

# Carbon Literacy for The Food Sector

## Course Overview

Shareable Course

2023

The Carbon Literacy Project

Carbon Literacy  
Project





## About

### ‘Future Proofing your Organisation through Educational Transformation’

The Carbon Literacy Standard is a training framework that has been designed to enable transformative behaviour change across an organisation.

This Shareable Course has been developed using this framework to allow accessible and engaging training specifically for food brands.

The materials allow easy access to the latest evidenced based science, empowering your people to develop definable, realisable actions towards sustainability initiatives.

The shared evidence base behind the course will also provide crucial support to your sustainability department, informing decision-making and guiding strategies.

---

*“Thinking about running a Carbon Literacy course? Do it!*

*It’s informative, it’s fun, it’s scary at times.....I mean this is a big problem we’re facing – but you go away feeling really empowered, ready to do something about it.”*

**Hugh Fearnley-Whittingstall,**  
celebrity chef & environmental  
campaigner

---

---

*“We felt this training had a vast amount of important information that is very suited to helping everyone understand more about climate change due to carbon emissions more clearly.”*

**Lush**

---

---

*“It equips us to act in response to the climate crisis and strengthen our carbon knowledge.”*

Mark Fenton, Carbon Manager,  
**HS2**

---

## AutoTrader

Won Company Award for Sustainability at the 2022 Car Finance Awards.

Work with the Carbon Literacy Project was noted by judges as a “fantastic achievement”

# Why Carbon Literacy?



## Transform your culture by...

### Creating Awareness

Empower your employees to embrace sustainability & motivate them to recognize the need for change and participation.

### Shifting Mindsets & Values

Highlighting sustainability benefits & addressing resistance aligns employees with your sustainability goals.

### Fostering Engagement & Ownership

Training promotes collaboration, allowing your employees to identify solutions & share best practices.

### Improving Employee Morale & Engagement

Commitment to environmental responsibility boosts morale, engagement, & loyalty.

*The question should be 'why not?' rather than 'why should you be engaging in behaviour change training?'*

## ...to benefit from

### Innovation & Market Opportunity

Engaging staff drives innovation and creates market opportunities for sustainable products & services.

### Better Risk Management

Environmental policies identify and mitigate risks, protecting your operations and supply chains.

### Improved Public Perception & Reputation

Environmental training demonstrates commitment, enhancing your brand amongst investors & the public.

### Greater Regulatory Compliance

Training ensures compliance with environmental regulations, avoiding penalties & legal issues.

### Cost Savings

Low-carbon practices result in significant cost savings, including energy bills and waste disposal fees.

### Enhanced Competitive Advantage

Differentiating as sustainable attracts and retains customers, giving you a competitive edge.

### Greater Investor Attractiveness

Environmental policies attract investors & increase capital access.

### Future Proofing

Environmental policies position your organisation for a sustainable future, addressing challenges.

*"The Carbon Literacy Project is a fantastic initiative for any business that wants to take an informed step forward in their sustainability agenda"*  
Emma Love, Product & Sustainability Director, **PROPER**



# Getting Started

## Sector Specific

Developed for the sector with the latest evidenced-based science & designed to be delivered by peers.

## Adaptable

You can make it relevant to your organisation and area with customisable slides.

## User Friendly

There's no need to be a carbon expert to deliver, but attending a [Carbon Literacy course](#) & our free [Delivering Successful Carbon Literacy Workshop](#) will be helpful.

## Complete Kit

All materials needed for a day's worth of certified Carbon Literacy training are included

## Accreditation

This Shareable Course is only licensed for certified Carbon Literacy training within the sector - all learners must pledge an individual and group action. The trainer must submit learners' evidence forms to [evidence@carbonliteracy.com](mailto:evidence@carbonliteracy.com) within approx. 2 weeks of the training with a [certificate request form](#).

[Becoming a Carbon Literate Organisation](#) showcases commitment to a low-carbon culture.

## What does the Toolkit include?

### Before starting training

In our 'getting started' pack you will find our bank details document and our invoicing setup form.

Before starting training, please complete and return our invoicing setup form to

[accounts@carbonliteracy.com](mailto:accounts@carbonliteracy.com) and

set up The Carbon Literacy Trust on your accounting system. This allows us to issue invoices to cover certification costs and prevents hold-ups in returning certificates.

