

SUPPLY CHAIN SUSTAINABILITY



Carbon Reporting – National Highways Scheme Delivery Framework

Naomi Pratt, Action Sustainability

House Rules



Cameras and mics are off due to audience size



Get involved in our poll questions



Use the Q+A box for questions



Share your feedback at the end



Slides and recording will be shared later

Webinar Overview

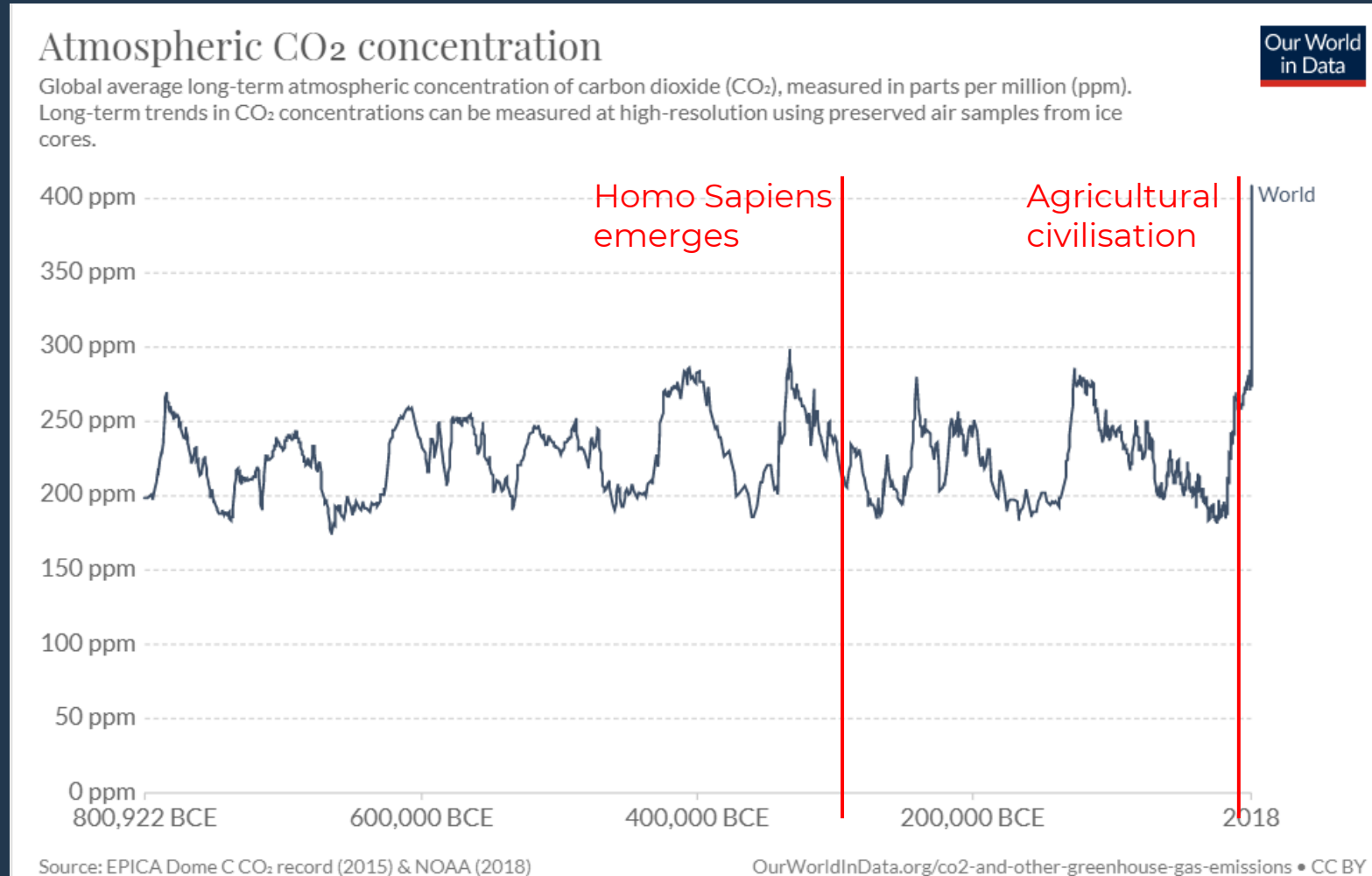
- **Why** are we reporting on carbon?
- **Where** do GHG emissions come from?
- **What** is the global and UK response?
- **What** do we report?
- **How** should we report our carbon?
- **Where** do we get data from?



An aerial photograph of a glacier, showing a large, dark, jagged rock formation in the foreground on the right side. The glacier's surface is highly textured with numerous crevasses and ridges. The overall color palette is dominated by blues and greys, with a bright green horizontal band across the middle.

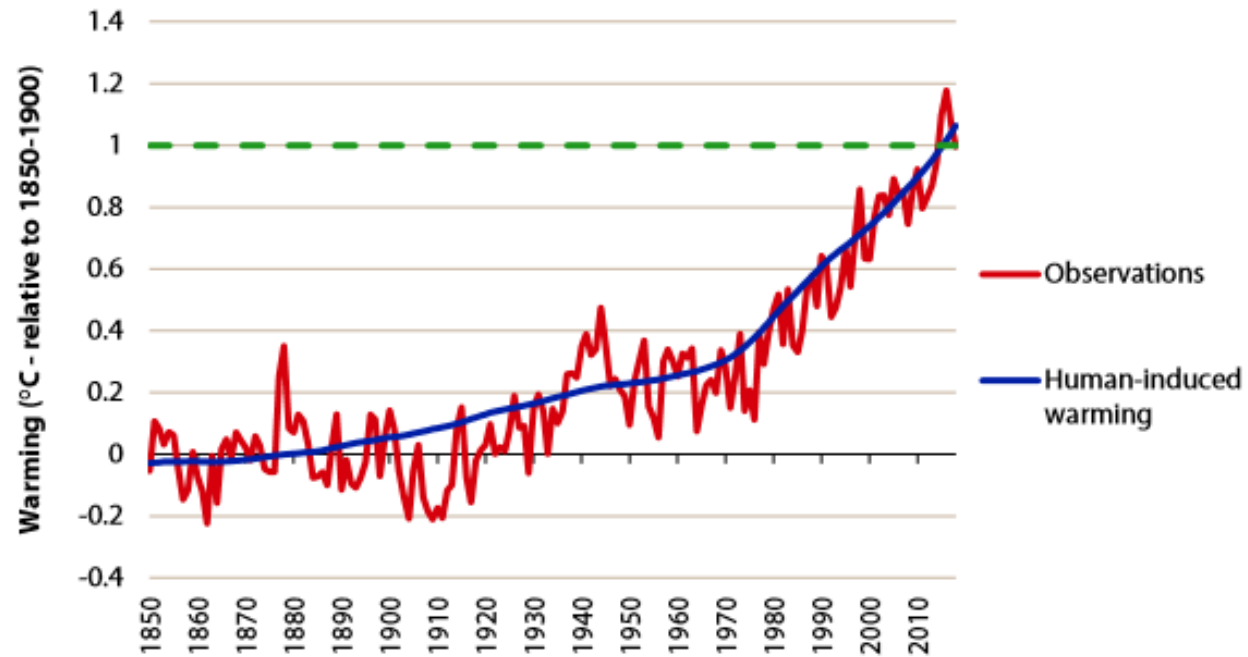
Why are we reporting on carbon?

