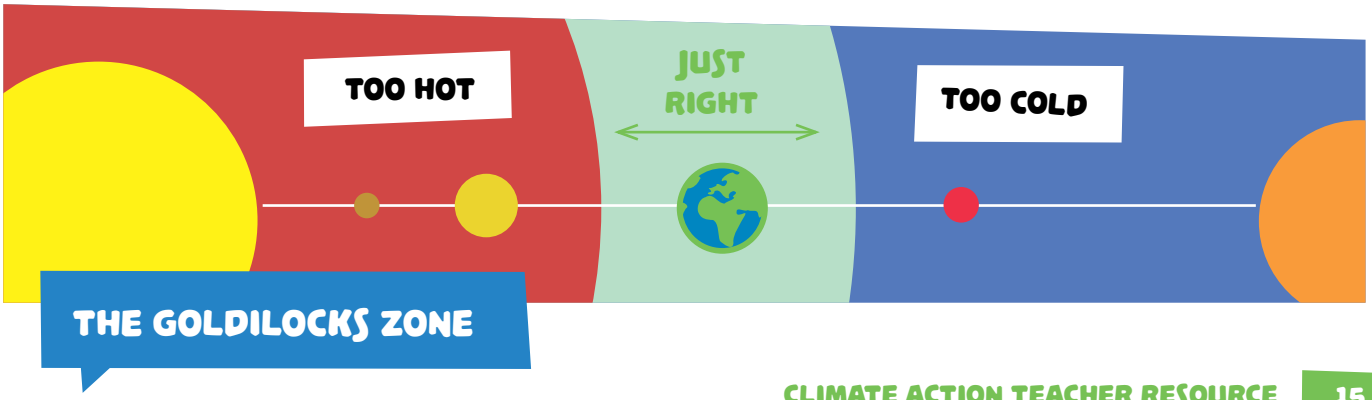
Much like the childhood story, Earth sits in what is known as the Goldilocks Zone. Similar to Goldilocks' porridge, the temperature on Earth is just right; not too hot and not too cold. This is extremely important because it allows liquid water to exist on this planet.

What else do we know about the Earth's positioning relative to the Sun?

The distance between the Sun and the Earth varies as the Earth orbits the Sun every 365.24 days, and the pathway is not a perfect circle, but elliptical.

In July, the Earth was approximately 5,000,000km further away from the Sun than in January. Anyone who has seen a mounted globe in a classroom will know that the Earth's axis is tilted. This 23.5 degree tilt is responsible for the seasons we experience; when the Northern hemisphere is tilted towards the sun in July, we experience summer and the Southern hemisphere is tilted away from the sun and so experiences winter.

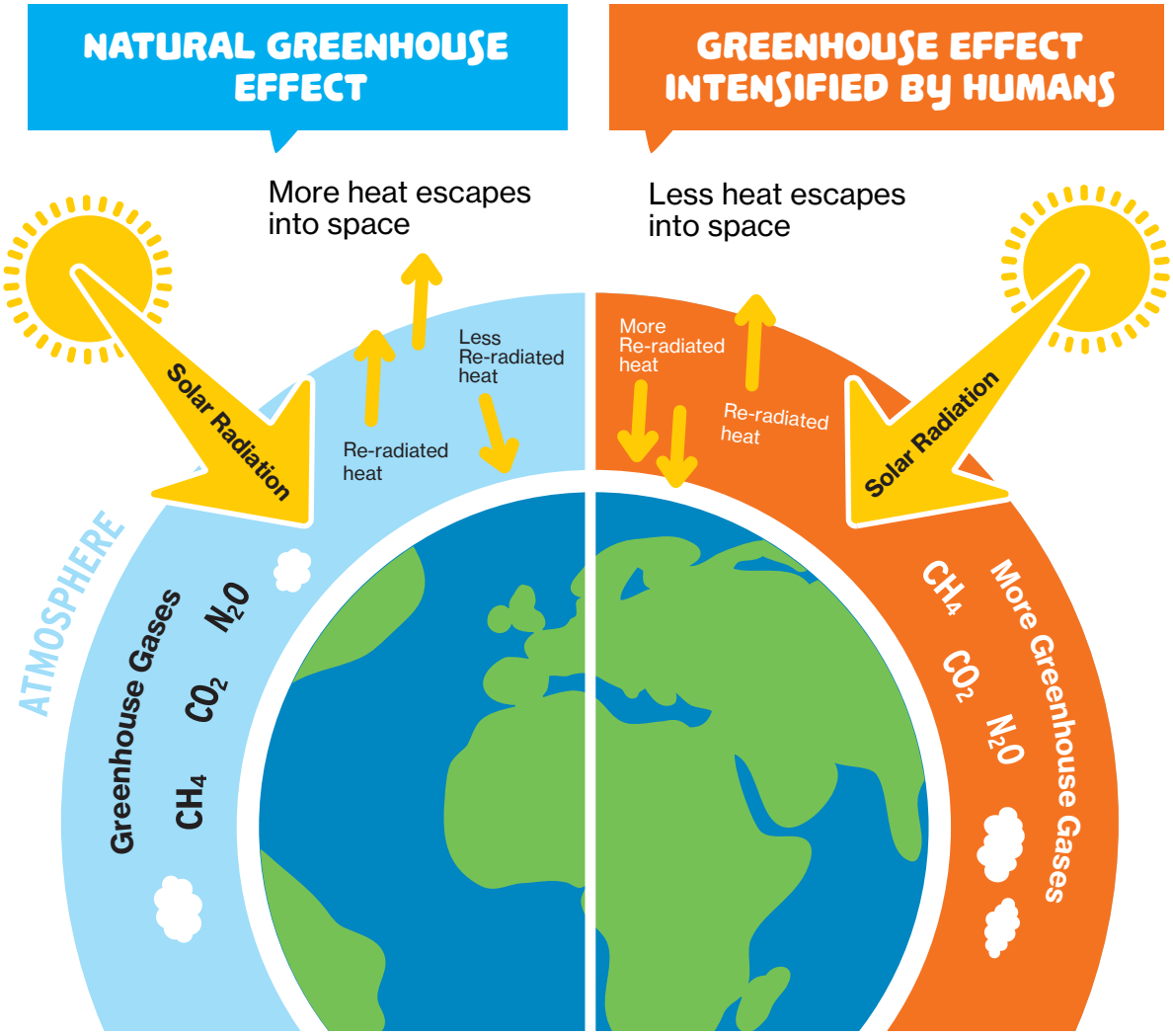
https://climate.ncsu.edu/edu/Tilt



The Greenhouse Effect

Earth's atmosphere keeps the surface of the planet about **30 degrees Celsius warmer** than it would be, this is called the **natural greenhouse effect.** As the **sun's solar or shortwave radiation** reaches earth, about **30% is reflected** back into space, **20% is absorbed by the atmosphere** and the rest is absorbed by land and oceans; but this depends on the reflectivity of the atmosphere and the surface.