Some organisations bulk purchase certificate applications in advance which reduces admin for both parties.

Alternatively, we can invoice you for each batch of learners.

Getting Started Pack

Slide Deck & Trainer Script

Trainer Manual & Source Materials

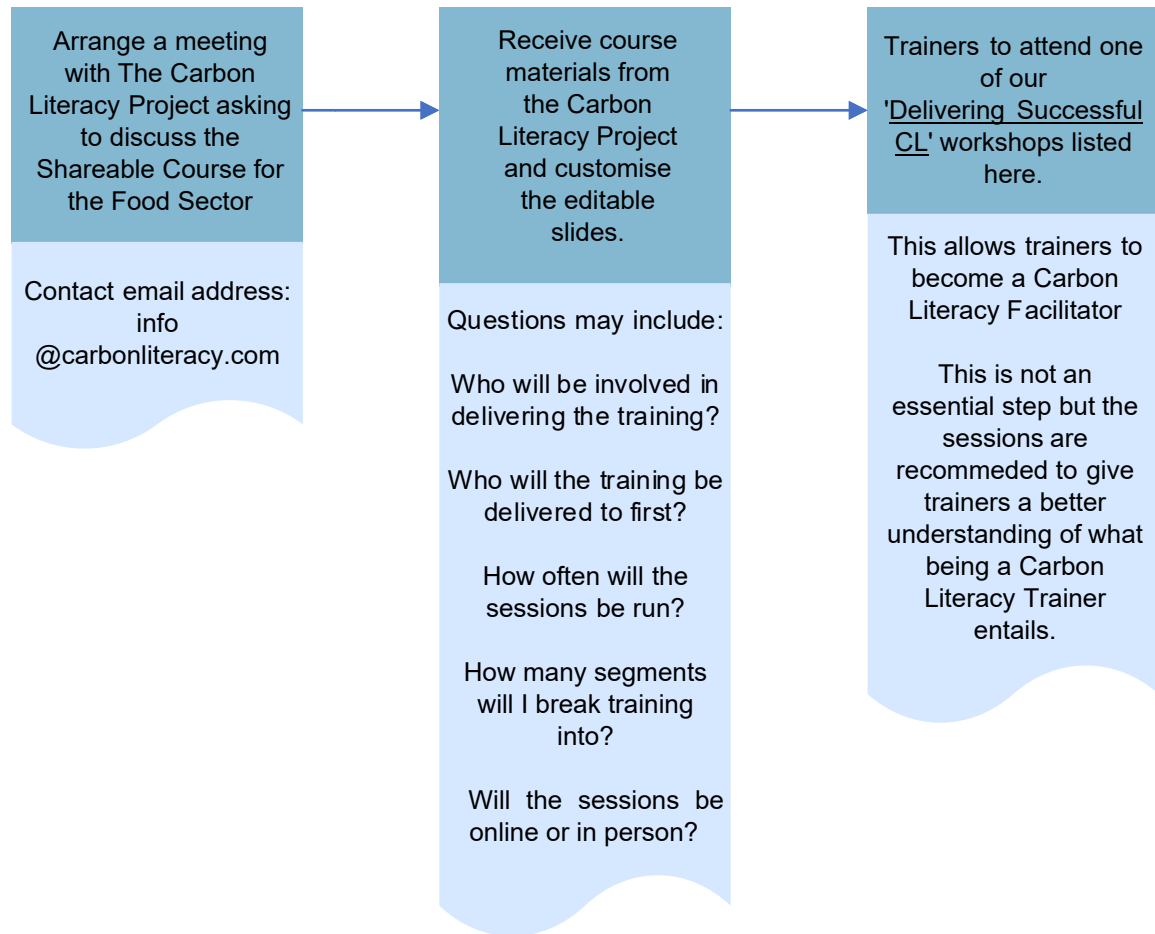
Pre & Post-Course Forms

Evidence Forms

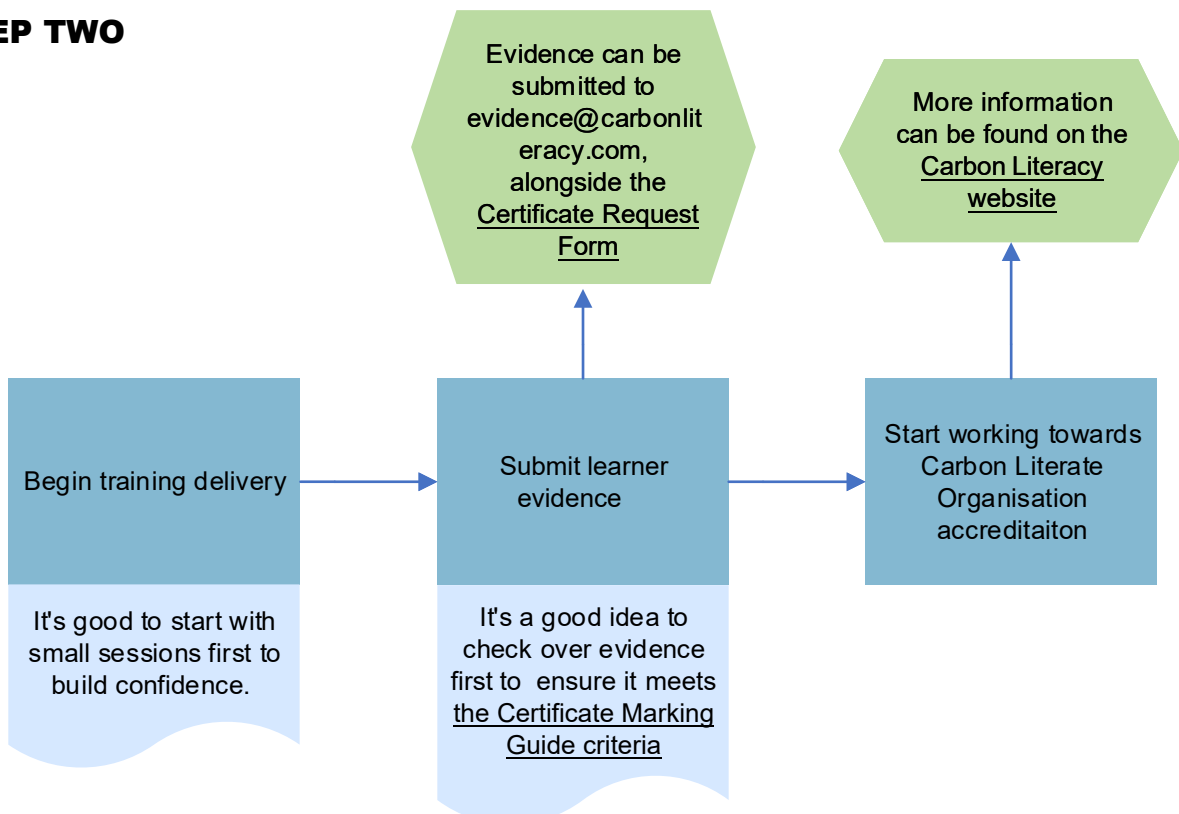
Activity pdf

# Process of Delivering Carbon Literacy Training

## STEP ONE



## STEP TWO





## Running Order and Course Content

Module	Topic	Time	Activity Duration
Intro	Introductions/Housekeeping	09:00	0:07
	Learning outcomes	09:07	0:03
	The sustainable development goals	09:10	0:03
	Optional video on sustainability (3 mins)	09:13	0:00
Module 1 Nature, Climate & Society	Icebreaker: Understanding the concept of risk	09:13	0:10
	Planetary boundaries	09:23	0:10
	Optional discussion (10 mins)	09:33	0:00
	Are we wearing plastic blinkers?	09:33	0:08
	Biodiversity loss	09:41	0:10
	Optional: linking environmental issues (8 mins)	09:51	0:00
	Greenhouse gases and the greenhouse effect	09:51	0:06
	Values: Equity	09:57	0:08
	Optional video: Equity (4 mins)	10:05	0:00
	Break	10:05	0:10
	Editable: Reducing the UK's Carbon Footprint	10:15	0:10
	Local and national Impacts	10:25	0:15
	Editable: Impacts on your organisation	10:40	0:05
	Pathways to our future and close of module 1 (+ optional climate impacts, 5 mins) (+ optional quiz, 5 mins)	10:45	0:07
	Choose any of the optional elements highlighted in red that are suitable for the audience (up to 8 - 10 mins of time available)	10:52	0:08
		Intro and learning outcomes	11:00
Why is personal change so important?		11:05	0:07
Carbon Footprints		11:12	0:04



