Climate Emergency Film

This information note complements the Climate Emergency film and associated learning activities. It highlights some of the ways NRW is helping to sustainably manage our natural environment.

Time	Main Theme	Basic Information
0.07	Natural Resources Wales' purpose is to pursue sustainable management of natural resources in all of its work.	This means looking after air, land, water, wildlife, plants and soil to improve Wales' well-being, and provide a better future for everyone.
0.22	Global warming – Natural or man-made?	
0.38	Natural – The Earth's orbit varies.	
0.40	Natural – The Sun's output fluctuates.	
0.43	Natural – Meteor strikes have changed the climate leading to extinctions.	
1.05	Man-made.	
1.12	The climate is changing. Weather is becoming more unpredictable.	
1.21	The climate is changing. Too much rain for some. Too little for others.	
1.38	The climate is changing. Sea levels are rising.	
1.49	The climate is changing. Local and global species are moving as the climate warms.	

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1.55	And invasive species are spreading.	It is an offence to allow certain invasive plants to grow in the wild, such as Japanese Knotweed. The Wildlife and Countryside Act 1981 lists relevant plants in Schedule 9 Part II. Species seen on film are: • Oak processionary moth - first introduced by accident to Britain in 2005. They almost exclusively live in and feed on oak trees. They will feed on other trees if they run short of oak leaves to eat and have been observed on hornbeam, hazel, beech, sweet chestnut and birch trees. • Himalayan balsam - introduced into the UK in 1839 as a garden plant. It produces thousands of seeds a year, from pods that open explosively, shooting seeds several metres away. Because the seeds float, the plant can spread at an alarming rate, away from riverbanks along ditches, hedges and road verges, even invading woodlands. These invasive species grow very tall and take over areas and choke native species leading to less biodiversity. Each plant can produce up to 800 seeds. These are dispersed widely as the ripe seedpods shoot their seeds up to 7m (22ft) away.
2.02	The natural cycle. Photosynthesis.	
2.05	The natural cycle. Trees and plants store carbon and release oxygen through photosynthesis.	Forests, trees and woodlands help us address climate change by reducing the amount of greenhouse gases in the atmosphere. They do this by absorbing carbon dioxide (CO_2), using the carbon (C) to produce sugars for tree growth and releasing the oxygen (O_2) back into the air. As trees grow, they store carbon in their leaves, twigs and trunk, and in the soil around them.

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2.17	Natural cycle. Native woodlands protect biodiversity.	There are several unique types of woodland and we have a responsibility to sustainably manage them and the wildlife which live in them. Our ancient woodlands are important not just to the wildlife, but to people and the economy. It's important that we manage woodlands carefully to ensure that these beautiful, species rich places can be protected for future generations. **UK protected species of plants** The Wildlife and Countryside Act 1981 gives some legal protection to all wild plants. Plant and fungi species listed on Schedule 8 have greater protection. Offences include sale and intentionally picking, uprooting or destroying. The Wildlife and Countryside Act 1981 (as amended) makes it illegal to uproot any wild plant, unless you have the permission of the landowner. In addition, more than 100 flowering plants and over 75 lower plants are listed on Schedule 8. These species are either rare or vulnerable to exploitation. For these specially protected plants, it is an offence to: Intentionally pick, uproot or destroy; Sell, offer or expose for sale.
2.23	Mans' impact. Forests are disappearing.	
2.29	Mans' impact. Uplands have been changed.	From the high grasslands, blanket bogs and heathland, right up to the rocky mountain tops, our Welsh mountains and uplands are full of life. Several species such as the red kite, and rare alpine plants, depend upon the habitats on which they live, and it is important that they are carefully managed to keep them in good condition. The uplands are vital for people too – they supply and purify drinking water and visitors come in their thousands to walk the footpaths or simply enjoy the views.

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2.31	Mans' impact. Native trees replaced with sheep, non-native trees and conifer plantations.	Woodlands and trees are under increasing threat as a result of our changing climate. These threats include increased risks from changes in water availability (too much or too little), wind damage and conditions that favour woodland pests and pathogens, thus increasing the incidence and severity of disease. We need to make sure our existing woodlands, as well as those that are planted in the future, can continue to play a part in reducing net carbon emissions.
2.34	Mans' impact. Agriculture.	NRW works with farming organisations and groups to advise and support the development of a sustainable agricultural industry to: • conserve, enhance and restore wildlife habitats, species, landscapes and cultural characteristics • provide quality jobs and a viable return to those farming and managing the land • maintain and support the social fabric of rural communities • help with tackling the challenges posed by climate change • make it easier for people to reach and enjoy the countryside and to understand it better
2.37	Mans' impact. Now often monoculture, reducing biodiversity and damaging the land.	
2.42	Mans' impact. More fertiliser is required as soil quality is eroded.	Better soil and land management – improving how we manage soil would: • safeguard future food production • support habitats for wildlife • reduce costs of water treatment • reduce the amount of fertilizer used
2.44	Mans' impact. Peat extraction releases the carbon it stores.	Peatlands are one of Wales' critical natural assets, with a fascinating environmental history and an important role in securing the future resilience of our environment. Large amounts of carbon, fixed from the atmosphere into plant tissues through photosynthesis, are locked away in peat soils, representing a valuable global carbon store. Many areas of Wales' peatlands have been accumulating for over 8000 years.