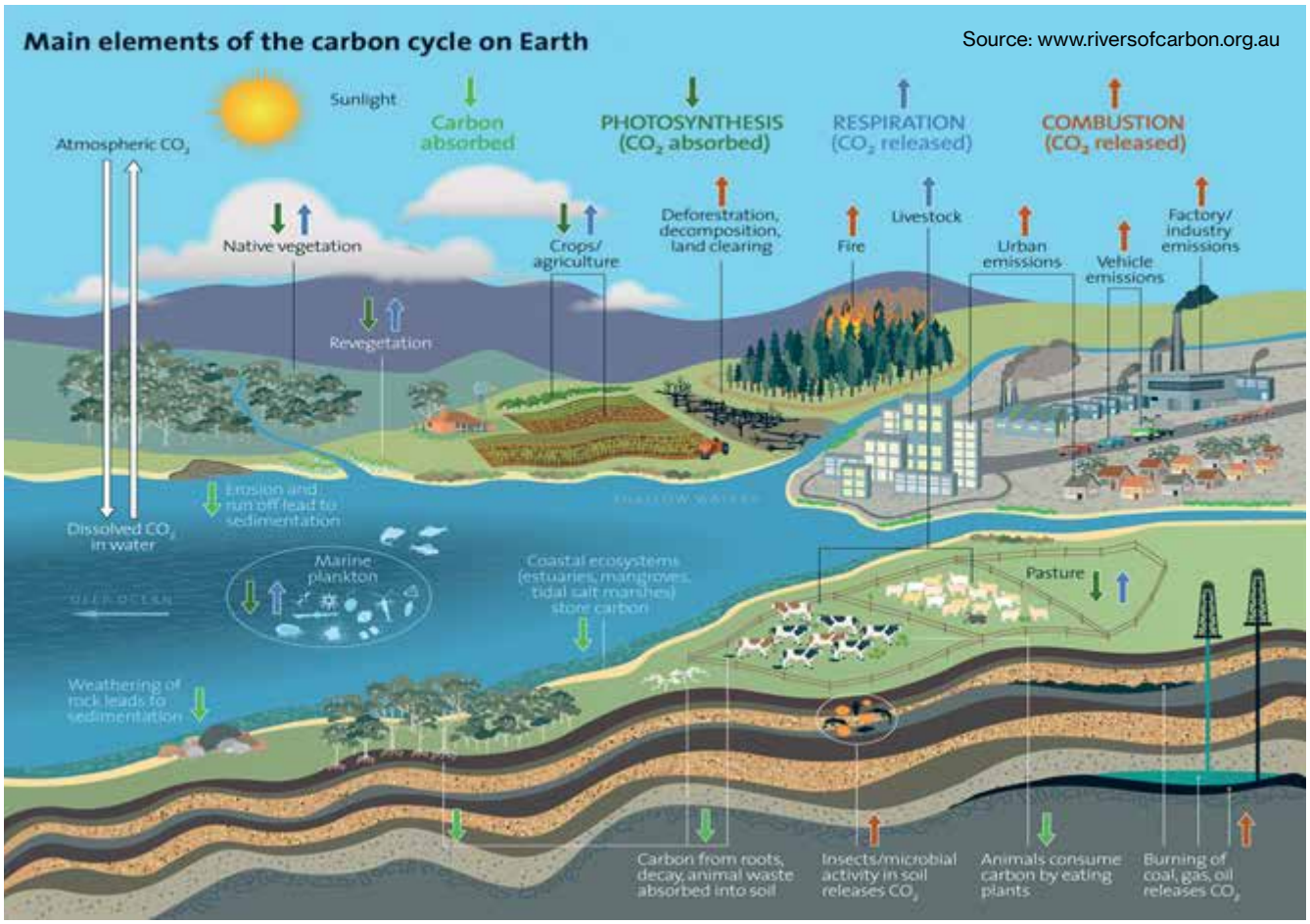
BRIGHT WHITE ICE, DESERTS AND CLOUDS WILL REFLECT WHEREAS DARK FORESTS, BOGS AND DEEP OCEANS WILL ABSORB.



Back to the natural greenhouse effect; the earth cools itself by emitting longwave radiation back into space, in a stable but delicate state of equilibrium; but only about 10% of this passes through the atmosphere. The rest is absorbed by clouds and Greenhouse Gases and is then re-emitted in all directions, with about 50% directed back down towards the earth's surface again, leading to the natural greenhouse effect and a warmer surface temperature on Earth. The problem is that this greenhouse effect is being intensified by humans as we burn up tonnes of fossil fuels and release unprecedented volumes of greenhouse gases; the last 6 years alone have broken previous records for global CO_2 emissions every single year.

The Carbon Cycle

Here we can see the main elements of the carbon cycle on Earth, both natural elements that would exist without humans (such as photosynthesis and respiration), and the intense release of CO_2 emissions as the burning of fossil fuels takes place. Other human activity that results in an increased or unnatural greenhouse effect includes rearing livestock and deforestation.

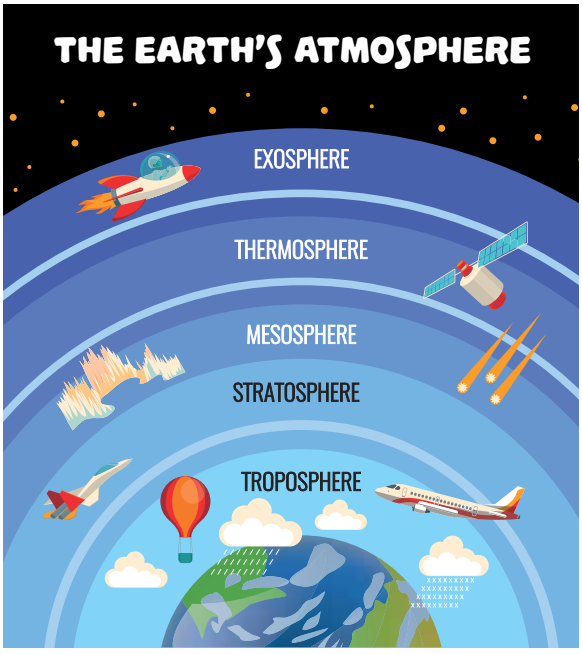


SO NOW WE KNOW THAT CARBON IS MOVING ALL OVER EARTH'S ATMOSPHERE, WHAT DO YOU THINK THE ATMOSPHERE IS ACTUALLY MADE UP OF?

Earth's atmosphere is made up of 5 main layers extending above the surface, thinning out the higher you go: troposphere, stratosphere, mesosphere, thermosphere and exosphere.

It consists of the permanent gases 78% nitrogen, 21% oxygen, 0.9% argon as well as greenhouse gases in varying amounts.

https://earthobservatory.nasa.gov



What are the main Greenhouse Gases?

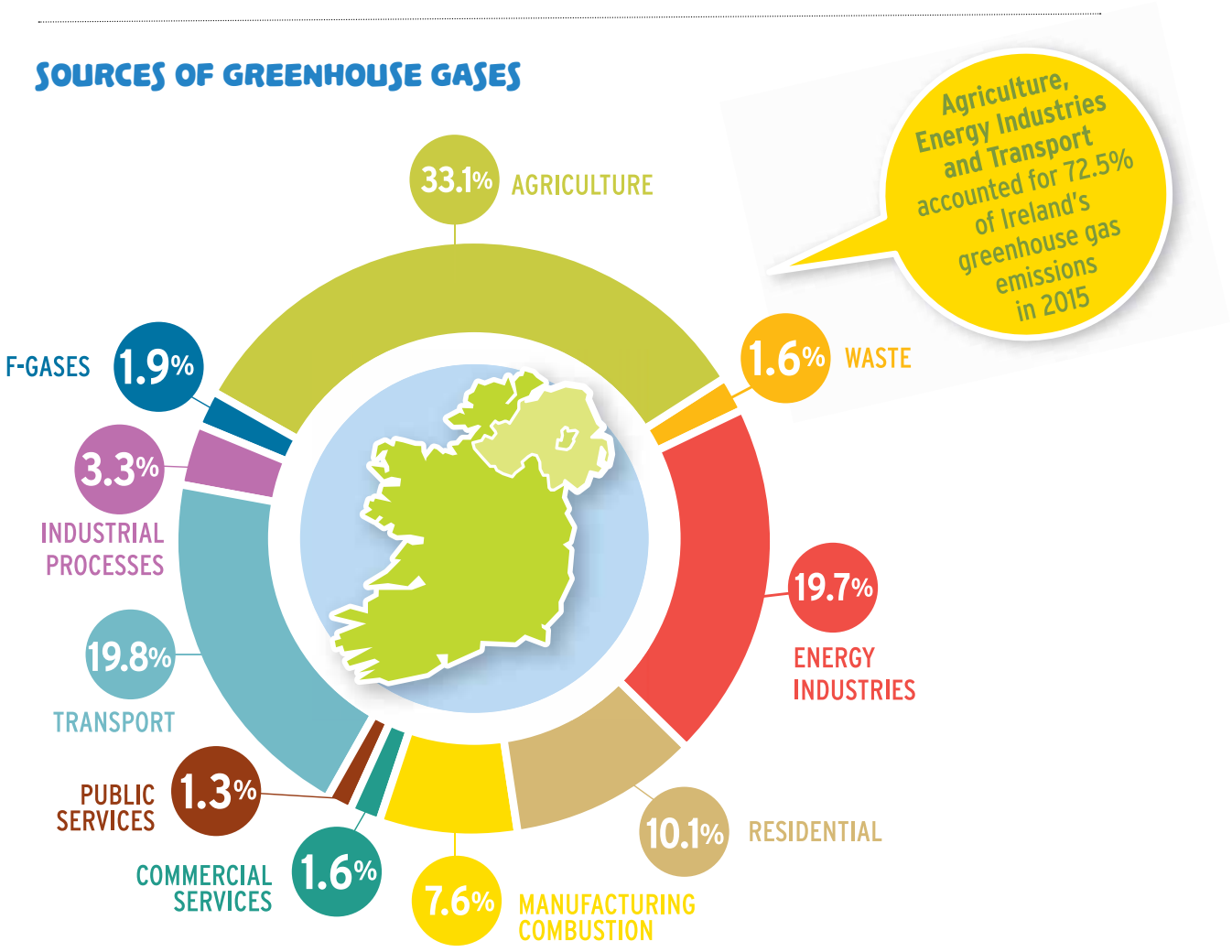
Water vapour (H_2O) is the most abundant greenhouse gas followed by carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O) and then synthetic fluorinated gases (like the CFC's we mentioned earlier).

