

HS2

Carbon Literacy Certificate Training

Module One

Welcome and Introduction

Module 1

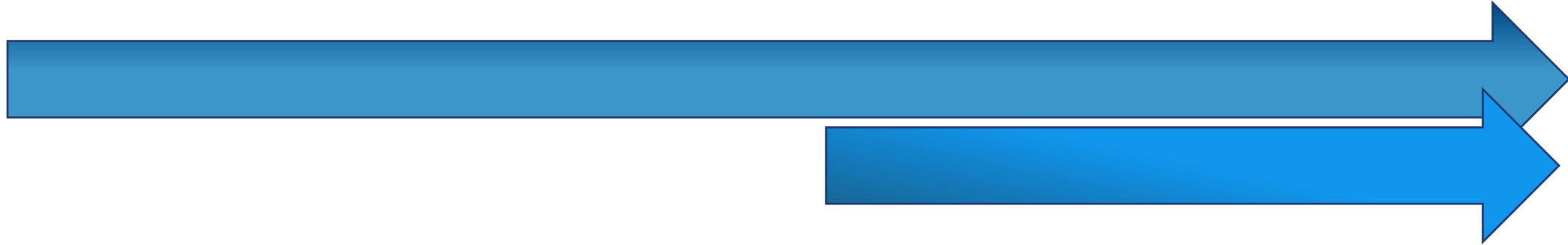
In this learning we will introduce you to carbon literacy; a project that is being implemented to support the delivery of HS2's net zero carbon objectives.

We all have a role to play in reducing carbon emissions. The action we take can – and does – make a difference.



Aims:

The main aims of this course are:



1 To improve knowledge and understanding of the carbon impact of your actions.

2 To build capability and motivation to take action to reduce your own personal carbon impact and that of the HS2 programme.



Objectives:

The course will provide you with knowledge and understanding of:



- 1 The benefits of taking actions to reduce carbon emissions.
- 2 HS2's net zero carbon objective and the action we are taking to achieve net zero carbon emissions.
- 3 What you can do to reduce your carbon footprint and that of the HS2 programme.



Carbon Literacy Certificate Programme Outline

- The training will be delivered in two parts:
 1. E-learning; and,
 2. A workshop
 - There are 7 learning modules which provide the foundation for the workshop, these are:
 - Introduction and keywords
 - Climate change and the climate impact of human activities
 - Impacts of climate change
 - Climate action
 - HS2 and climate action
 - My actions
 - Forward look
 - Learners also need to submit two carbon reduction pledges – to be accepted by the Carbon Literacy project – to become Carbon Literate certified.
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Carbon Literacy Learner Actions

To complete the Carbon Literacy Certificate programme you will be asked to make two action pledges which will be assessed by the Carbon Literacy Project; leading to the award of the Carbon Literacy Certificate.

Your actions will directly contribute to HS2's net zero carbon objectives.

1. Create at least one significant personal action - an action that you can take without needing the help or permission of another – to reduce the carbon footprint of the HS2 programme.
2. Create at least one significant group action – an action involving other people – to reduce the carbon footprint of the HS2 programme.



27,847
citizens
certified



55,694
actions
pledged



76
Carbon
Literate
Organisations

2212 organisations
engaged



69
certified
training
professionals



10 consortia
initiated



308 courses
designed



5-15% carbon
savings
per-person



15
nations
delivering

<https://carbonliteracy.com/about-us/>



Learners who have completed a days worth of Carbon Literacy learning can be certified as 'Carbon Literate' by the Carbon Literacy Project. This is a recognition that can be included in your CV and professional experience.

The logo for HS2, consisting of the letters 'HS2' in a bold, white, sans-serif font, centered within a dark blue square.

HS2

Introduction – Carbon Literacy

Carbon Literacy means being aware of the impact of everyday activities on the climate; and, knowing what steps can be taken to reduce emissions as an individual, a group, or an organisation, and why it's important that we all take these steps.

The Carbon Literacy Values:



The action of individuals **can** and **does** make a difference.



We need to work with others in HS2, our supply chain partners, the wider construction and rail industry, as well as society to create change.



Equity and fairness, now and in the future, underlies the changes that we want to see in HS2, the UK and globally.

