



SESSION 9 – Net Zero

VIEW THE SLIDES in 'SLIDE SHOW' mode – and then all the links will work!!

Please do send us photos of your children enjoying this club!

(Resources required – Paper + Black / Coloured pens)

Slide 2 – Challenge Review

Did you see anything particularly awe-inspiring in nature this week?

How did you find this week's Young Climate Warriors weekly challenge?

Slide 3 – The UK target is 'net zero carbon' by 2050. What do you think this means?

Scientists have said that globally we need to cut carbon emissions by 45% by 2030 (the majority of targets are set from 1990 baseline levels) and get down to 'net zero emissions' by 2050.

Definition – Net Zero. When a balance of 'zero' is achieved between carbon emissions produced and carbon taken out of the atmosphere. (Think of it like trying to empty a bath with the taps on – you can either turn down the taps (reduce the emissions), or drain more through the plug hole (take carbon out of the atmosphere).)

Over the course of this Club we have looked at many ways to reduce our carbon emissions – we are now going to think about how we can take carbon out of the atmosphere – by using 'carbon stores'.

Slide 4 – Do you think this picture helps explain Net Zero?



WATCH THE VIDEO – (click the link on the slide in 'slide show' mode)

Cafod Climate Change Net Zero – less than 3 minutes

<https://www.youtube.com/watch?v=VqZD-mnC5Gk&feature=youtu.be>

Slide 5 – Natural carbon stores

Planet Earth has several very powerful natural defences against climate change – can you guess what they are from these pictures?

FORESTS – Plants soak up Carbon dioxide to make food for themselves using the sun's energy (photosynthesis) trapping it in their trunks, branches, roots and leaves.

SOIL – UK soils hold an estimated 9.8 billion tonnes of carbon: equivalent to the global carbon emissions made by humans in one year! – But we've been taking our soils for granted. Today, more than half of the world's soil is degraded



The excess carbon dioxide that trees absorb goes down through their roots and feeds organisms that live in the soil. Carbon from the roots and leaves of dying plant is also captured in the soil.

OCEANS – In the last 200 years, the oceans have absorbed a third of the CO₂ produced by human activities and 90% of the extra heat trapped by the rising concentration of greenhouse gases. They are also the world's largest store of carbon, where an estimated 83% of the global carbon cycle is circulated through marine waters.

Slide 6 – We need to help protect our carbon stores – forests.

Definition of Deforestation: the overall loss in the total area of woodland.

Pictures – Logging in Malaysia – possibly for palm oil plantations, Amazon rain forest – single crop plantations, Community tree planting.

Deforestation is normally driven by clearance for alternative land uses, sometimes for development, sometimes for the timber. Vast areas of the world's forests have been destroyed to make way for: coffee, soy and palm oil plantations

Why does deforestation matter?

Firstly – forests store enormous quantities of carbon – it is captured from carbon dioxide (via photosynthesis) and stored in the structure of the tree.

Secondly – The trees and other vegetation circulate water vapour to create clouds and rain – the removal of those forests can lead to desertification.

Thirdly – Forests are also their own eco-systems – and support a huge abundance of living species.

Fourth – Forests are often an important defence against the effects of climate change eg flooding.

What can we do?

Learning about Sustainable Palm Oil (RSPO) – and only buying RSPO products.

RSPO* = Roundtable for Sustainable Palm Oil – develops and implements global standards for sustainable palm oil.

Palm oil trees grow in tropical rainforests in over 40 countries, but most farmed palm oil (85%) comes from Malaysia and Indonesia. In recent decades large areas of rainforest, and peatlands have been destroyed to make way for palm oil plantations.

It is important not to just 'avoid' palm oil – as that could encourage companies to use other vegetable oils that require more land to grow and more deforestation. Palm oil trees produce more oil per hectare than soybean, coconut, rapeseed or sunflower oil crops, and millions of small-scale farmers depend on producing palm oil for their livelihoods.

WWF says "Boycotting palm oil is not always the answer, but demanding more action to tackle the issues ... is."



Support the sustainable management of forests and woodlands – buy FSC products. FSC* = Forestry Stewardship Council FSC is an international, non-governmental organisation dedicated to promoting responsible management of the world's forests. Plant more Trees – Support community tree planting schemes, or plant more trees in your garden.

Slide 7 - We need to help look after our oceans.