Scene Setting: The last 800,000 years



Scene Setting: The last 200 years

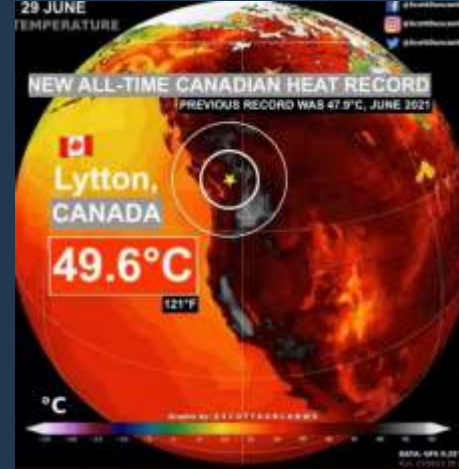
Figure 2.1. Observed and human-induced warming



Source: HadCRUT4, NOAA, NASA and Cowtan & Way datasets; IPCC (2018) *Chapter 1 - Framing and Context*.

Notes: 'Observations' are the average of the four datasets above as in IPCC-SR1.5 including for the full year of data for 2018.

Global impacts of climate change



A tall industrial smokestack with a red and white striped pattern is shown against a bright blue sky with scattered white clouds. A large, thick plume of white smoke or steam is being emitted from the top of the stack, extending across the upper right portion of the frame. A horizontal green bar is overlaid across the middle of the image, containing the text.

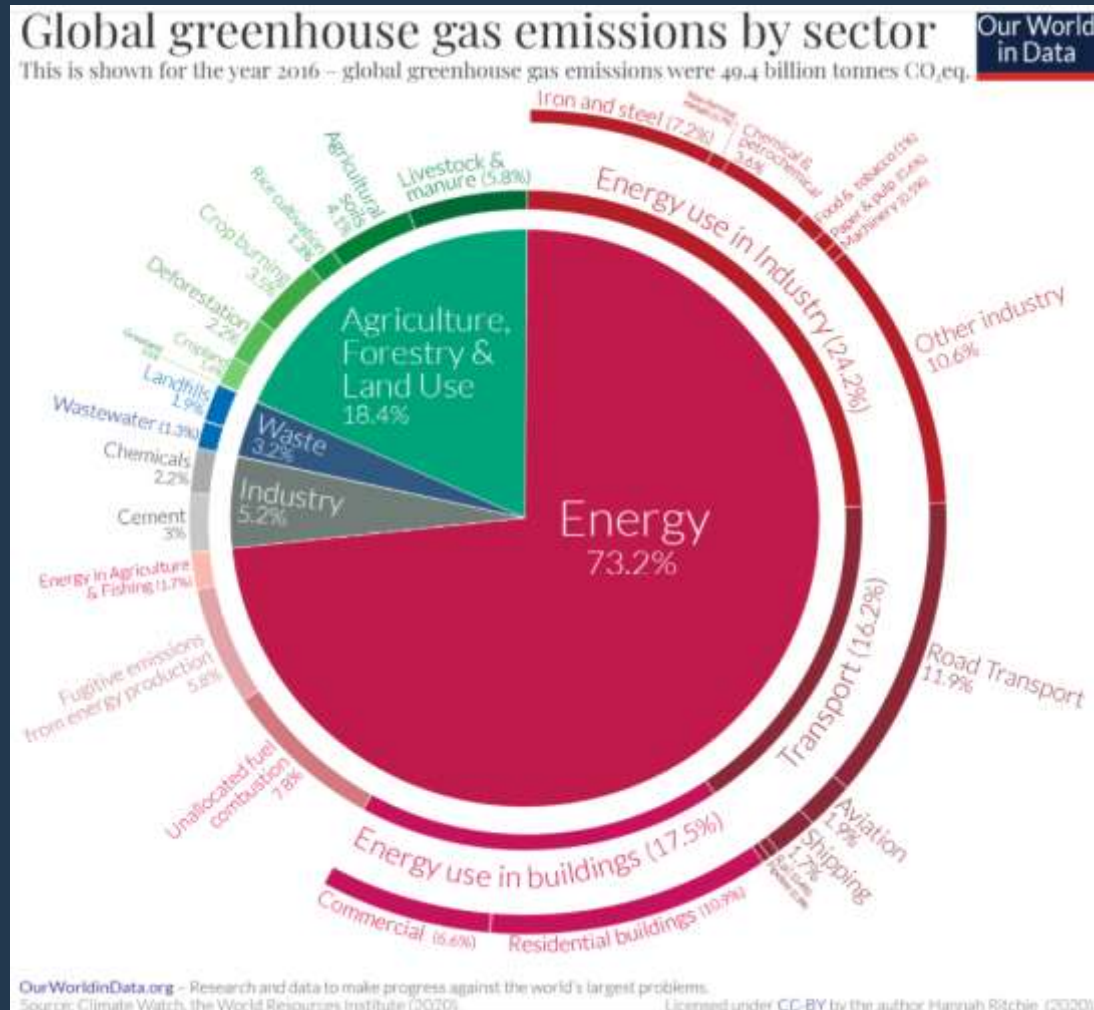
Where do GHG emissions come from?

What gases contribute to climate change?

- CO₂ (carbon dioxide)
- CH₄ (methane)
- N₂O (nitrous oxide)
- SF₆ (sulphur hexafluoride)
- HFCs (hydrofluorocarbons)
- PFCs (perfluorocarbons)
- (NF₃ nitrogen trifluoride)
- Kyoto Protocol 'Basket' of 6 GHGs
- Limit warming to 2°C above pre-industrial levels, if not 1.5°C



What industries contribute to climate change?