Greenhouse gases whose percentages vary daily, seasonally, and annually have physical and chemical properties which make them interact with the shortwave and longwave radiation (or heat) given off from the earth which affects the energy balance of the globe. Therefore, scientists are watching the observed increase in greenhouse gases like carbon dioxide and methane carefully, because even though they are relatively small in volume, they can strongly affect the global energy balance and temperature over time. Methane is about 25-30 times more potent and effective at trapping heat than carbon dioxide!

https://climate.ncsu.edu/edu/Composition

In Ireland, the vast majority of our GHG emissions arise from the agriculture industry, closely followed by transport and energy (EPA 2015). Carbon dioxide mainly comes from burning fossil fuels, such as coal, oil, gas and peat/turf. It is also released through the processes of deforestation and urbanisation. The main sources of methane and nitrous oxide are farm animals, manure and fertiliser.

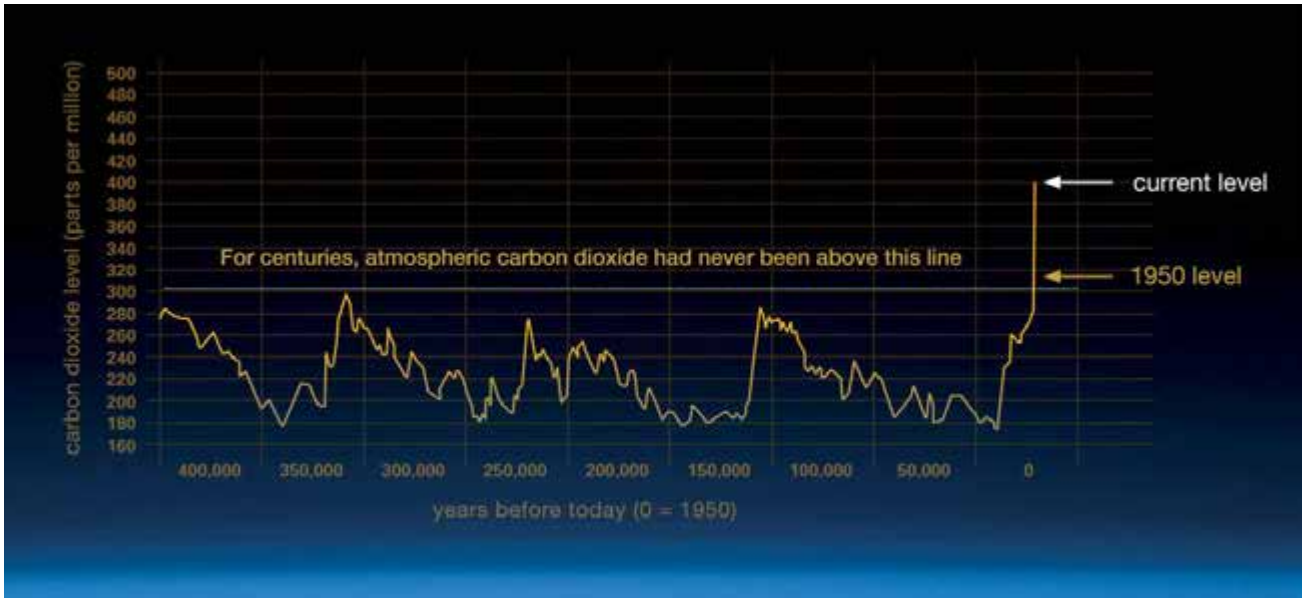
SOURCES OF GREENHOUSE GASES



Source: www.epa.ie/media/infographic_climate_July2017.pdf

The Proof!

Firstly, let's look at the Atmospheric CO_2 levels going back 400,000 years. Can you all see the pattern occurring roughly every 100,000 years? Why do you think that is happening? Think about the Earth's elliptical orbit and how it changes... this is roughly in line with our ice-ages. And what do you think caused the steep and never-before-seen rise before 1950? The intense fossil fuel exploitation and combustion since the Industrial Revolution has soared CO_2 levels over 400ppm (parts per million).



Source: J.R. Petit et al.; NOAA Mauna Loa CO2 Record.

- Over the last 200 years, carbon dioxide is up 40%, methane is up 150% and nitrous oxide is up by 20%. These greenhouse gases (GHG) are now higher than they have been for over 800,000 years.
- There is a clear temperature anomaly from 1880 to the present day, showing that the Earth's surface has increased by 0.84 degrees Celcius. If you examine the spike in temperature, alongside the increased GHG levels, you can see a clear correlation.
- Climate deniers or sceptics often try to blame the Sun but the average energy output has remained relatively stable from 1980-2005, therefore, this is not the cause of the increasing global surface temperature.
- A combination of melting sea ice and increased ocean temperatures is causing the water to expand and resulting in a noticeable sea level rise. From 1993-2016 the annual rate of rise was 3.41mm.

Download the full teacher notes to accompany each slide here: **https://tinyurl.com/ybl4toqx**

Revisit the questions on page 14 with your class.

CLIMATE CONVERSATION & CAKE

WE NEED TO TALK ABOUT CLIMATE CHANGE!

Every day in the news we can see extreme weather events, people being displaced from their homes or some amazing new green technology, but we rarely hear the words climate change.

This activity aims to change that, and get your students talking about climate change in the present, not just how it will affect future generations, but how it is impacting us right now. The aim of a climate conversation is to come together for a chat and a cup of tea, (maybe a slice of cake!) and explore how we can take action collectively to slow down climate change.

Step 1: Collaborate

The conversation can be as big or small as you want. Who could you collaborate with to host a conversation in your school? Do you want it to be internal in your class or could you invite another subject class or local school, business, Tidy Towns or local college representatives?

Step 2: Create the space

A climate conversation could be during a coffee morning, a lunchtime gathering or in class. It should be a welcoming, informal and cosy space where conversations can flow and everyone's voices can be heard. Have some large sheets of recycled paper, bits of scrap paper and a whiteboard to record key points.

Step 3: Hold the conversation

The conversation is a space to reflect personally and together. You can adapt the process and questions to suit your group focus.

- Invite each person to silently think 'why do you think climate change is happening?'.
- Working in pairs, each person offers their answer and the other person probes 'But why?'. Invite the pairs to share their thoughts with the table. What were peoples starting points? Where did they end up? Record the causes of climate change that each table identifies.
- Think about where and how you can see these causes in your own life, school or the local community. Invite everyone to share these connections.
- Now think about when you might have experienced or heard of the impacts of climate change in your own life, school or the local community. Examples could include power cuts due to storms, damage from flooding, water shortages during a drought, road and/or school closure etc.
- What personal or local climate actions could the group take to mitigate some of the root causes they have identified? How could the group adapt to the impacts of climate change? Invite each pair to share their final thoughts, a take home message, suggested solutions or something that they are going to pursue/learn more about. See page 32 for an example Climate Action Plan.

Welcome everyone to the climate conversation and introduce the principles of a good conversation:

- We acknowledge one another as equals, we try to stay curious about each other
- We recognise that we need each other's help to become better listeners
- We slow down so we have time to think and reflect, we expect it to be messy at times
- We remember that conversation is the natural way humans think together

Source: Margaret Wheatly (2009: 33) 'Turning to one another: simple conversations to restore hope to the future'.

CHAPTER 4

Learning Outcomes

C.S.P.E. Global Citizenship Strand Action: Organise a debate about a local or global development issue of concern.