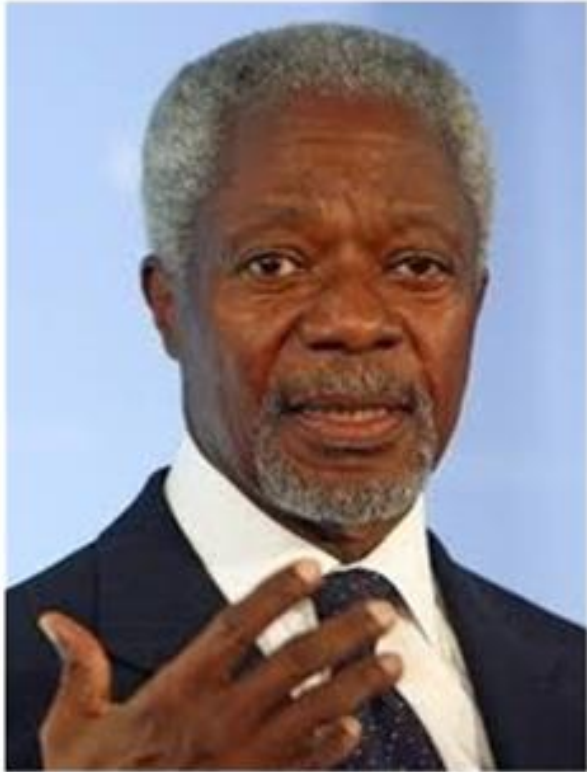
Why?

Click on the name of these influencers to reveal why acting on climate change is vital:

Kofi Annan



Why?



Kofi Annan

Former Secretary/General of the United Nations

“The world is reaching the tipping point beyond which climate change may become irreversible. If this happens, we risk denying present and future generations the right to a healthy and sustainable planet – the whole of humanity stands to lose.”

Interview. The Guardian. 3 May 2015



Why?

Click on the name of these influencers to reveal why acting on climate change is vital:

Kofi Annan

Alexandria Ocasio-Cortez



Why?



“We don’t have time to sit on our hands as our planet burns. For young people, climate change is bigger than election or re-election. It’s life or death.”

Alexandria Ocasio-Cortez,
US Politician & Activist



Why?

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Kofi Annan

Alexandria Ocasio-Cortez

Barack Obama



Why?



Barack Obama

Former President of the United States of America

“We are the first generation to feel the effect of climate change and the last generation who can do something about it.”

Twitter; 23 September 2014



Why?

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Kofi Annan

Alexandria Ocasio-Cortez

Barack Obama

Dr Jane Goodall



Why?



“You cannot get through a single day without having an impact on the world around you. What you do makes a difference and you have to decide what kind of difference you want to make.”

Dr Jane Goodall,
Scientist and Activist



Why?

Click on the name of these influencers to reveal why acting on climate change is vital:

Kofi Annan

Alexandria Ocasio-Cortez

Barack Obama

Dr Jane Goodall

Ban Ki-Moon

Why?



“Climate change is the single greatest threat to a sustainable future but, at the same time, addressing the climate challenge presents a golden opportunity to promote prosperity, security and a brighter future for all.”

Ban Ki-Moon,
Former Secretary General of UN



Introductory Exercise



Activity – how big is your own carbon footprint?

It's up to all of us to fix the climate crisis.

Take your first step by calculating your carbon footprint.

Once you calculate your impact, you'll be able to see how you compare to the world and UK average as well as understand which parts of your lifestyle contribute the most to your score.

Then introduce positive change to your life, doing your bit to take climate action and make a difference.