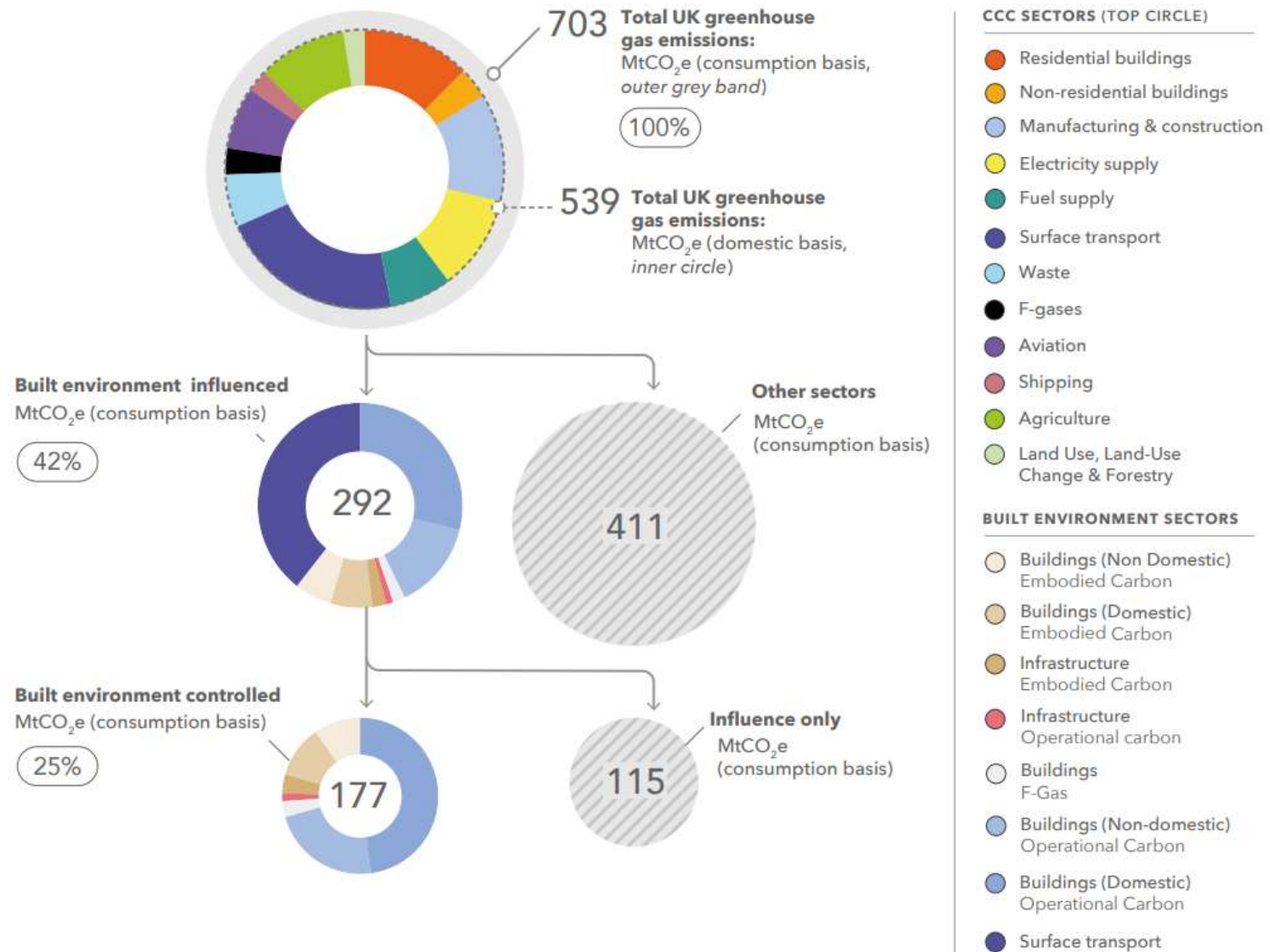


- **Industry 29.4%**
- **Agriculture & Forestry 21.1%**
- **Buildings 17.5%**
- **Transport 16.2%**

The scale of the challenge for the built environment

- [UKGBC Whole Life Carbon roadmap 2021](#)
- Built environment can influence 42% of UK emissions
- Embodied carbon from construction and refurbishment makes up ~ 20% of built environment emissions

Figure 1: Total UK GHG emissions (2018 CCC Data) showing proportion of Built Environment emissions





What is the political response?

The backstory - international climate diplomacy



The Brundtland Report

In 1987, The Brundtland Commission (*Our Common Future*) which coined what has become the most often-quoted definition of sustainable development as development that

OUR COMMON FUTURE

THE WORLD COMMISSION ON ENVIRONMENT AND DEVELOPMENT

"meets the needs of the present without compromising the ability of future generations to meet their own needs."



Global greenhouse gas emissions and warming scenarios

Our World
in Data

- Each pathway comes with uncertainty, marked by the shading from low to high emissions under each scenario.
- Warming refers to the expected global temperature rise by 2100, relative to pre-industrial temperatures.

Annual global greenhouse gas emissions in gigatonnes of carbon dioxide-equivalents

150 Gt

100 Gt

50 Gt

Greenhouse gas emissions
up to the present

0

1990 2000 2010 2020 2030 2040 2050 2060 2070 2080 2090 2100

No climate policies

4.1 - 4.8 °C

→ expected emissions in a baseline scenario if countries had not implemented climate reduction policies.

Current policies

2.7 - 3.1 °C

→ emissions with current climate policies in place result in warming of 2.7 to 3.1°C by 2100.

Pledges & targets (2.4 °C)

→ emissions if all countries delivered on reduction pledges result in warming of 2.4°C by 2100.