English W3: Write for a variety of purposes, for example to analyse, imagine, explore, engage, amuse, narrate, inform, explain, argue, persuade, criticise, comment on what they have heard, viewed and read.

English OL1: Know and use the conventions of oral language interaction, in a variety of contexts, including class groups, for a range of purposes, such as asking for information, stating an opinion, listening to others, informing, explaining, arguing, persuading, criticising, commenting, narrating, imagining and speculating.

CLIMATE CARTOONS

Information on climate change is often communicated through lengthy lectures, graphs and charts or language that those outside of the scientific community might find difficult to understand or simply boring.

This activity will look at novel communication methods to engage students in climate change.

Break your class into three groups and ask each to study one of the cartoons on the next page for 10 minutes, discussing the trigger questions below.

QUESTIONS:

- What are the key messages presented in the cartoon?
- Which details in the cartoon are the most important?
- Describe your groups' cartoon to the other two groups, without showing them the cartoon.
- What audience do you think the cartoon is best suited to?
- If you had to come up with a title for the cartoon, what would it be and why?

WALKING VOTE

Place the three cartoons in different corners of the room and ask your class which they think is the most effective at engaging the reader in climate change? After they have voted by walking to their chosen cartoon, call on a student from the smallest group and encourage them to convince others to join them by explaining their choice. Repeat this for each group, giving people the opportunity to move each time and then count the votes. Taking the cartoon with the most votes, give your students the choice of completing one of the extension activities below.

GET CREATIVE

Drama

Perform a short sketch using one cartoon as inspiration.

Art & Languages

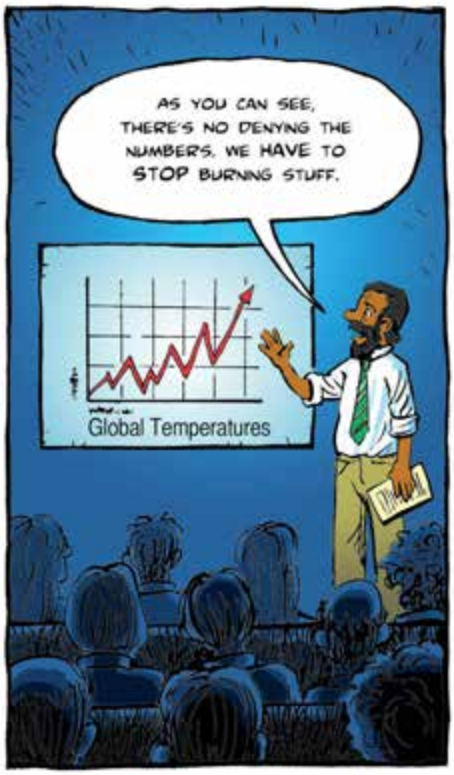
Draw a climate comic strip or write a short climate story featuring one cartoon as a start, middle or end point.

Check out the Global Goals comic "Chakra The Invincible Fights Climate Change": **https://tinyurl.com/yd3vyv6u**

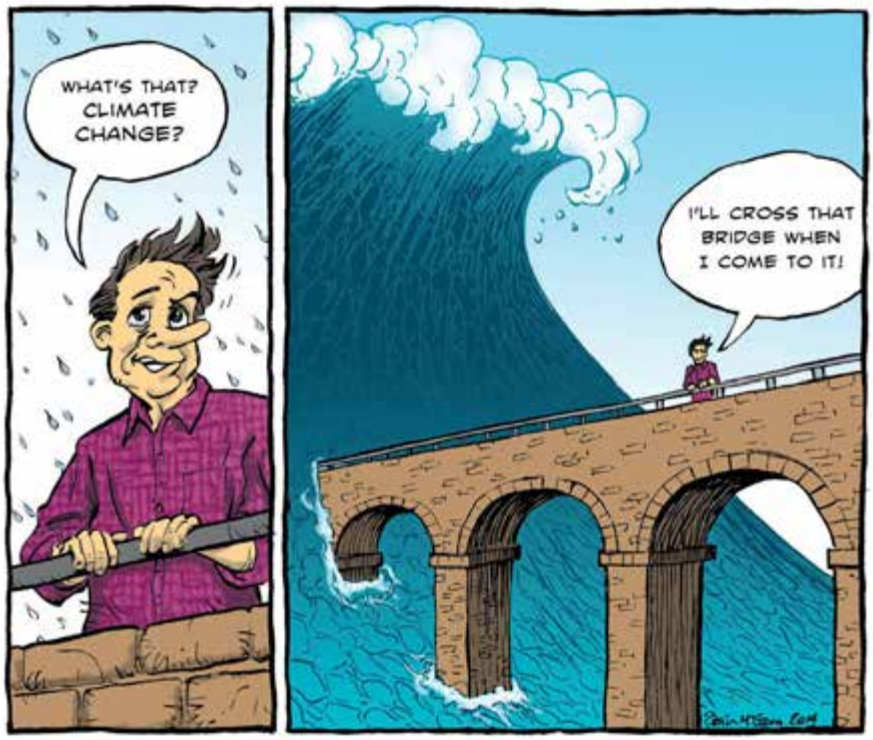
For more illustrations and fantastic short stories from Irish writer Oisín McGann, please visit: **http://globalweatherstations.com/?author=9&lang=en**

CLIMATE CARTOONS

Working the numbers



Cross that bridge



Denial

CHAPTER 5

Learning Outcomes

Science 1.8: Evaluate media-based arguments concerning science and technology.

Science 1.6: Conduct research relevant to a scientific issue, evaluate different sources of information including secondary data, understanding that a source may lack detail or show bias.

C.S.P.E. Global Citizenship Strand Action: Use digital technology and/or other means to create awareness about a local or global development issue.

CSPE 3.12: Examine case studies of the use of digital or other media in an environmental movement.

English OL8: Listen actively to interpret meaning, compare, evaluate effectiveness of, and respond to drama, poetry, media broadcasts, digital media, noting key ideas, style, tone, content and overall impact in a systematic way.

English OL5: Deliver a short oral text, alone or in collaboration with others, using appropriate language, style and visual content for specific audiences and chosen purposes.

CLIMATE CHANGE IS PERSONAL

Climate change is often perceived as an abstract, futuristic problem that doesn't affect us here and now in Ireland.

It can sometimes feel too big to imagine or too big to do anything about. This exercise looks at how poetry can bridge the gap and help make climate change a tangible and current issue for your students to understand.

Read the poem opposite, which was written by a Green-Schools student and Climate Ambassador, then consider the trigger questions on the next page with your class.

THE ASCENSION OF THE DOVE

The echo of the saw,
The tree tumbling with a thud.
How sad all this, I thought.

Plastic penetrating the ocean blue,
Perhaps this could be a cue,
For us to finally step aback,
And ponder at what we've got.

Now hares have lost the race,
Turtles are stuck in place.
They light their pipes to pass the time,
We are only beginning to see the crime.

The dove choked on black slime,
We have not risen to our prime.

One day we shall rise,
And overturn our planet's demise.
The pearl will be saved,
Our chains broken,

And the dove will ascend,
To light the way.

Shall we show our inner might?
And build a world of light?
There will be no more fear,
no more inaction, dear.

Rise, rise,
Step up to the mark,
Your mind will be your guide,
Listen to the whisper,
The whisper of the right.

By Marek Zbanski, TY student at Coláiste Chríost Rí, Cork, 2018.

CLIMATE CHANGE IS PERSONAL

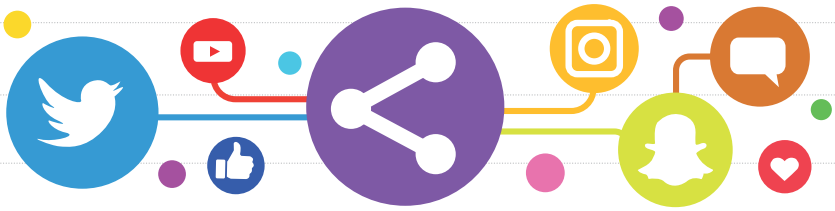
ASK YOURSELF:

1. **If you had to leave your home, and you could only take three objects with you, what would they be?** Try to pick objects you use every day. Think about how you would describe these objects without naming them.
2. **If you lost your home to flooding, which two objects would you want to save?** If these objects were lost, what would you lose, how would it affect you?
3. **Choose one object and draft a poem, song or rap about what you choose not to lose to climate change.**

Here's some tips for building your poem:

- Keep it personal – it's more interesting if it relates to your daily life.
- Repeated refrains can help emphasise your point.
- You don't have to rhyme!
- Slang words, expressions or words from other languages are allowed.
- Try to engage the senses: sight, sound, smell, touch and taste.