[**Take the questionnaire**](#)

Module 1 – Introduction and Keywords

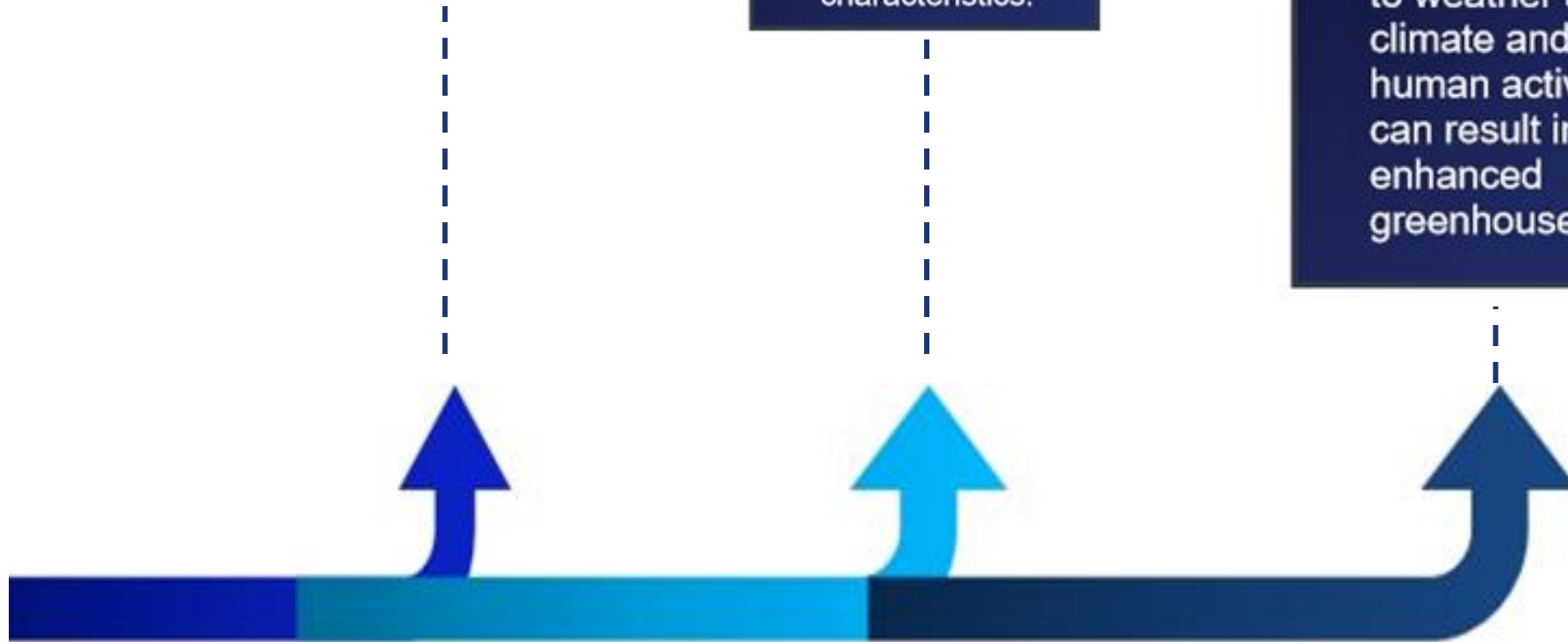


What you will learn in this section:

01 Keywords and their definitions.

02 What the main greenhouse gases are and their characteristics.

03 What the greenhouse effect is, its relationship to weather and climate and how human activities can result in an enhanced greenhouse effect.



Key terms

Activity: match the term to the word

Carbon Dioxide: A gas in the Earth's atmosphere, occurs naturally and is also a by-products of human activities such as burning fossil fuels. It acts as a greenhouse gas, trapping heat in Earth's atmosphere. Whilst it is not the most powerful greenhouse gas it is the largest contributor to climate change because it is so common.

Carbon Footprint: The amount of carbon dioxide equivalent (CO₂e) emissions emitted by an individual, organisation or emitted during the manufacture of a product.

Climate: The average weather over time.

Climate Change: The long-term change in the average weather patterns that have come to define Earth's local, regional and global climates. It can happen naturally or in response to human activities, including the burning of fossil fuels and clearing of forests.

Fossil Fuels: Fuels such as coal, oil and natural gas made from plant or animal remains formed ages ago in the Earth.

Global Warming: An increase in the Earth's average temperature that is caused by extra greenhouse gases in the atmosphere.