<b>Module 2</b> The Power of Personal Change	Optional Video: the carbon footprint (3 mins)	11:16	0:00
	Reducing your carbon footprint	11:16	0:20
	Optional break (if modules are being run across one day) 5 mins		0:00
	Greenhouse gases and food	11:36	0:03
	Optional; Are we missing the woods for the trees? (3 mins)	11:39	0:00
	Optional: Perspective on food (15mins)	11:39	0:00
	Optional: Co-benefits of a healthy diet (10 mins)	11:39	0:00
	Optional: Resource consumption (8 mins)	11:39	0:00
	Climate values: Nature connection	11:39	0:06
	Communicating the environmental emergency	11:45	0:03
	Close (+ optional Quiz 5 mins)	11:48	0:02
	Choose any of the optional elements highlighted in red that are suitable for the audience (up to 8 - 10 mins of time available)	11:50	0:10
<b>Module 3</b> Farming for our Future	Intro and learning outcomes	12:00	0:05
	Emissions in the food sector	12:05	0:05
	Impacts of food and agriculture	12:10	0:08
	Food waste	12:18	0:18
	Optional: supply chain and farm food waste (10mins)	12:36	0:00
	Optional: Your food waste policy (3 mins)	12:36	0:00
	Food supply chain emissions	12:36	0:04
	The green revolution and industrial agriculture	12:40	0:08
	Soil	12:48	0:07
	Break	12:55	0:10
Biomimicry	13:05	0:15	



	<b>Agroecology / Regenerative agriculture</b>	13:20	0:05
	<b>Farm case study video</b>	13:25	0:05
	<b>Optional: Climate smart agriculture (prior reading homework required) 15 mins</b>	13:30	0:00
	<b>Optional: Your transition to sustainable agriculture (3 mins)</b>	13:30	0:00
	<b>Can agroecology feed the world?</b>	13:30	0:04
	<b>Optional Video: Food forests (5 mins)</b>	13:34	0:00
	<b>Close (+ optional Quiz 5 mins)</b>	13:34	0:01
	<b>Choose any of the optional elements highlighted in red that are suitable for the audience (up to 10-15 mins of time available)</b>	13:35	0:10
<b>Module 4</b> The Environment is our Business	<b>Intro and learning outcomes</b>	13:45	0:05
	<b>Actions to reduce the carbon footprint of your organisation: emissions scopes</b>	13:50	0:10
	<b>The food sector: greenhouse gases (optional 5 minutes discussion on local food)</b>	14:00	0:10
	<b>Your organisations carbon footprint</b>	14:10	0:02
	<b>Optional: Your net zero targets (3 mins)</b>	14:12	
	<b>Optional: Science based targets (8 mins)</b>	14:12	
	<b>Your carbon hotspots (select and edit 3 slides), Options include, but are not limited to: Transport and Distribution, Employee Travel, Consumer Use, Packaging, Building Energy Management, Home Working, Manufacturing, Waste</b>	14:12	0:15
	<b>Developing a sustainable supply chain</b>	14:27	0:03
	<b>Influencing your supply chain</b>	14:30	0:10
	<b>Optional: Inspiring customers and colleagues (10 mins)</b>	14:40	0:00
	<b>Optional video: What is the circular economy (6 mins)</b>	14:40	0:00





	<b>Break</b>	14:40	0:10
	<b>Offsetting (optional 5 minutes discussion)</b>	14:50	0:15
	<b>Optional: Regenerative business (15 mins)</b>	15:05	0:00
	<b>Action planning</b>	15:05	0:20
	<b>Evidence Form</b>	15:25	0:15
	<b>Wrap Up (optional quiz 5 mins)</b>	15:40	0:03
	<b>Choose any of the optional elements highlighted in red that are suitable for the audience (15 mins of time available)</b>	15:43	0:17
		16:00	0:00
<b>Total Training Time (M1,2,3 &amp;4)</b>			<b>07:00</b>