Adapted from: www.capefarewell.com/switch/teachers/



Share Your Message

We would LOVE to hear from your class if you are happy to share your poems, raps or songs about what you choose not to lose to climate change. Get in touch with us on social media via twitter, instagram or facebook and use the hashtag #greenschools. Alternatively, you could email our office at **greenschools@antaisce.org**

Be Brave!

Ask if anyone would like to present their piece over the intercom, at a school assembly or have it printed in your school newspaper.

Watch the video George The Poet presents 'A Climate of Change': **www.youtube.com/watch?v=kfEF_P73RE0**

CLIMACOM

Now that your class has explored the power of the personal side to climate change, it's time to go back to the prezi from chapter 3 and progress to the 'Climate Communications' video section:

https://tinyurl.com/y87pck8j

1. Often the media portrays climate change as a debate, with one 'scientist' on either side. This is not representative of the scientific community and the overwhelming consensus they have reached. **Watch 'Last Week Tonight with John Oliver: A Statistically Representative Climate Change Debate'.**
2. Unfortunately, the 3% of climate deniers have a loud voice and deep pockets. **Watch 'Late Night with Seth Meyers: Sceptic Senator Ted Cruz terrifies a 3-year-old girl'.**
3. It's not just American politicians, and Presidents that are climate deniers! Watch **'The Dáil: Danny Healy Rae denies climate change'.**
4. Some governments are taking a novel approach to engaging the public in climate change. **Watch 'Save the PIZZA!' produced by Bensimon Byrne for Ontario MOECC**
5. Some celebrities are using their voice and influence to raise awareness of climate change. Can you think of any other celebrities or YouTubers that use their channels to voice concern about climate change? **Watch 'Leonardo DiCaprio's Oscar Award Speech' as he talks about climate change in 2016.**

Evaluate some or all of these video communications and explore the general public and scientific arguments for and against climate change, understanding that a source may lack detail or show bias.

How could you best communicate climate change to a friend, younger sibling or parent? What effective methods would you use depending on the individual you are communicating with? In groups of 4, choose a target audience and develop a climate communication suited to them. It could take the form of a video, advertisement, poem, rap, story, song or dance! Here are some top communication tips:

- **Experiential:** What is your story? Set the scene, paint a picture!
- **Meaningful:** What is the purpose of the campaign/advertisement?
- **Engaging:** Who is your target audience? What do they care about?
- **Hopeful:** What is your call to action? Keep it brief!

Check out the Young Reporters for the Environment and enter your Climacom: **www.yreireland.org**

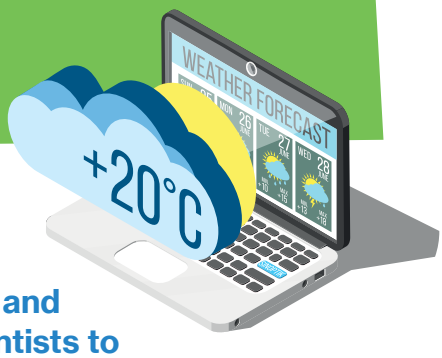
CHAPTER 6

Learning Outcomes

Geography 1.8: Gather, record and interpret weather data.

Geography 1.6: Classify global climates and analyse the factors that influence the climate in Ireland.

Science 1.4: Produce and select data, critically analyse data to identify patterns and relationships, identify anomalous observations, draw and justify conclusions.



WEATHER RESCUE

Understanding historical weather data will help us observe and interpret any current change and also enables climate scientists to map future trends using state-of-the-art computer models.

Most weather records prior to 1950 have never been digitised, even though the Met Office has European daily reports dating as far back as 1860. This is where you Citizen Scientists come to the rescue!

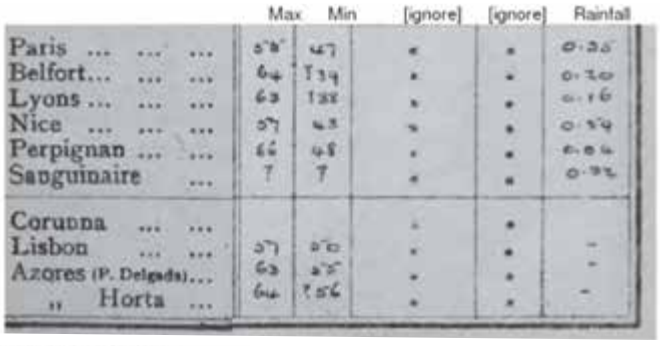
"AS THE WORLD WARMS WE EXPECT THE FREQUENCY OF SOME TYPES OF EXTREME WEATHER TO CHANGE AND THIS DATA WILL PROVIDE A BASELINE TO HELP US MEASURE THOSE CHANGES. CAN YOU HELP US RESCUE THESE LOST OBSERVATIONS AND FULFIL THE ASPIRATIONS OF THESE DEDICATED METEOROLOGISTS FROM OVER A CENTURY AGO"?

What units did they use to measure the weather?

The rainfall is measured in inches, the temperature is in Fahrenheit, and the pressure uses inches of mercury (in/Hg). Ed Hawkins and his team will convert all the measurements (mm, Celsius and mb) as part of the data processing. Head over to the **Zooniverse Citizen** Science portal, complete the quick online tutorial with your class and then get classifying:

www.zooniverse.org/projects/edh/weather-rescue

Here's an example of an old weather record from the Weather Rescue project



Subject 21500886
30 March 1909 (daily values)

Ed Hawkins has also created **climate spiral gifs** to help us visualise the global temperature change, atmospheric carbon dioxide rise and arctic sea ice loss. Have a look at the animations with your students after you have classified some old weather records:

www.climate-lab-book.ac.uk/spirals/

CLIMATE DATA

Met Éireann has recently made historical weather data available which gives you the opportunity to select local quantitative data and enables your students to interpret and critically analyse patterns and identify anomalies, drawing their own conclusions as to the changing climate of your county. This activity would form a great Maths class, especially during Green-Schools' Climate Action Week!

We have downloaded and tidied up the dataset for Dublin (Glasnevin) from 01/01/1961 to 31/12/2017 to include daily rainfall, maximum temperatures and minimum temperatures. In the example line chart below you can see the average temperature (°C) in Dublin from 1970-2000.

As a class, classify global climates and analyse the factors that influence the climate in Ireland. Then break into pairs and work your way through the following questions.

QUESTIONS:

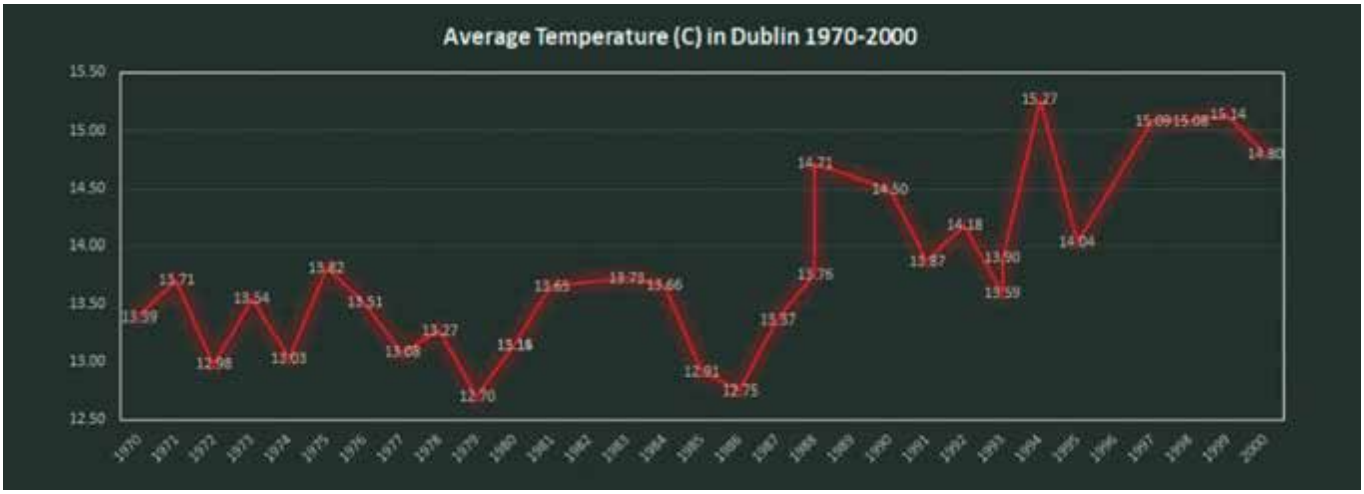
1. From which weather station are you analysing data?
2. For what date range are you interpreting weather data? Please note that you should select a minimum of 30 years to qualify as 'climate data'.
3. Which categories are you focusing on (i.e. rainfall, temperature etc.)?
4. What frequency of data resolution are you using (i.e. hourly, daily, monthly)?
5. What date, month or year has recorded the highest value in each of the categories you are examining?
6. What date, month or year has recorded the lowest value in each of the categories you are examining?
7. Create a visual representation using excel to depict your dataset (i.e. a line, bar or area chart).
8. Have you noticed any patterns in your dataset?
9. Have you noticed any anomalies in your dataset? An anomaly can be defined as something different from what is expected or a deviation in a pattern.
10. Draw a conclusion based on your analysis of the data.