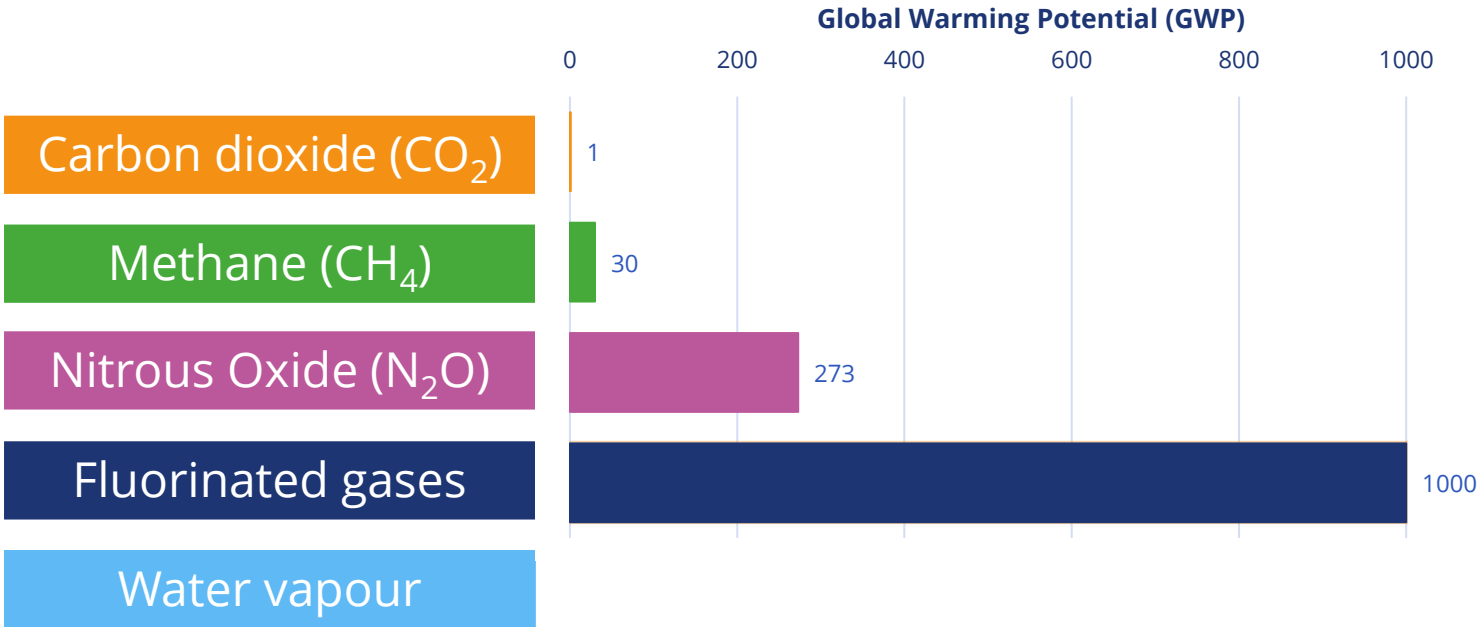
Greenhouse Effect: When greenhouse gases keep the Earth warm by trapping heat from the sun.

Greenhouse Gas: Any gas that traps heat in the atmosphere, such as carbon dioxide, methane and water vapour.

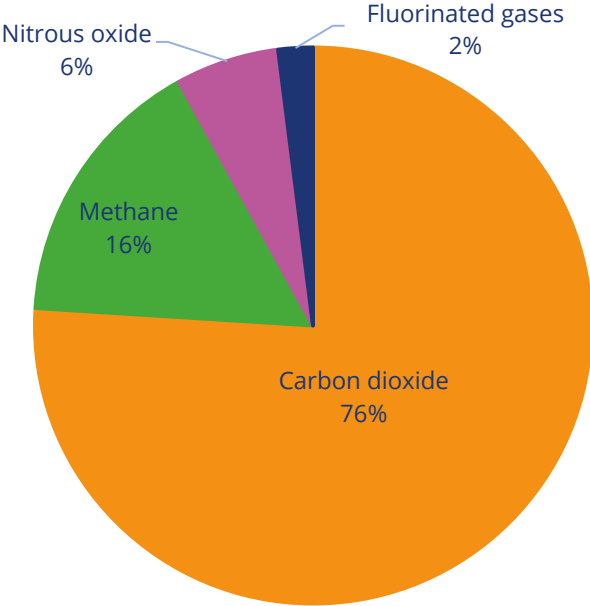
Net zero carbon: When anthropogenic (human generated) emissions of greenhouse gases to the atmosphere are balanced by anthropogenic removals over a specified period.