**Blue slides** – slides that are designed to be edited by the trainer.

**Orange slides** – are activities.

**Green slides** – contain videos that learners watch on their own devices.

**Red slides** – slides that are optional to include.

# Sample Slide with Trainer Script

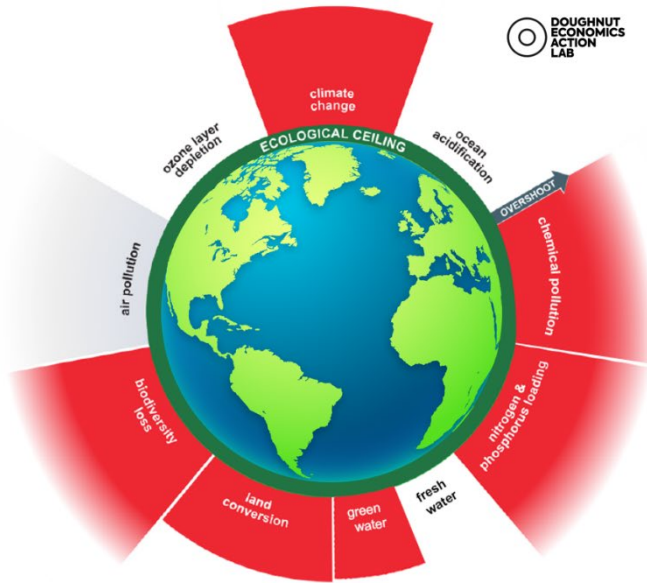


## 9 Planetary Boundaries

Six planetary boundaries have already been crossed:

1. Biodiversity loss
2. Nitrogen and phosphorus loading
3. Land conversion
4. Chemical pollution
5. (Green) Water
6. Climate change

The 9 dimensions of the ecological ceiling are the nine planetary boundaries defined by Earth-system scientists Steffen et al. 2015



## Sample Trainer Script:

**TIME: 10 mins**

**At the end, there is an optional activity: Place learners in breakout rooms (10 mins).**

**Johan Rockström developed the 9 planetary boundaries model [see slide]**

- He did this with 28 internationally renowned scientists
- At the world-leading Stockholm Resilience Centre (part of Stockholm University)
- The planetary boundaries framework has generated huge interest within science, policy, and practice

**They identified the nine processes that regulate the stability and resilience of the Earth system**

- They are boundaries within which humanity can continue to develop and thrive for generations to come i.e. live sustainably
- Crossing these boundaries increases the risk of irreversible environmental changes

**In the red danger zones you can see that six planetary boundaries that have already been crossed**

- The first boundary crossed is biodiversity loss – and we'll look at that in more detail later
- The second boundary crossed is nitrogen and phosphorus loading

**Can you write into the chat what you think the main pressure on the nitrogen and phosphorus boundary is**

- This is largely due to the excessive use of fertilisers in industrial agriculture and animal slurry (manure) from factory farms
- These contain a lot of nitrogen and phosphorus which run-off into waterways
- It's not something we hear much about – but we should do!
- It creates massive imbalances in soils so plants and animals can no longer thrive
- It creates dead zones in the world's oceans where there is no oxygen and few organisms can survive
- It's also the main cause of pollutions in UK rivers (more problematic than the human effluent so often reported on)

**The third boundary crossed is land system change**

- So when vital habitats get used for something else



### Can you write in the chat what you think the main pressure on these vital habitats is?

- Again, this is largely due to industrial agriculture

### **The fourth boundary crossed is chemical pollution**

- Which we will look at briefly in the next slide

### **The fifth boundary crossed is green water**

- Most of us are familiar with the term freshwater meaning water from rain, rivers, lakes and groundwater
- But water is called green when it comes from the cycle created by soil and plants
- The intensive use and consumption by humans depletes the resources of this water, this again is partly due to agriculture
- It's essential for maintaining soils and humidity levels in forests like the Amazon

### **The sixth and last boundary crossed is climate change**

- We will look at climate change in much more detail throughout the course
- It's important to remember though that all the planetary boundaries are interlinked
- And, just as we saw before good planetary health means a strong social foundation based on the United Nations Sustainable Development Goals

[The Trainer Script continues with social boundaries, interlinking to the United Nations Sustainable Development Goals. Further reading on the information in the script is beneath the Trainer Notes along with the links to all evidenced-based sources.]

