

Weather and Climate Change

Make a difference

See accompanying 'take action' video in Glow
video: <http://tinyurl.com/z3wfv2m>

Make a difference



Climate change is one of the biggest challenges facing the global community in the 21st century. Scientists believe that the world is heating up rapidly and that this will cause changes to our weather and climate.

Scotland is taking a lead on tackling climate change with the Climate Change (Scotland) Act which commits Scotland to the world's most ambitious greenhouse gas reduction targets. Our country has responded positively to the challenge and is seeking to be a world leader in harnessing renewable technology - creating jobs, helping the economy and demonstrating leadership on the international stage.

However, if we are to meet the targets of reducing greenhouse gas emissions by 80% by 2050 then it will require everyone to play their part. This section explains some of the ways that individuals and schools can engage children and young people in hands-on activities to tackle climate change to help them develop new skills and support their development as responsible global citizens.

Reflective questions

- How can we create exciting opportunities for young people to be active global citizens?
- What skills, values and attitudes can be encouraged through active learning projects?

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Schools

Introduction

Schools are responsible for 15% of public sector greenhouse gas emissions and up to 50% of emissions from local authorities.

As a result of climate change legislation introduced at UK level, local authorities are now required to reduce emissions across their estates and accordingly many are now ensuring that all new-build schools meet appropriate standards relating to energy efficiency and use of renewable technologies.

However, the most important factor in determining how energy efficient a school is has more to do with the attitude and behaviour of those who use the buildings. This underlines the importance of ensuring that learning about climate change is firmly embedded within Curriculum for Excellence and is woven into the values, fabric and life of the school. Tackling climate change and taking positive action to reduce energy usage and waste also provides excellent opportunities for pupils to show initiative, take responsibility and develop skills, attitudes and behaviours relating to sustainability and global citizenship.

Reflective questions

- How can we enable learners to understand, respect and care for the rights, responsibilities, values and opinions of others in Scotland and the wider world?
- How can we engage learners in democratic processes and encourage them to participate in critical thinking and decision making in schools and communities at local, national and international level?

Schools

The three Rs

Scotland's Zero Waste Plan, launched in June 2010, sets ambitious targets to ensure as much waste as possible is recycled, reused or recovered. The target by 2025 is to ensure no more than 5% of waste is sent to landfill.

Reducing waste also helps tackle climate change since energy is used to create, package and ship products around the globe. Disposing of waste products also contributes to global warming as landfill sites give off significant quantities of methane (a powerful greenhouse gas) as the waste decomposes.

The support of individuals, schools, local authorities and other key stakeholders is crucial if Scotland is going to be successful in becoming a zero waste society. Using the three Rs is a good place to start:



Reduce - To buy less and use less. Includes switching off lights, turning down heating, walking instead of using the car, using less packaging. Also requires us to 'rethink' our daily choices and develop strategies for moving to a low carbon, low waste lifestyle. Reducing is one of the most effective approaches on the 'waste hierarchy'.

Reuse - Make do and mend, hand-me-downs, bring-and-buy sales, online auctions, freecycle networks and charity shops. Do everything you can to avoid throwing it away if it can be used again. Also includes repairing. Find out about freecycle networks: <https://www.ilovefreecycle.org/>

Recycle - The bottom of the waste hierarchy as recycling uses energy to break down products so that they can be used again. However, everything from paper to food waste to mobile phones can now be recycled. Try contacting your local authority waste or recycling officer to find out more about the support they can give to your school.

Reflective questions

- How can we enable learners to become informed consumers and producers who have an appreciation of the merits and impacts of products and services?
- How can we build capability in learners to make reasoned choices relating to the environment, to sustainable development and to ethical, economic and cultural issues?

Schools

Ecological footprint

An ecological footprint is a measure of how many hectares of land and sea our lifestyles depend upon. This is the area of land and sea which is needed to provide us with resources and absorb the total amount of waste that we generate.

If the land and sea across the globe was divided up equally we would each have 2.1 hectares to support our lifestyles. However, in Scotland we depend on 5.4 global hectares each (a large football pitch is roughly equivalent to a hectare). The Living Planet 2008 report provides details of the ecological footprint of countries around the world.

Find out about the Living Planet Report 2008:

http://wwf.panda.org/about_our_earth/all_publications/lpr_2016/

Carbon footprint

A carbon footprint is a measure of how many tonnes (or kilos) of carbon dioxide are released by fossil fuels, when they are burnt to give us heating and electricity, and to power transport. Carbon dioxide requires many hectares of vegetation and sea to absorb it from the atmosphere so it follows that the bigger our carbon footprint, the bigger our ecological footprint.