2°C pathways

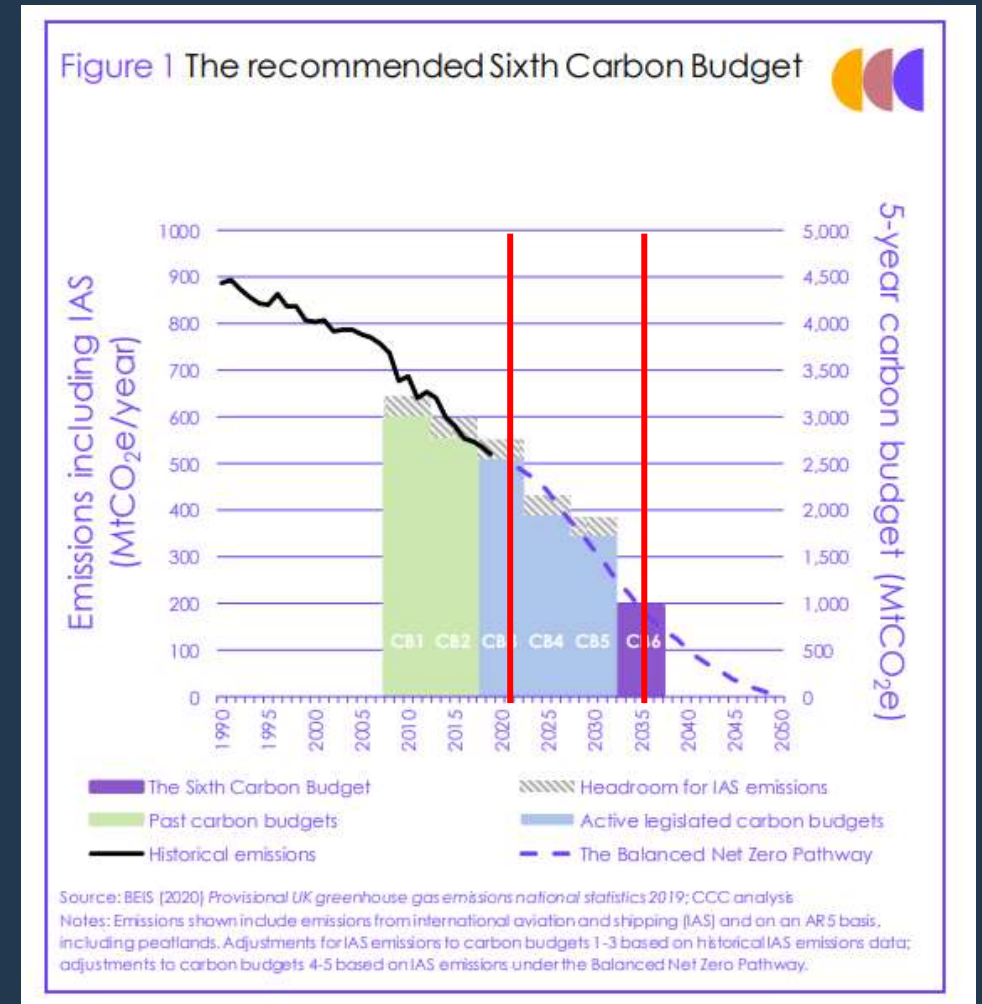
1.5°C pathways

Data source: Climate Action Tracker (based on national policies and pledges as of May 2021).
OurWorldinData.org - Research and data to make progress against the world's largest problems.

Last updated: July 2021.
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National climate strategy

- Legal requirement under the UK Climate Change Act (2008) for a target of 100% reduction by 2050 – ‘net zero’
- New intermediate target for UK of 78% by 2035 vs 1990 baseline.
- Scotland has legislated to hit net-zero by 2045, Wales’ and NI targets are 100% by 2050
- Ireland has legislated to hit net-zero by 2050
- The Committee on Climate Change publishes 5-year carbon budgets, the most recent one being the [Sixth Carbon Budget](#) (2033-2037)



UK Gov't PPN06/21: 5th June 2021 *Carbon Reduction Plans*

- Bidders for any contract over £5m ex VAT per year from Central Government, their Executive Agencies and NDPBs
- Contractors will have to provide a carbon reduction strategy confirming their commitment to achieving Net Zero by 2050 in the UK
- Covers Scope 1, 2 and certain Scope 3 (Upstream transportation & distribution, Waste generated in operations, Business travel, Employee commuting, Downstream transportation & distribution)
- From 30th September 2021
- Also upcoming – carbon emissions (buildings) bill and update to building regulations Part Z



Cabinet Office

Procurement Policy Note – Taking Account of Carbon Reduction Plans in the procurement of major government contracts

Action Note PPN 06/21

05/06/2021

Issue

1. The UK Government amended the Climate Change Act 2008¹ in 2019 by introducing a target of at least a 100% reduction in the net UK carbon account (i.e. reduction of greenhouse gas emissions², compared to 1990 levels) by 2050. This is otherwise known as the 'Net Zero' target. This Procurement Policy Note (PPN) sets out how to take account of suppliers' Net Zero Carbon Reduction Plans in the procurement of major Government contracts.

Dissemination and Scope

2. This PPN applies to all Central Government Departments, their Executive Agencies and Non Departmental Public Bodies. These organisations are referred to in this PPN as 'In-Scope Organisations'. Please circulate this PPN within your organisation, drawing it to the attention of those with a commercial and procurement role.

3. In-Scope Organisations should take action to apply this PPN when procuring goods and/or services and/or works with an anticipated contract value above £5 million per annum³ (excluding VAT) which are subject to the Public Contracts Regulations 2015 save where it would not be related and proportionate to the contract.

4. This PPN applies to framework agreements and dynamic purchasing systems only where it is anticipated that the individual value of any contract to be awarded under the



National Highways goals and strategy

National Highways: Net Zero Highways 2030 / 2040 / 2050



CORPORATE EMISSIONS

Net zero by 2030



MAINTENANCE & CONSTRUCTION EMISSIONS

Net zero by 2040



ROAD USER EMISSIONS

Net zero by 2050

2030: Net zero for operations

- Covers own energy and travel. Actions include renewable powered lighting, LED road lighting, electric vehicles and tree planting.

2040: Net zero for maintenance and construction

- Covers emissions from making and transporting materials used to maintain network. Actions include near-zero plan for each procurement category, increasing capacity on existing roads, construction innovation programme

2050: Net zero carbon travel

- Covers emissions from users of the road network. Actions include zero carbon HGV trials, EV charging services, promotion of walking and cycling, access to rail, and measures to reduce the need to travel