If you would like your class to analyse the raw data in excel, you can download it from the Green-Schools website:

www.greenschoolsireland.org/resources/

Alternatively, if you would like to select a different location, closer to your school, please visit the historical data page of Met Éireann and select the station of your choice:

www.met.ie/climate/available-data/historical-data



THE GLOBE PROGRAM

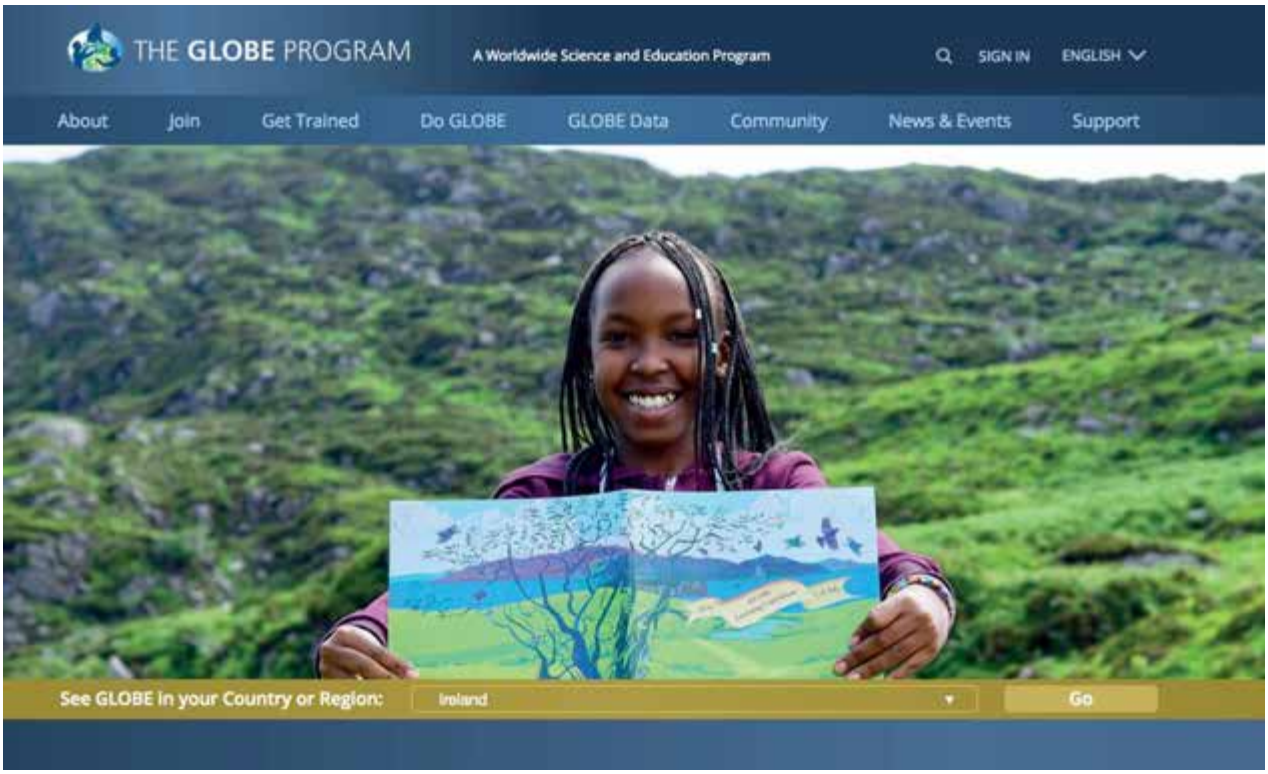
Teachers and students interested in citizen science projects should explore the GLOBE (Global Learning and Observations to Benefit the Environment) **program.**

GLOBE is an international science and education programme led by NASA and provides students and the public with the opportunity to participate in data collection, the scientific process and contribute meaningfully to our understanding of the Earth system and global environment.

The Environmental Education Unit of An Taisce coordinates GLOBE in Ireland in partnership with the EPA. For more information and access to resources and support.

THE **GLOBE** PROGRAM

Visit: **www.globe.gov/join/become-a-globe-teacher**



CHAPTER 7

Learning Outcomes

Geography 1.9: Differentiate between the types of energy resources produced by the physical world.

Geography 2.2: Evaluate the environmental, economic, and social consequences of rock exploitation and energy resources.

Science 2.6: Research different energy sources; formulate and communicate an informed view of ways that current and future energy needs on Earth can be met.

Science 4.8: Research and discuss the ethical/sustainability issues that arise from our generation and consumption of electricity.

Science: 1.7: Organise and communicate their research and investigate findings in a variety of ways fit for purpose and audience, using relevant scientific terminology and representations.

English R2: Read for a variety of purposes: learning, pleasure, research, comparison.

English OL7: Choose appropriate language, style and visual content for specific audiences and chosen purposes: persuading, informing, narrating, describing a process

CLIMATE RESEARCH

This chapter is all about your students conducting their own research, whether that be in the library, online or even through interviews. Here's some useful links:

The Climate Ambassador programme is a brand new Irish initiative designed to train and support individuals in taking climate action and has a fantastic page of suggestions to support individuals in taking climate action in their school, college or community.

http://climateambassador.ie/actions/

The Environmental Protection Agency is responsible for the protection of Ireland's environment including licensing, law, planning, education, monitoring, regulation, research and management.

www.epa.ie/irelandsenvironment/climate/

NASA is one of the world's leading climate research agencies and the Global Climate Change website aims to give the public accurate news and visuals of the Earth's changing climate.

https://climate.nasa.gov/evidence/

The BBC Education Guides for KS3 are very similar to the Junior Cycle Curriculum, especially the section on energy resources which is very useful.

www.bbc.com/education/guides/zggk87h/revision/1

QUESTIONS:

1. Compare and contrast two sources of renewable energy and two sources of non-renewable fossil fuels, listing their advantages and disadvantages.
2. Using a Venn diagram, evaluate the environ–mental, economic and social consequences of rock exploitation, using a different non-renewable fossil fuel from question 1.
3. Find out how much energy Ireland requires annually. What percentage of this is consumed by the residential sector? How much electricity/ gas does your household use each year?
4. Where does Ireland source its energy to meet the current demand? i.e. where does it come from and what percentage of our energy is from renewable sources or non-renewable fossil fuels?
5. Research a country or city whose majority energy demand is met using native renewable energy. i.e. they are not majorly dependant on imports or fossil fuels. Examples could include Scotland, Iceland, Sweden, Costa Rica, Norway, Nicaragua, Uruguay, Germany, Denmark, Morocco and Kenya.

This blog post will give you a decent overview and links to further country-specifics on renewable energy: **www.clickenergy.com.au/news-blog/12-countries-leading-the-way-in-renewable-energy/**

PRESENTATION

Break your class into three groups and give each team a project to present on: locally, nationally or globally.
The presentations can be judged under the following headings:

- **Creativity** – is the presentation delivered in a novel and interesting way?
- **Audience suitability** – do the information and ideas presented appeal to the crowd?
- **Scientific accuracy** – is it feasible or impossible?