Pictures – phytoplankton, ocean plastics, mangrove swamp, seaweed



WATCH THE VIDEO - (click the link on the slide in 'slide show' mode)

'What on earth is blue carbon?' – 2 minutes

<https://www.youtube.com/watch?v=ITwPDs2LdcU>

Phytoplankton – Have you heard of phytoplankton? Our oceans are teeming with these free-floating microscopic plants (we can't see them with the naked human eye - we need to use a microscope).

David Attenborough describes them as 'our greatest ally in combating climate change' – because like plants and trees they absorb carbon dioxide from our atmosphere. When they die they fall to the deep ocean floor trapping carbon.

Plastics – Each litre of sea ice contains as many as 12,000 pieces of microplastic (tiny fragments of plastic) – this is reducing the phytoplankton's ability to store carbon. It is also becoming clear that as plastics degrade at the oceans surface they release methane and other greenhouse gases making climate change worse.

Mangrove swamps, sea grasses, salt marshes and sea weed – Blue carbon is the term used for carbon that is captured or 'trapped' within ocean and coastal ecosystems. Like plants and trees on land, seaweeds, seagrasses, mangroves and salt marshes along our coast absorb carbon – and at a much faster rate than forests on land.

What can you do?

Reduce plastic use – to prevent plastic waste entering our oceans.

Globally, over 90% of plastic goes unrecycled, even if it's put in a recycling bin, partly because some products are really tricky to recycle. More than 8 million tonnes of plastics enter the ocean each year.

Support campaigns / petitions – for example

Join the Fight against plastics pollution – Campaign being run by WWF

<https://www.wwf.org.uk/fight-plastic-pollution>

Slide 8 – It's time for a Kahoot! quiz!

Let's see how you do?



(Maybe answer them as a class or as individuals / pairs?)

<https://create.kahoot.it/share/could-you-be-a-young-climate-warrior/dcb814dc-ad85-481e-98c0-3e84fb420f7d>

All the answers have been covered in this Climate Change Club in a Box.

Answers:

- 1) David Attenborough – ‘Right now we are facing our greatest threat in 1,000 years – Climate Change’
 - 2) 97% - How many climate scientists agree that human-caused climate change is already happening?
 - 3) 1.5 degrees – The earth is already getting hotter, in the 2015 Paris Agreement, 195 countries agreed to try to limit warming to?
 - 4) All of the above – According to a scientific report released in 2018, what is likely to happen if temperatures rise by more than 1.5degrees. More storms, heatwaves, forest fires and floods; Sea levels will rise higher threatening people’s homes and farms; Coral reefs may be completely destroyed.
 - 5) 10 years – How many years to Scientists say we have to solve the climate crisis?
 - 6) True – The 400 million people who are most vulnerable to climate change are already living in extreme poverty.
 - 7) 90% - The richest half of the world’s population is responsible for what percentage of global carbon emissions?
 - 8) True – Food, transport, heating, electricity are among activities that create 6 tonnes of carbon emissions per year per person in the UK
 - 9) All of the above – How can individuals make a difference? – Reduce, reuse, recycle – in that order; Persuade governments, businesses and friends to take action; Stop using fossil fuels and switch to renewables.
 - 10) 33% - How much of the UK’s electricity came from renewable sources (solar, wind, biomass) in 2018.
 - 11) All of the above – What sort of things could you do at home to help tackle climate change? Have a shorter shower or use less water in the bath; Have a go at cooking with pulses and beans and eating less red meat; Walk instead of drive
 - 12) All of the above – How can joining Young Climate Warriors help? You can discover lots of ways to tackle climate change; You’ll be part of a team, together you can do much more; You’ll find lots of interesting facts to tell family and friends.
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Slide 9 – Draw a persuasive drawing – cartoon??!

Draw a picture asking others to look after and protect – our forests or our oceans

Could you add clothes / props?

Have you thought about their facial expressions?

Can you give them speech bubbles?



Slide 10 – Challenge for the week!

Share your drawing – maybe take a photo of it and send it to others who live further away?

Share what you are learning and thinking!

Take-away points from this session:

- Scientists have said that globally we need to cut carbon emissions by 45% by 2030 and get down to 'net zero emissions' by 2050.
- Net Zero means - when a balance of 'zero' is achieved between carbon emissions produced and carbon taken out of the atmosphere.
- Planet Earth has three main very powerful natural defences against climate change – Our carbon stores – Oceans, Soils, Forests.
- We need to help protect our 'Carbon stores', and persuade others to do so too.