National Highways targets and achievements

Completed

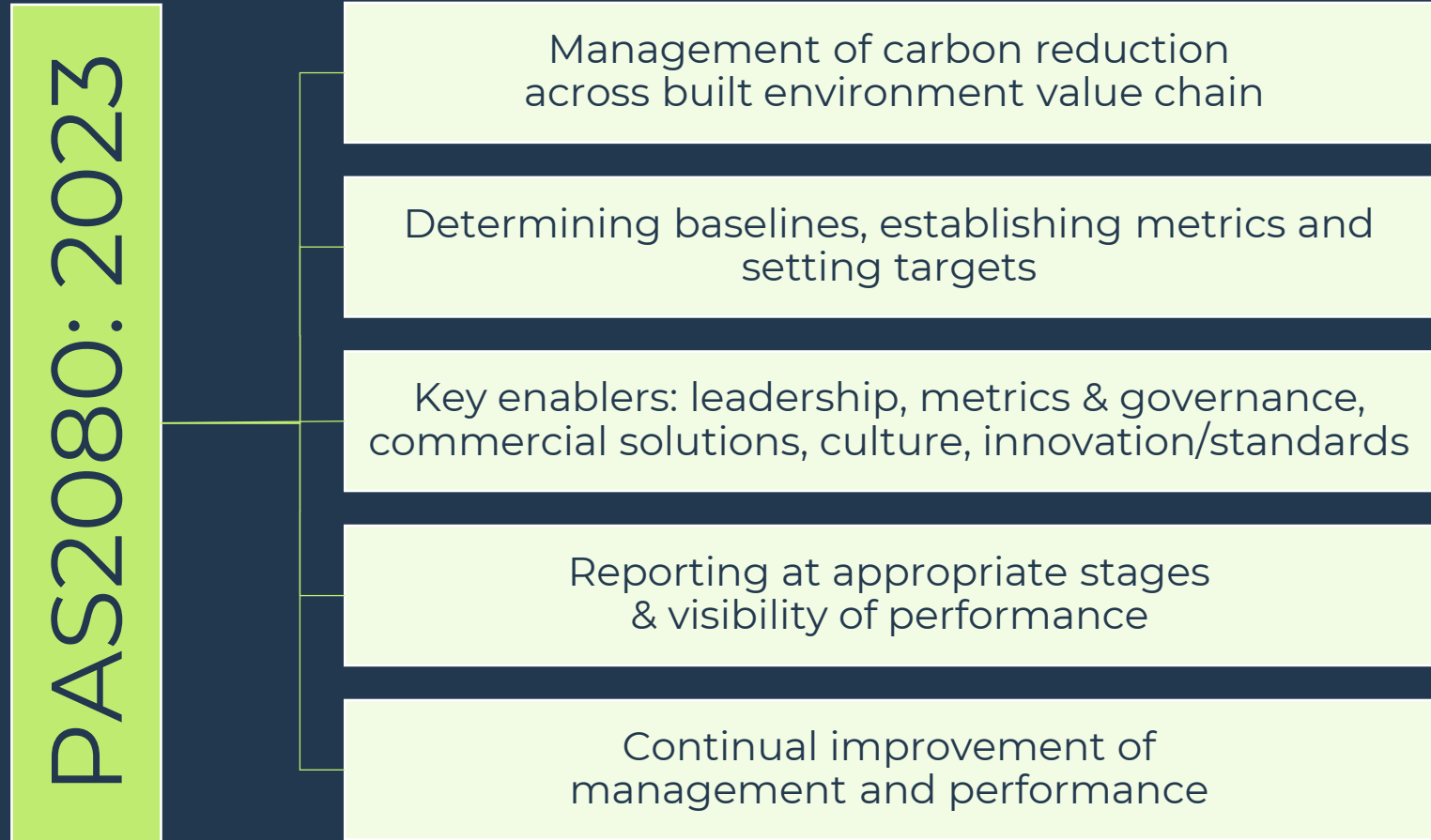
- Carbon Management System accredited to PAS 2080:2016
- Carbon Construction Innovation Programme
- Net zero roadmaps for concrete, steel and asphalt
- Trialling low carbon materials
- Launched low carbon opportunities register

In progress




- Sharing carbon resources through external SharePoint
- Embed CMS into project delivery and maintenance activities as BAU
- Pilot net zero plant on construction sites
- Integrate zero carbon into procurement processes
- Support supply chain to become PAS 2080 accredited