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2.52	Mans' impact. Fossil fuels = greenhouse gases.	Creating new woodland and bringing more woodlands into active management will make a positive contribution to mitigating climate change. If timber is harvested and used for construction or manufacturing, most of the carbon in the timber remains locked up for the life of the product. Carbon can be locked up for as long as several hundred years when it is used in products such as the beams of buildings or furniture. Certain woodland management techniques are most likely to deliver long-term reductions in net greenhouse gas emissions. These include: • Growing enduring timber for construction and manufacturing • Using smaller diameter timber for wood fuel • Reducing soil disturbance
2.58	Mans' impact. The demand for food and energy continues to grow.	
3.03	Possible mitigations.	
3.06	Possible mitigation. More spaces for wildlife and pollinators.	Pollinators are creatures that transfer pollen from one flower to another to fertilise plants so that they can make fruit and/or seeds. Without them, plants cannot reproduce. Many insects pollinate plants including bees, wasps, flies, beetles, moths and butterflies. Every third mouthful of food we eat has been created by pollination. We need pollinators to grow the food we love. The list is long and includes apples, pears, cabbage, mangoes, brazil nuts, cashews, strawberries and chocolate! Pollinators are good for the economy. They offer a free pollination service – having to pollinate crops by hand would cost billions and would make our food bills a lot more expensive. Our pollinators are disappearing. There are several reasons for the decline in pollinators: • Climate change and the unpredictable or extreme nature of the weather. • Pesticides that kill 'pests' but also harm pollinators.

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3.06 (Continued)	Possible mitigation. More spaces for wildlife and pollinators.	• Modern agricultural practices that remove hay meadows and flower-rich habitats for a more intensive method of farming. • Changes in pollinator habitats. Fragmentation and grazing at certain times of year, can deprive pollinators of a food source when they most need it. • Reduction in habitats such as meadows, hedgerows, woodland edges, grasslands, gardens and orchards. Pollinators need suitable wild spaces for nests and hibernation. There are many things we can do to make it easier for pollinators to survive. We can make sure that we take every opportunity to provide them with their essential needs. This can be relatively simple such as managing grass verges in a more sensitive way, or leaving wild areas around our offices, homes and public buildings, not using plastic grass and sowing wildflower seeds. We can all help by making our gardens pollinator friendly by not using pesticides, not mowing the lawn as often, and growing pollinator-friendly plants.
3.13	Possible mitigation. Reduce imports.	
3.15	Possible mitigation. Buy and grow more locally.	
3.20	Possible mitigation. Reduce meat production which is energy, land and water intensive with livestock producing methane gas.	
3.30	Possible mitigation. Upgrade older houses that are less energy efficient.	
3.35	Possible mitigation. Use natural building materials that are more environmentally friendly and energy efficient.	Use of carbon-rich building materials (locking up carbon in the long term) with wood and wood products, wool insulation and the use of plant fibre as a fuel energy source.
3.42	Possible mitigation. Employ modern building technology which is more energy efficient.	

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3.48	Possible mitigation. Special surfaces reduce flooding compared to tarmac or concrete.	
3.50	Autogas, although it's a cleaner option than petrol/diesel, it is still a fossil fuel contributing to CO_2 emissions.	
3.53	Possible mitigation. Renewable energies.	The Natural Resources Wales' Energy Delivery Programme has integrated wind farm development into the sustainable management of the Welsh Government Woodland Estate. The Energy Delivery Programme works to deliver approximately 75% of the Welsh Government's onshore wind energy target.
3.59	Small scale local schemes including hydro electric.	Natural Resources Wales' Energy Delivery Programme supports the development of small-scale hydroelectricity on the Welsh Government Woodland Estate. Small-scale schemes of between 10 kilowatts (kW) to 1 megawatt (MW) can be integrated into working forests if care is taken to manage the impact on the environment and other forestry activities, such as access, recreation and infrastructure.
4.06	Possible mitigations. Refuse, reduce, reuse, re-purpose, recycle.	
4.27	If our climate is changing, can we make a difference?	

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