Renewable Energy: Energy resources that don't get used up, such as wind, solar, tidal, etc.

Greenhouse gases



The global warming potential (GWP) of human-generated greenhouse gases is a measure of how much heat each gas traps in the atmosphere, relative to carbon dioxide.



How much each human-caused greenhouse gas contributes to total emissions around the globe.

Summary of Module:

- Climate change can happen naturally or in response to human activities. Research by the Intergovernmental Panel on Climate Change (IPCC) shows that it is extremely likely that human activity has caused recent global warming.
 - The greenhouse effect is a natural process that acts to warm the climate and distribute heat throughout the atmosphere. The latter is a fundamental part of how weather systems can develop, whilst climate governs weather variability.
 - The most significant gases that cause global warming via the greenhouse effect are carbon dioxide, methane, nitrous oxide, fluorinated gases and water vapor.
 - Carbon dioxide is the primary greenhouse gas emitted through human activities. Increases in the atmospheric concentrations of greenhouse gases produces a positive climate forcing, or warming effect.
 - One of the most visible consequences of a warming climate is an increase in the intensity and frequency of extreme weather events.
-

Multiple choice questions

Select the correct answer to the below question:

Which is the most common emission from the combustion of fossil fuels?

- Methane (CH₄)
- Helium (HE)
- Nitrous Oxide (N₂O)
- Carbon Dioxide (CO₂)

Answer:

Carbon Dioxide

Carbon Dioxide is the most well-known GHG and is the most common emission from the combustion of fossil fuels.



Lifespans of Greenhouse Gases

Methane

12 years

Fluorinated gases

Up to 50,000 years

Nitrous Oxide

114 years

Carbon Dioxide

Up to 200 years



Global Warming Potential Greenhouse Gases

Methane

27 - 30

Fluorinated gases

1,000s-10,000s

Nitrous Oxide

273

Carbon Dioxide

1



Drag and drop exercise

Drag and drop headings (i.e. Climate Change) into the Target box that matches the description in the blue box.

Climate Change

The amount of carbon dioxide equivalent (CO₂e) emissions emitted by an individual, organisation or emitted during the manufacture of a product.

Target Box 1

Global Warming

A gas in the Earth's atmosphere, occurs naturally and is also a by-products of human activities such as burning fossil fuels. Acts as a greenhouse gas, trapping heat in Earth's atmosphere. not the most powerful greenhouse gas, it is the largest contributor to climate change because it is so common.

Target Box 2

Greenhouse Effect

The long term heating of Earth's climate system observed since the pre-industrial period (between 1850 and 1900) due to human activities, primary fossil fuel burning which increase heat-trapping greenhouse gas levels in Earth's atmosphere.

Target Box 3

Carbon Dioxide

One of the main factors determining the temperature of a planet. It's the phenomenon by which certain gases in the atmosphere trap heat that would otherwise escape to space, thereby keeping the planet warm.

Target Box 4

Carbon Footprint

A long-term change in the average weather patterns that have come to define Earth's local, regional and global climates. It can happen naturally or in response to human activities, including the burning of fossil fuels and clearing of forests

Target Box 5

Drag and drop exercise - Answers

The amount of carbon dioxide equivalent (CO₂e) emissions emitted by an individual, organisation or emitted during the manufacture of a product.

Carbon Footprint

A gas in the Earth's atmosphere, occurs naturally and is also a by-product of human activities such as burning fossil fuels. Acts as a greenhouse gas, trapping heat in Earth's atmosphere. not the most powerful greenhouse gas, it is the largest contributor to climate change because it is so common.

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One of the main factors determining the temperature of a planet. It's the phenomenon by which certain gases in the atmosphere trap heat that would otherwise escape to space, thereby keeping the planet warm.

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Climate Change

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Congratulations

You have now completed Module 1 of the HS2 Carbon Literacy Certificate training.

Please continue with Module 2.