Carbon in Infrastructure: PAS 2080



PAS 2080:2023
Carbon management in buildings and infrastructure

Tier 1 and 2 suppliers to be accredited by end 2025

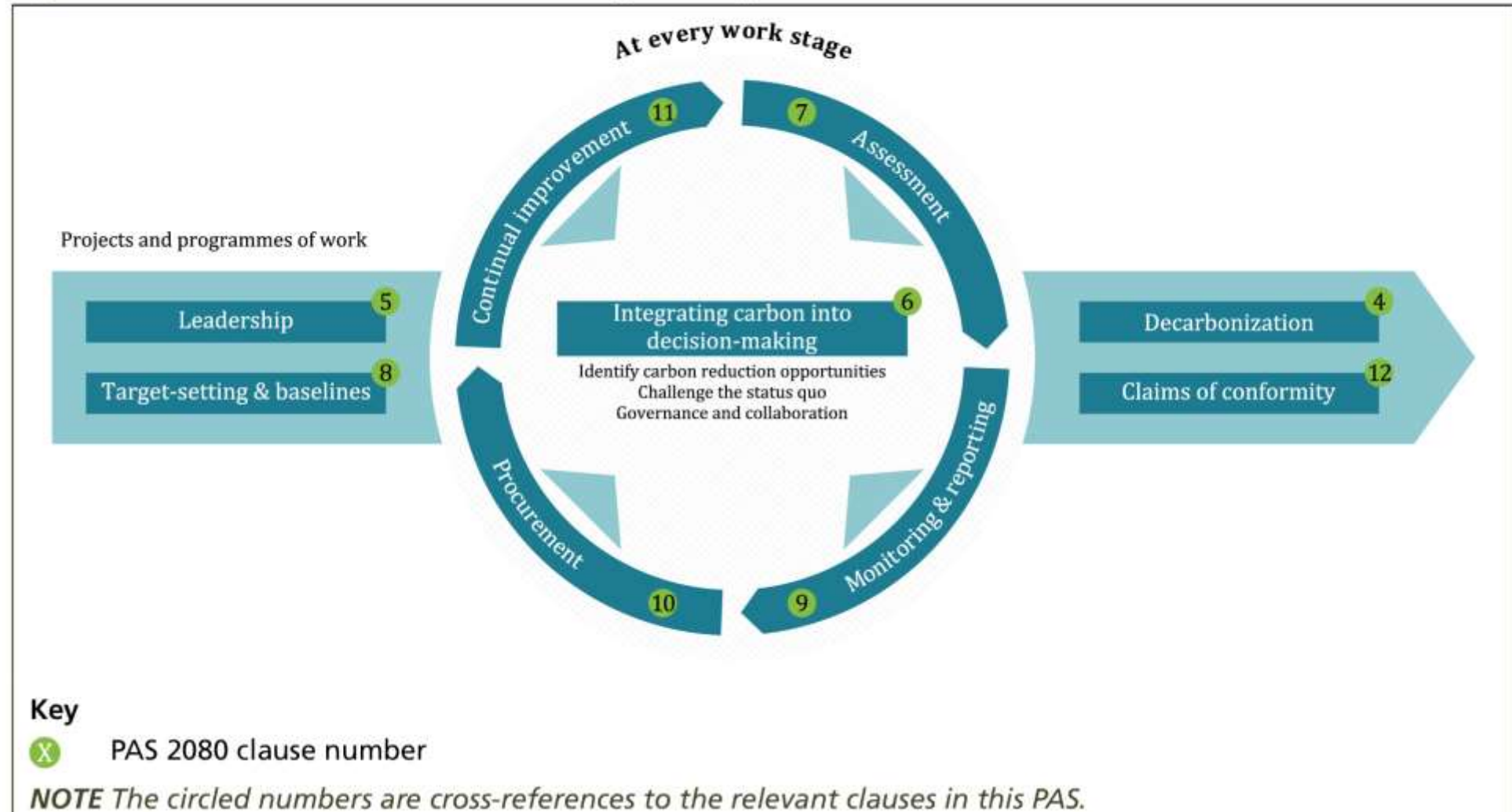


Carbon in Infrastructure: PAS 2080

Check out our recent webinar on PAS 2080



Figure 6 – The PAS 2080 carbon management process



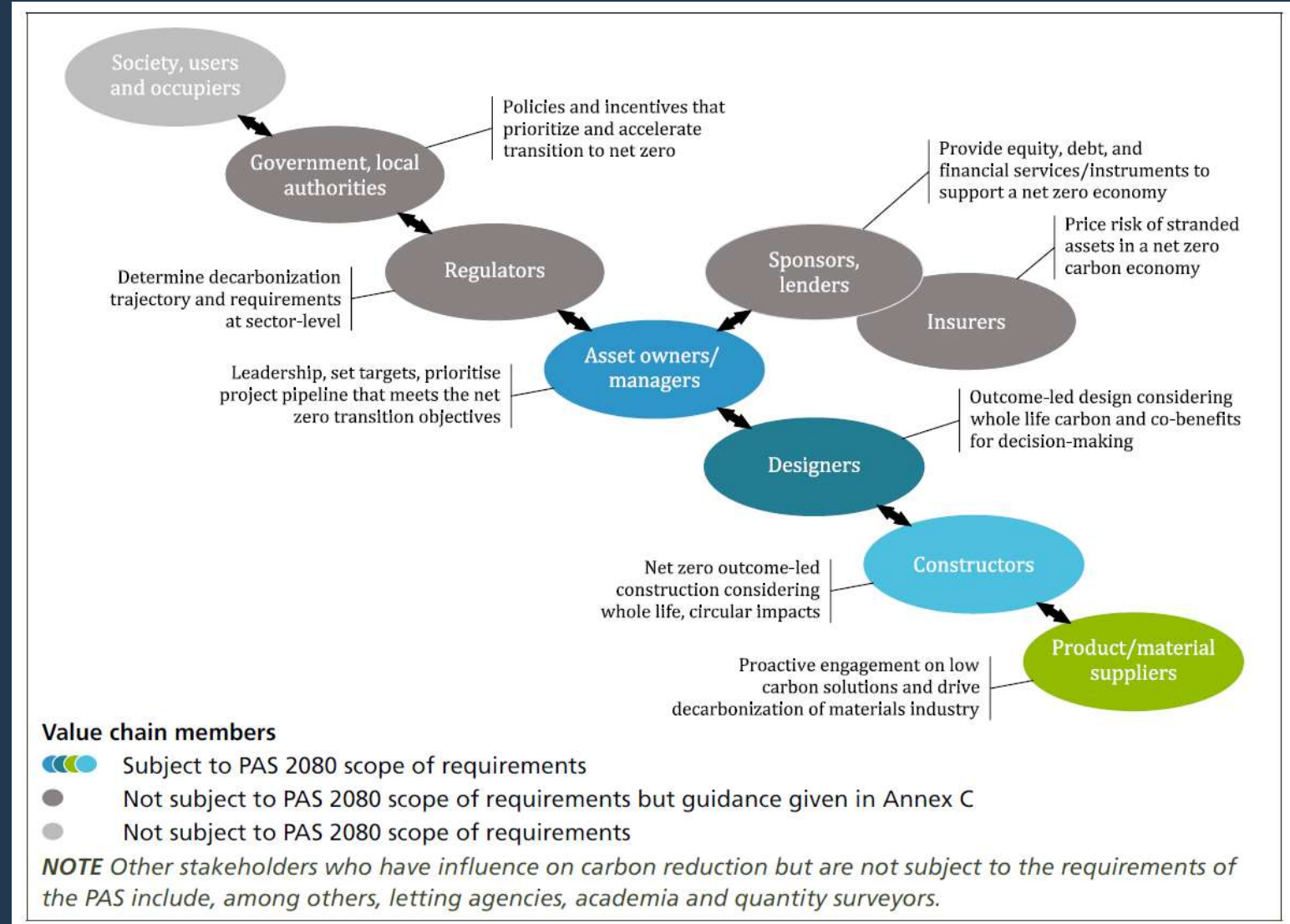
Carbon in Infrastructure: PAS 2080

The standard recognises differentiated influence and responsibilities at asset, network and system level

Responsibilities within each clause are arranged by requirements for:

- All value chain members
- Asset owners
- Constructors
- Product/material suppliers