PROJECTS:

- **Locally:** How can our Green-School sustainably meet energy requirements by the year 2025?
- **Nationally:** How can Ireland sustainably meet energy demand by the year 2030?
- **Globally:** How can Earth sustainably meet energy demand by the year 2050?

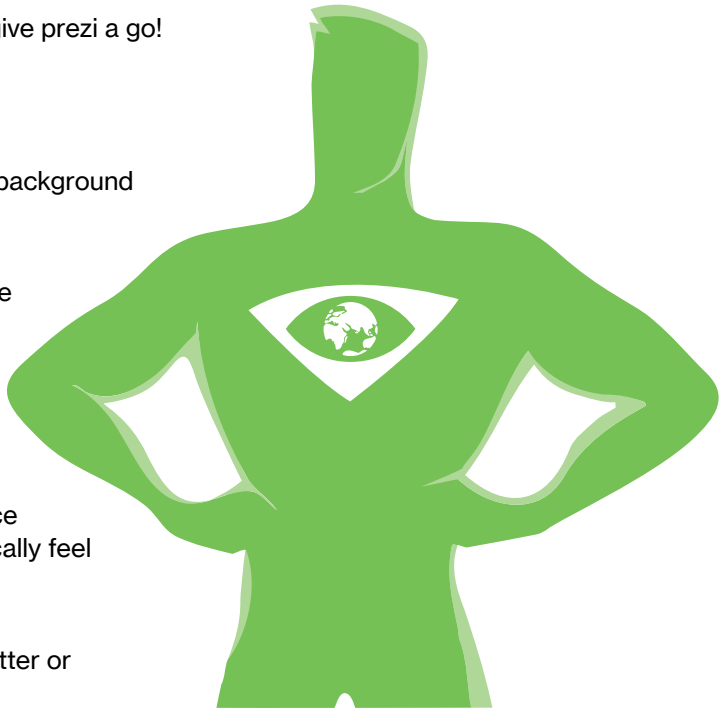
  Alternatively, if you would like your students to work individually, another option is to focus on their future life.

- **Personally:** What will my world be like in 2030, assuming some or all the Sustainable Development Goals have been achieved, and I am successfully working in the Clean Energy Sector?

TIPS

Prezi: if you're sick of using powerpoint why not give prezi a go!

www.prezi.com



Video: create a video or slideshow to play in the background while you present your ideas.

Pictures: using pictures and other visual aids will improve your presentation and help your audience see what you're talking about.

Word limit: if you're using powerpoint or prezi don't overload your slides with text, keep it to a minimum and use speaker notes to fill in the blanks – try not to read from your slides.

Confidence: make eye contact with your audience and stand in the power position – you'll automatically feel like you can take on the world!

Share your projects far and wide! Be sure to tag @GreenSchoolsIre and @climate_ambass on Twitter or Facebook!

CHAPTER 8

16 PEACE, JUSTICE AND STRONG INSTITUTIONS

Learning Outcomes

Geography 2.9: Assess the interrelationships between the physical world, tourism and transport.

CSPE Global Citizenship Strand Action: Invite a local political representative to answer questions about addressing a local or global development issue of concern.

English OL4: Listen actively to get the gist of an account or presentation noting its main points and purpose.

CITIZEN'S ASSEMBLY

Since 2016, Ireland has a unique method in consulting the people of the nation. The Citizens' Assembly is a group of 99 randomly selected people plus the Chairperson, established to determine public perception and consider action on various issues.

This activity will look at 'Making Ireland a leader in tackling climate change' and in turn ask you to consider 'How can our Green-School become a leader in tackling climate change?'.

How can the State make Ireland a leader in tackling climate change?

Choose one of the following themes to focus on and then watch the videos with your class here:

https://tinyurl.com/yakq4b57

If YouTube is blocked in your school, then you can pick a theme from the Final Report here:

https://tinyurl.com/ybhs6867

Transport (pages 76-80)

- Anne Graham, NTA – Transport Policy in Ireland
- Dr. Brian Caulfield, TCD – If Ireland was a Leader
- Connie Hedegaard – The Danish Experience
- Prof. Andrew Kerr – The Scottish Experience

Agriculture, Food & Land Use (pages 80-86)

- Gary Lanigan, Teagasc – Agriculture Policy in Ireland
- Andrew McHugh, Farmer – Smart Farming
- Iseult Ward, FoodCloud – Our Food Story
- Tony Garahy - Lough Boora Farm

After choosing a theme and watching the video(s) or reading the Final Report extract(s), explore the following questions with your class:

1. Which was your favourite speaker/extract and why?
2. Can you think of any questions you would want to ask them if you were at the Citizen's Assembly?
3. Summarise Transport or Agriculture Policy in your own words.
4. How do you think Ireland can become a leader in tackling climate change?
5. How can your Green-School become a leader in tackling climate change?

Now you know how the Citizen's Assembly works, why not organise your own event in school and invite some local political representatives to present or sit on a panel for general discussion on climate change or specifically question five from above:

How can your Green-School become a leader in tackling climate change?

CHAPTER 9

Learning Outcomes

CSPE: Global Citizenship Strand Action: start or support a local, national or international initiative or campaign which aims to address a local or global development issue.

CSPE: 2.4: Discuss three or more sustainable living strategies they can employ in their lives.

CSPE: 2.10: Evaluate how they can contribute in responding to one challenge currently facing the world.

CLIMATE ACTION PLAN

The Action Plan is the core of the Green-Schools Programme and the perfect way to empower your students to do something practical in relation to what they have learnt.

It is a time-tabled series of specific goals for improvement. Short, medium and longer-term quantifiable targets should be set where possible and these should be developed from the environmental review, audit or survey. Ensure your targets are realistic, achievable, measurable and have proposed completion dates. Success increases confidence and builds enthusiasm for future plans!

It is crucial to decide how you will monitor your progress and give each student or group a role or specific task that they can take ownership of. The Action Plan is not a review of the work that has already been done, but a list of future goals and actions that will help you achieve those targets. Each and every theme of the Green-Schools programme relates to climate change and your environment, so hosting a Climate Action Day or having an entire Climate Action Plan is a great way to showcase what you are doing.

Watch the video 'The Story of Change': **https://tinyurl.com/y78vyf3z**

For inspiration and ideas, have a look at the Green-Schools Climate Hope news article available here: **https://greenschoolsireland.org/climate-hope-for-green-schools/**

GOAL 1: TO STOP USING SINGLE-USE PLASTICS IN SCHOOL.

Action	Person/Group	Target Date	Achieved
Screen 'A Plastic Ocean' or similar documentary/film.			
Do a #2minutebeachclean or #2minutestreetclean.			
Create art or a sculpture from the plastic waste collected.			
Hold an exhibition and invite parents and the local community.			
Raise awareness that you are becoming a #PlasticFreeSchool. Design posters showing banned items such as single use plastic bottles, bags, cling film, straws, yoghurt pots, takeaway cups, coffee pods and cutlery. Make sure to let people know what alternatives they can use!			
Hold a competition to see which class wins the race to become #PlasticFree			

GOAL 2: TO REDUCE THE NUMBER OF STUDENTS BEING DRIVEN TO SCHOOL AND INCREASE WALKING, CYCLING AND PUBLIC TRANSPORT USE.

Action	Person/Group	Target Date	Achieved
Undertake travel surveys for all students and staff.			
Showcase the results on the Green-Schools noticeboard and compare your school to the national average.			
Undertake a walkability and cyclability audit around your school, highlighting the safest routes available for students and staff.			
Look at your uniform policy and ensure there are no barriers to cycling, such as skirts or tight trousers.			
Contact your local council and petition them for safe cycle lanes and signage indicating safe passing distances and student safety.			
Ask your local bike shop to donate a bike or voucher for whoever cycles to school for the most days each year.			

GOAL 3: TO REDUCE THE VOLUME OF MEAT AND DAIRY CONSUMED IN SCHOOL.

Action	Person/Group	Target Date	Achieved
Research and create an engaging presentation (or write a speech) to inform your peers of the carbon footprint and environmental impact of the meat and/or dairy industry in Ireland.			
Deliver your presentation in classes or at school assemblies.			
Hold a vegetarian or vegan pot luck taster where everyone brings in one dish to share and swaps recipes.			
Run a #MeatlessMonday campaign in your school and give people ideas and recipes for simple healthy alternatives.			