## Sample Slides

**Greenhouse Gases & The Greenhouse Effect:**

A greenhouse gas is a gas in the atmosphere that absorbs and emits heat.  
This process is the fundamental cause of the greenhouse effect.  
The primary greenhouse gases in Earth's atmosphere are:

Carbon Dioxide      Methane      Nitrous Oxide      F-Gases

The slide features four ball-and-stick molecular models: Carbon Dioxide (O=C=O), Methane (CH4), Nitrous Oxide (N2O), and F-Gases (represented by a central orange atom with six green atoms).

### Focus on climate change

#### Summary of slide content:

Greenhouse gases and the greenhouse effect

- Brief explanation of the basic science and the main sources of GHGs

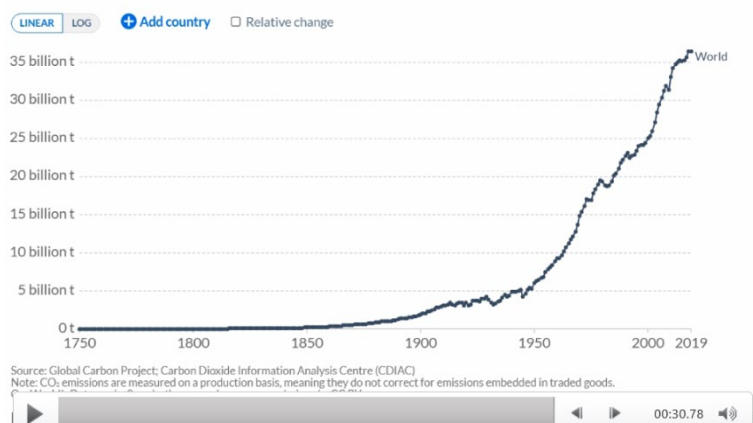
The carbon cycle

- There have been increases and decreases in carbon dioxide levels in the atmosphere in the past but the current speed of change is unprecedented. Natural ecosystems simply will not be able to adapt.



## Annual CO<sub>2</sub> emissions

Carbon dioxide (CO<sub>2</sub>) emissions from the burning of fossil fuels for energy and cement production. Land use change is not included.



### Emissions over time

#### Summary of slide content:

- You can see in this animation that the vast majority of our carbon emissions happened since the end of WWII.
- The rate of emissions steepened post-1990.
- People alive today are the main contributors to these emissions.
- The last 70-years has been a huge binge of consumption that very much includes the dependence of industrial agriculture on fossil fuels.

Animation courtesy of Our World in Data

### What are the top options for reducing your carbon footprint?

- Public transport
- Heat pump
- Recycle
- Insulate your home
- Electric car
- Live car free
- ↓ less long haul flight per year
- Plant based diet
- Green energy

### Understanding the impacts of day-to-day activities

#### Summary of slide content:

So, let's start by looking at which activities would reduce your carbon footprint the most:

- We can then think about how these same actions impact other environmental issues

#### Interactive exercise:

- **What two things would reduce your carbon footprint the most?**
- **And, which two things would reduce your carbon footprint the least?**



## Food waste

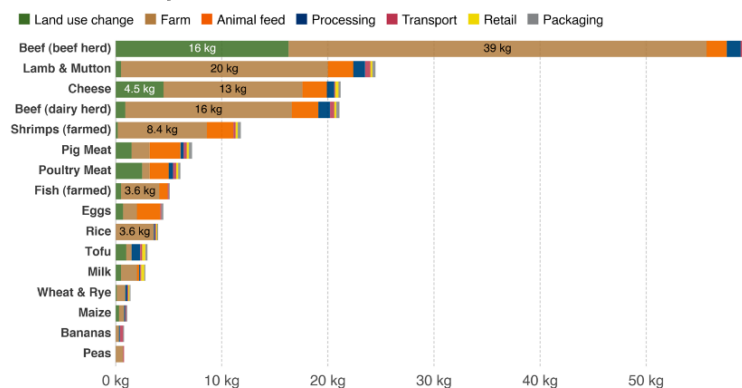
### Summary of slide content:

- New research from Tesco and WWF estimates that around 40% of the world's food was lost or wasted every year. If food waste was a country, it would be the world's 3<sup>rd</sup> largest emitter.
- Project Drawdown – which estimates the potential contribution of different mitigation actions – “ranks cutting food waste ahead of moving to electric cars and switching to plant-based diets”

### Food: greenhouse gas emissions across the supply chain

Greenhouse gas emissions are measured in kilograms of carbon dioxide equivalents (kgCO<sub>2</sub>e) per kilogram of food. This means non-CO<sub>2</sub> greenhouse gases are included and weighted by their relative warming impact.