Close collaboration across the value chain is required

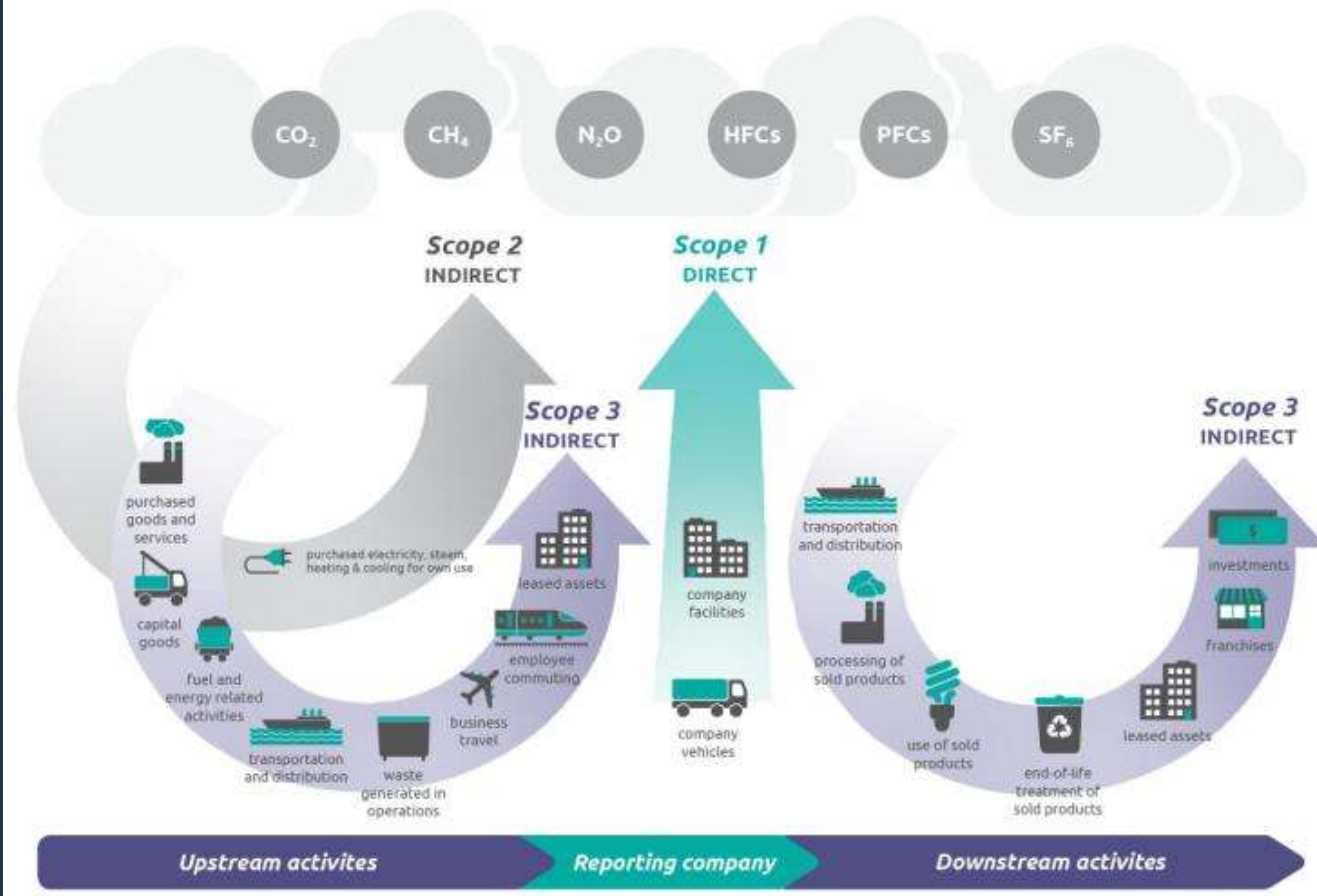




What do we report?

Operational Boundaries – Scopes

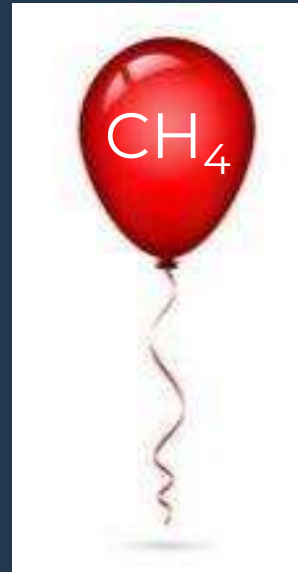
Figure [1.1] Overview of GHG Protocol scopes and emissions across the value chain



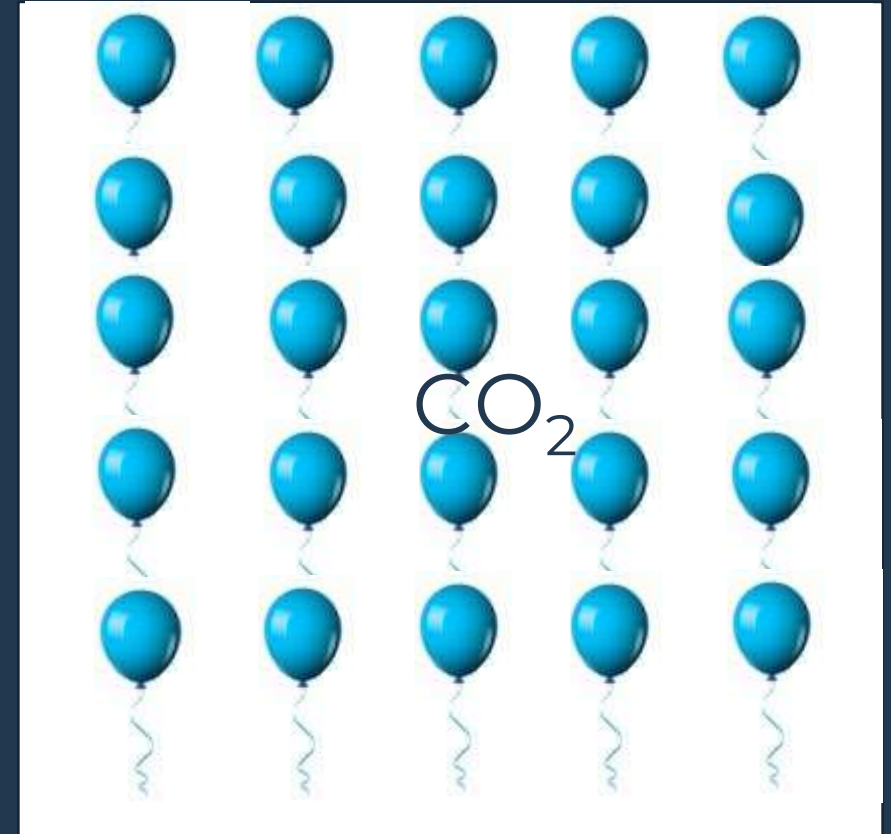
- **Direct emissions** are emissions from sources that are owned or controlled by the reporting company
- **Indirect emissions** are emissions that are a consequence of the activities of the company but occur at sources owned or controlled by another company