Reflective question

- How can we use global footprint activities to support learning and teaching and develop confidence and skills in learners?



Schools

Travel plans

Over the past 20 years the number of children and young people being driven to school has doubled. This has increased congestion and pollution and has damaged the environment. This cultural shift towards the car has also caused children and young people to be less active and has contributed towards rising cases of obesity in children.

An effective school travel plan can address these issues and help:

- reduce the volume of vehicles on the school run
- improve safety on the school journey
- encourage healthy and environmentally friendly travel choices.

In the context of climate change, school travel plans can make a significant impact on reducing the emissions from greenhouse gases.

You can find out more about school travel plans by visiting the Safe routes to school website or by downloading the 'Teacher's guide to developing a School Travel Plan'.

Safe routes to school website: <http://www.sustrans.org.uk/our-services/what-we-do/getting-young-people-active>



PDF file: Sustrans - How to develop a school travel plan (1.6 MB)

https://education.gov.scot/improvement/Documents/WCC/SRS_STP_Teacher_Guide.pdf

Reflective question

- How can we use our school travel plan to support learning and teaching about climate change, health and wellbeing and global citizenship?

Schools

Eco awards

There are a number of environmental award programmes for schools that offer a structured set of activities and resources to support children, young people and schools on their journey towards sustainability. These programmes are enormously popular in Scottish schools and can provide useful resources, support, guidance and training.

Eco-Schools Scotland - over 98% of local authority controlled Scottish schools are now registered with Eco-Schools, making Scotland one of the most successful Eco-Schools networks in the world. Over 1000 schools have now achieved green flag status.

John Muir Award - an environmental award scheme focused on wild places. It encourages awareness of and responsibility for the natural environment, in a spirit of fun, adventure and exploration. Over 100,000 awards have been issued.

Forest Schools - a process that offers children, young people and adults regular opportunities for hands-on learning experiences in a local woodland environment.

Using programmes such as those above can provide rich opportunities for outdoor learning and enable children and young people to develop an understanding of sustainability. They can also play an important role in supporting a whole school approach to sustainability and global citizenship and help support the implementation of Curriculum for Excellence.

Reflective question

- How can we use eco programmes to create opportunities for active learning approaches and also to provide learners with opportunities for personal achievement?



Schools

Sustainable schools

A sustainable school is one that has successfully adopted and implemented a holistic whole school approach to global citizenship and sustainable development education.

There are many routes to adopting a whole school approach of this nature and the journey may take 5 to 10 years to complete. Among other themes, a sustainable school will develop children and young people as global citizens through learning about climate change, human rights, health and wellbeing, community partnerships, pupil voice and social justice.

In a sustainable school there will be strong leadership and vision from the senior management team and issues relating to global citizenship will be embedded within the ethos and curriculum and through whole school action plans on transport, relationships, community links, school estate management and so on. The three main areas of focus for a sustainable school are: curriculum, campus and community.

Reflective question

- How can we adopt a whole school approach to global citizenship and sustainable development to enrich the learning experience for all children and young people in our school?



Communities

Every local authority in Scotland has signed Scotland's Climate Change Declaration and is committed to working in partnership with the Scottish Government and local communities to tackle climate change. Local authorities are working hard to reduce waste and go green and many communities themselves are setting up innovative and exciting approaches to reducing emissions and promoting more sustainable lifestyles.



Scotland's Green Islands

Along with other island communities, the local community on the Isle of Eigg is working to reduce emissions and provide the local population with a clean, renewable and sustainable electricity supply. The community has its own power company, Eigg Electric, and has established a renewable energy grid that generates 92% of the island's energy needs. The community's electricity is generated using wind power, hydro-electric power and solar panels. Eigg has been called Scotland's first Green Island and other island communities across Scotland are following suit.

Going carbon neutral

Community groups, businesses, schools and people in Stirling are working together to make it Scotland's first carbon-neutral city. Going Carbon Neutral Stirling aims to inspire change in lifestyles and attitudes through practical activities and events. Other towns, villages and cities in Scotland are undertaking similar approaches through the [Transition Town](#) Scotland movement.

Reflective question

- How can we enrich learning and teaching by providing children and young people with exciting and meaningful opportunities to engage as active global citizens within their local community?