GOAL 4

Action	Person/Group	Target Date	Achieved

GOAL 5

Action	Person/Group	Target Date	Achieved

CLIMATE ACTION

As part of your Climate Action Day or when celebrating the success of your Climate Action Plan, why not ask your whole school to make a simple #ClimatePledge?!

We've picked 8 of our favourite pledges but feel free to make up your own too! Encourage students to display them proudly as a badge or make a collaborative art piece or colourful bunting by stringing them all together.

My #ClimatePledge is to refuse disposable plastic bottles, bags, straws, cutlery and cups!

My #ClimatePledge is to walk, cycle or get public transport to school.

My #ClimatePledge is to turn off the lights and only charge my phone during the day.

My #ClimatePledge is to plant pollinator-friendly flowers and spread wildflower seeds.

My #ClimatePledge is to have shorter showers – 5mins max!

My #ClimatePledge is to buy local food, Fairtrade and cruelty-free products where possible.

My #ClimatePledge is to eat less meat and dairy.

My #ClimatePledge is to ensure sanitary products I use don't get flushed and end up in the Ocean.

CHAPTER 10

Learning Outcomes

CSPE 2.12; 3.13: Reflect on what has been learned in this strand.

English OL2: Engage actively and responsibly within class groups to listen to or recount experiences and to express feelings and ideas.

REFLECTION

Time for reflection is often overlooked, so we have decided to dedicate a chapter to it. Ideally you would take 3 minutes out of each lesson to recap what you have covered together, any interesting questions that came up and any remaining areas to explore further.

Ask your students what impact each activity has on their thoughts or if some new information gained has influenced the way they think or decisions they might make.

Personal Reflection

Ask your students to take 3 minutes to reflect internally at the end of each lesson and complete the following sentences:

- The most important thing I learned was...
- The most interesting part was...
- I would like to learn more about...

Wellbeing Strengths and Opportunities

It is widely accepted that focusing on a students' wellbeing during school years can not only lead to a well-rounded education but also positively influence their opportunities in the future. Ask your students to sit in groups of four and think back to some or all of the activities you have completed from this resource (or this term), not just what they have learned, but how they have learned it.

Try to think of a time where you felt one or more of the following indicators of wellbeing:

- Active – confident in physical activity
- Responsible – take action to protect and promote my wellbeing and making the right choices
- Connected – to my school, friends, community and the wider world
- Resilient – skills to deal with life's challenges
- Respected – feel valued and listened to and care and respect others
- Aware – of my thoughts, feelings, behaviours and values

Now ask your groups to think about whether each of the indicators are a strength or opportunity for them, some could be both! Use the table below and discuss the examples provided.

Strength	Opportunity
Active, Responsible, Connected *I walk/cycle to school with my friends*	Respected *I will talk to my local TD/ Councillor about my concerns/ideas*

Think, Pair, Share

The Junior Cycle for Teachers Team are big fans of the 'think, pair and share' technique, creating a range of resources and videos explaining how to practically use it as a teaching strategy. Watch the video and then consider some of the questions below:

www.youtube.com watch?v=AmHU6t8ZhRE&feature=youtu.be

QUESTIONS:

1. What do you know about climate change?
2. List two human activities that have caused the rate of climate change to accelerate.
3. List three actions that you can take to reduce your carbon footprint.
4. Explain one solution for climate change that you have heard about or researched.
5. What would you like to learn more about in relation to climate change?

Time Capsule

Ask your students to write a letter to themselves, to be opened in 2030. This is the year that the Sustainable Development Goals will hopefully be achieved.

Your letter should include:

1. A reminder of what you have learnt about climate change.
2. A prediction about one of the 17 Sustainable Development Goals.
3. Some advice for your future self.
4. Encouragement to improve your choices that impact the planet.
5. Something funny.

For more information on reflection, evaluation and assessment, please visit the NCCA website or read 'Students Reflecting on their Learning', NCCA 2015. **www.ncca.ie/en/junior-cycle/assessment-and-reporting/focus-on-learning**

POST-CLIMATE ACTION STUDENT SURVEY

Now that you have completed some or all of the activities in this resource pack, please take 10 minutes to complete this survey with your students.

It will help us determine the potential impact that this resource is having in terms of value development, perception of climate change, knowledge and behaviour change.

This data will contribute to a national picture which will be published by Green-Schools and you can access on our website. No individuals or schools will be named.

The fastest and easiest way to do this is by asking your students to scan the QR code with their phones or click the following link and complete the survey online:

Scan me

www.surveymonkey.com/r/Post-CliSurvey

If you don't have access to a computer room in your school, or if your students aren't allowed complete the survey on their phones, you can scan and email the completed surveys to **greenschools@antaisce.org**

While your students are completing their surveys, please take 4 minutes to let us know what you thought of this resource as a teacher:

www.surveymonkey.com/r/ClimateTeacherSurvey

We hope you enjoyed the activities and found them useful in engaging students in climate change!

POLICY CONTEXT

International

The Intergovernmental Panel on Climate Change (IPCC) was set up in 1988 by the United Nations to provide policymakers with regular assessments of the scientific basis of climate change, its impacts and future risks, and options for adaptation and mitigation. Assessments by the IPCC provide a scientific basis for governments at all levels to develop climate-related policies and also inform the development of global climate policies including the Paris Agreement. World leaders formed the United Nations Framework Convention on Climate Change (UNFCCC) in 1992 at the Rio Earth Summit, with the objective of stabilising greenhouse gas concentrations in the atmosphere at a level which would prevent dangerous interference with the planet's climate system. Parties to the UNFCCC have met annually since 1992 to pursue its objectives, including agreeing the Kyoto Protocol in 1997, which committed developed countries to legally binding actions that would lower their greenhouse gas emissions. However, in light of increasing global emissions and average temperature rise, a more comprehensive and inclusive global response was needed.

In 2015, the UNFCCC adopted the Paris Agreement, which commits all Parties to ambitious climate mitigation and adaptation efforts, in an attempt to restrict global average temperature rise to below 2ºC above pre-Industrial levels. The Paris Agreement also commits to increasing the ability to adapt to the adverse impacts of climate change and to make finance flows consistent with a global pathway towards low greenhouse gas emissions and climate-resilient development. To date (July 2018), 178 of the 197 Parties to the UNFCCC have ratified the Paris Agreement, although the USA has signalled its intention to withdraw from the Agreement in 2020.

The Paris Agreement aims to achieve its goals by means of a series of ambitious climate action pledges, called Nationally Determined Contributions (NDCs), submitted by all Parties. The European Union submitted an NDC committing to a reduction of at least 40% in greenhouse gas emissions by 2030, compared with 1990 levels. This target will be achieved through emission reductions in the EU Emissions Trading System and reductions by each Member State in emission levels outside the ETS. Ireland has agreed a reduction target of 20% by 2020 and 30% by 2030 compared to 2005 levels for those emissions outside the ETS. Ireland is unlikely to meet our 2020 target and is expected to increase emissions in two key areas; transport and agriculture.

National

At a National policy and law level, Ireland passed the Climate Action and Low Carbon Development Act in 2015, the National Mitigation Plan (2017) and the National Adaptation Framework (2018). In 2017 the Citizen's Assembly looked at 'How the State can make Ireland a leader in tackling climate change' and reached 13 ambitious recommendations by majority vote, confirming that the Irish public think climate change is an urgent issue and should be at the centre of policy-making. The Department of Communications, Climate Action and Environment (DCCAE) are also rolling out the National Dialogue on Climate Action via climate lectures and regional gatherings to engage people in collaborative action.

Find out more here:
https://dccae.gov.ie/en-ie/climate-action/Pages/default.aspx

Education

Two education policies deserve a special mention as they have helped inform our programmes, resources and coincide with many of our strategic aims at the Environmental Education Unit of An Taisce. The National Strategy on Education for Sustainable Development (2014-2020) "aims to ensure that education contributes to sustainable development by equipping learners with the relevant knowledge, the key dispositions and skills and the values that will motivate and empower them throughout their lives to become informed active citizens who take action for a more sustainable future" (DES 2014; 3). The STEM Education Implementation Plan (2017-2019) aims to support the ambition to "have the best education and training service in Europe by 2026...that nurtures curiosity, inquiry, problem-solving, creativity, ethical behaviour, confidence, and persistence, along with the excitement of collaborative innovation" (DES 2017; 3).

NOTES

Green-Schools
An Taisce

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