Our World in Data



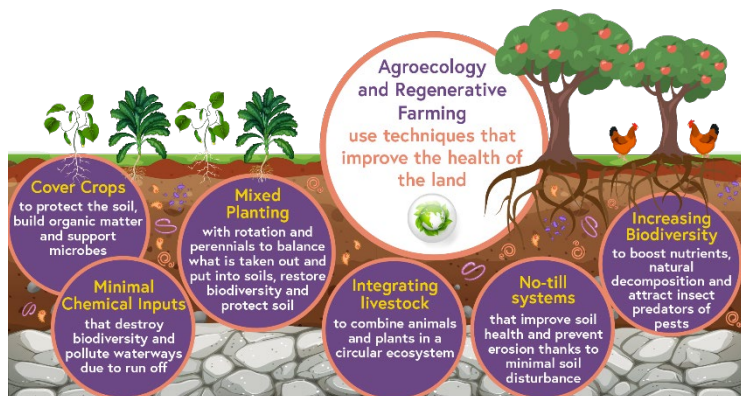
Source: Poore, J., & Nemecek, T. (2018). Reducing food's environmental impacts through producers and consumers. Science.  
 Note: Data represents the global median greenhouse gas emissions of food products based on a large meta-analysis of food production covering 38,700 commercially viable farms in 119 countries.  
 OurWorldInData.org/environmental-impacts-of-food • CC BY

## Greenhouse gases across the supply chain

### Summary of slide content:

- The 'farm stage' of the supply chain creates the most greenhouse gas emissions accounting for 80% of emissions.
- Farm practises and land use also have a huge environmental impact in many other environmental areas.
- The other parts of the supply chain are comparatively small even for plant-based foods.
- This means, for many companies in the food sector, on-farm emissions will be the biggest component of their business carbon footprint.
- This is why improving our farming techniques is absolutely critical in tackling the environmental emergency.

Image courtesy of Our World in Data



## The benefits of regenerative farming and agroecology

### Summary of slide content:

- An approach that works with nature.
- An umbrella term that incorporates techniques and values from regenerative agriculture & organic farming

Agroecology improves soils, stores carbon and creates fertility reducing the use of industrial fertilizers. Methods include many of those used by nature:

- Intercropping (mixed planting).
- Low or no till.
- Crop or animal rotation.
- Use of nitrogen fixing plants.
- Use of perennials and other plants with deep root systems.
- Mulch and cover crops.
- Pesticides are excluded or reduced to a small amount of natural, specific treatments.



## Business emissions scopes

### Summary of slide content:

- Scope 1 – All direct emissions.  
Direct production of greenhouse gas emissions from sources owned or controlled by the company.
- Scope 2 – Indirect emissions from energy.  
GHG emissions from electricity purchased and used by the organisation.

Interactive exercise: Where in the business do you think your scope 1 and 2 emissions are created?

- Scope 3 – All other indirect emissions from sources not owned or directly controlled by the company.



## Influencing your supply chain

Talk about the win-win of going green:

- Leadership
- Competitive edge
- Meeting targets
- Making savings
- Retaining staff
- Influencing and inspiring others

Nicola Siddons.

### Influencing your supply chain (scope 3 emissions)

#### Summary of slide content:

- Creating change across your supply chain. Upstream and downstream targets and criteria.

Interactive exercise: Creating a sustainable supply chain

- ISO 14001 as a framework to help address your supply chain.
- Understanding the circular economy.

## Carbon offsetting

- Carbon offsets are a mechanism to balance out carbon emissions
- Net zero is reached when the amount of carbon emitted balances the amount of carbon removed
- Offsetting can be used to pay someone else to remove carbon rather than taking action on your own emissions

### Carbon Offsets

#### Summary of slide content:

- Understanding Carbon offsets and the 'net' in net zero.
- Problems with carbon offsetting  
e.g., The land required to sequester just 2 Gigatonnes of carbon dioxide through ecosystem restoration is about 678 million hectares – about twice the area of India.
- Video – Problems with offsetting.
- Using carbon offsets effectively within a strategy of efficiency and innovation.