Scottish Government

Climate change is regarded as a crucial issue across many areas of the Scottish Government and the Government has introduced a raft of measures and action plans to reduce emissions, promote sustainable development and move Scotland rapidly to a low carbon economy. The Scottish Government also recognises that our country is ideally placed to take advantage of the enormous wind, wave and tidal resources off our shores and aims to make Scotland a world leader in the development of renewable technologies.



Initiatives include:

Climate Change (Scotland) Act (2009) is the most ambitious climate change legislation in the world and commits Scotland to reducing greenhouse gas emissions by 42% by 2020 and by 80% by 2050. These cuts are measured against emissions levels in 1990.

<http://www.gov.scot/Topics/Environment/climatechange/scotlands-action/climatechangeact>

Scotland's Climate Change Adaptation Framework (2009) seeks to build national resilience to climate change and foster innovative approaches to help our country adapt to the changes that lie ahead.

<http://www.gov.scot/Resource/Doc/295110/0091310.pdf>

Renewables Action Plan (2009) aims to harness Scotland's immense renewable potential and drive low carbon energy production.

<http://www.gov.scot/Resource/Doc/278424/0083663.pdf>

Zero Waste Plan (2010) aims to reduce waste going to landfill and help Scotland become a zero waste society.

<http://www.zerowastescotland.org.uk/>

Carbon capture and storage (2010) provides a road map outlining how Scotland will seek to develop innovative technologies to capture carbon dioxide emissions at source and store them underground.

<http://www.gov.scot/Resource/Doc/306380/0096201.pdf>

The above initiatives are just some of the many introduced by the Scottish Government but the Government also recognises the importance of education with regards to climate change and has worked with Education Scotland and other partner organisations to ensure that learning about climate change and sustainability is embedded within the experiences and outcomes of Curriculum for Excellence and also within 'Learning for Change: Scotland's second action plan for the United Nations Decade of Education for Sustainable Development'.

Find out more about Learning for Change:

<http://www.gov.scot/Resource/Doc/312576/0098842.pdf>

Reducing emissions in Scotland – 2015 progress report - from the

Committee on Climate Change. The report assesses the latest emission trends across the economy and suggests that additional opportunities to reduce emissions should be investigated.

<https://www.theccc.org.uk/publication/reducing-emissions-in-scotland-2015-progress-report/>

Reflective question

- How can we broaden in learners an understanding of the world and Scotland's place in it, through learning about human activities and achievements in the past and present?

Renewables

The Scottish Government has also set targets for renewable energy in Scotland:

- Generate 31% of our electricity from renewable energy by 2011.
- Generate 50% of all the electricity used in Scotland from renewable sources by 2020.
- 11% of Scotland's heat to come from renewable sources by 2020.

Scotland is at the cutting edge of renewable energy technologies. Our country has amazing natural resources that we can use to generate cleaner, greener electricity.

There are already 80,000 'green jobs' in Scotland. Wave and tidal projects alone employ about 5000 people. It is anticipated that a further 50,000 green jobs will be created in the next 10 to 15 years.

In the future, maybe all of our energy will be generated using wind, solar, biomass, wave and water power.

Reflective questions

- What opportunities are there to deliver science and technologies experiences and outcomes through studying renewable energy?
- Projects such as wave and tidal development and installation of wind farms have an impact on the local community. What are the arguments for and against projects of this nature?
- Should Scotland seek to be entirely dependent on renewable energy?



International agreements

The Kyoto Protocol was the world's first international agreement on tackling climate change. It was ratified by over 180 countries who agreed to reduce their greenhouse gas emissions by an average of 5.2%. Some countries, including China and India, were exempted from targets because they were not the main contributors during the period of industrialisation. However, the United States and Australia originally opted out of Kyoto because they objected to this. The first phase of Kyoto was adopted in 1997, came into force in 2005 and expired in 2012. It has had its successes and difficulties but it did succeed in putting climate change on the worldwide agenda for governments.



Copenhagen Accord

Over 190 countries from around the world were represented at the crucial United Nations climate summit in Copenhagen in 2009, known as COP15. The main outcome of the conference was the Copenhagen Accord, which was a promise from all the signatory nations that they will develop plans to limit the increase in global temperatures to 2°C. The conference also agreed a package of support measures to help developing countries. Many were disappointed that the conference failed to result in a binding agreement to reduce emissions.

In Doha, Qatar on 8 December 2012, the "Doha Amendment to the Kyoto Protocol" was adopted. This committed Parties to reduce greenhouse gas emissions by at least 18 percent below 1990 levels in the eight-year period from 2013 to 2020; however a different list of countries signed this compared to the first agreement.