Some fundamentals – Global Warming Potentials: GWP

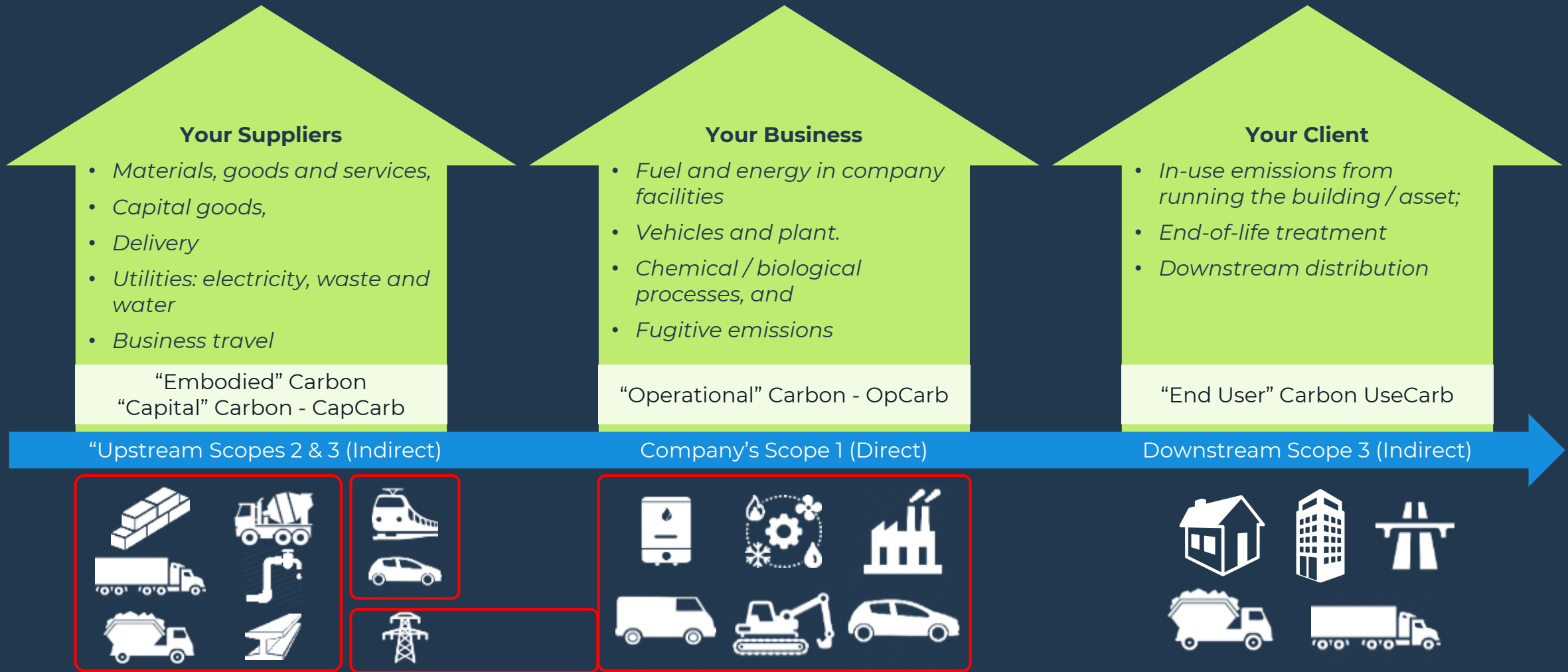
- It's all relative...
 - CO₂: 1
 - CH₄: 28
 - N₂O: 265
 - SF₆: 23,500
 - HFCs: 4 – 12,400
 - PFCs: 6,630 – 11,100
 - NF₃: 16,100
 - Expressed as “tonnes of CO₂ equivalent”; tCO₂e



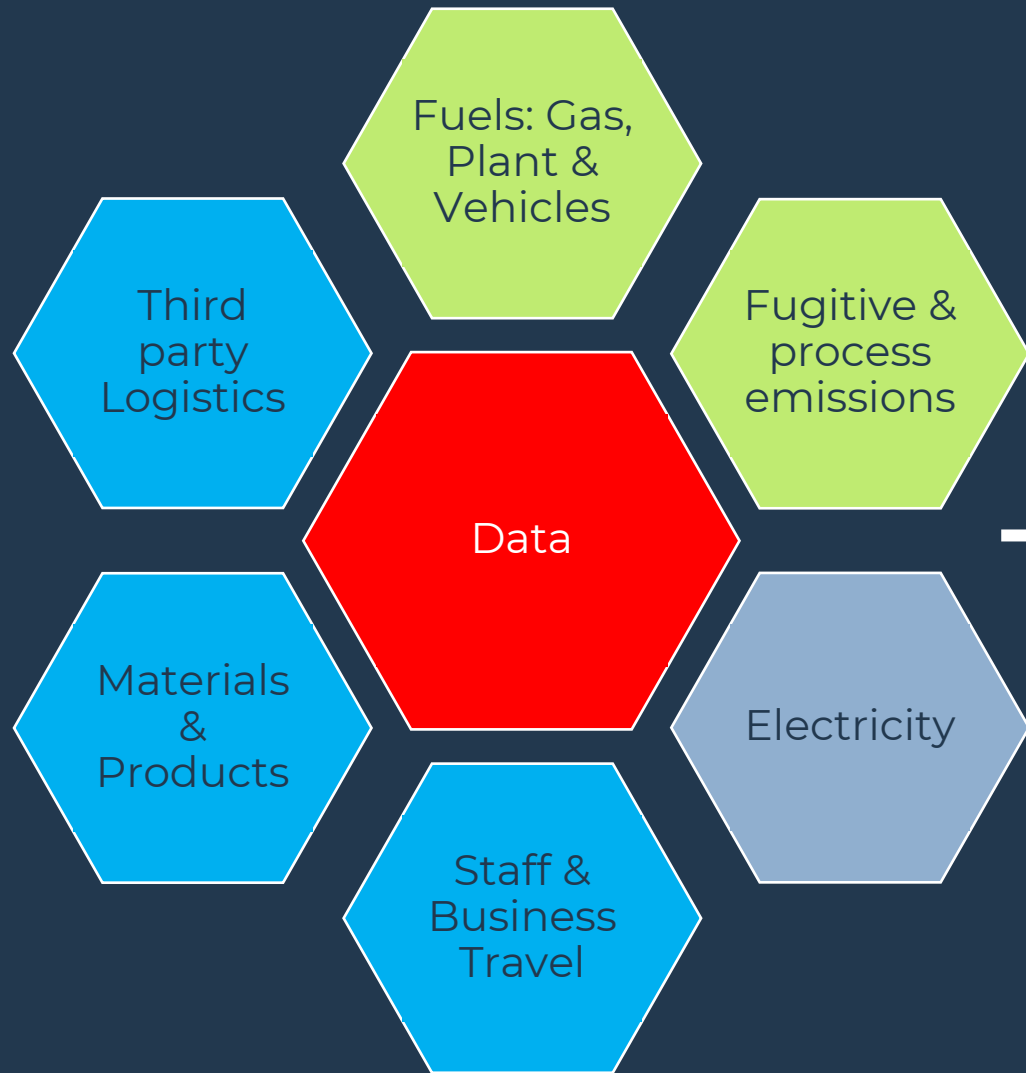
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Set your Boundaries for your Organisation



Where does Activity Data come from



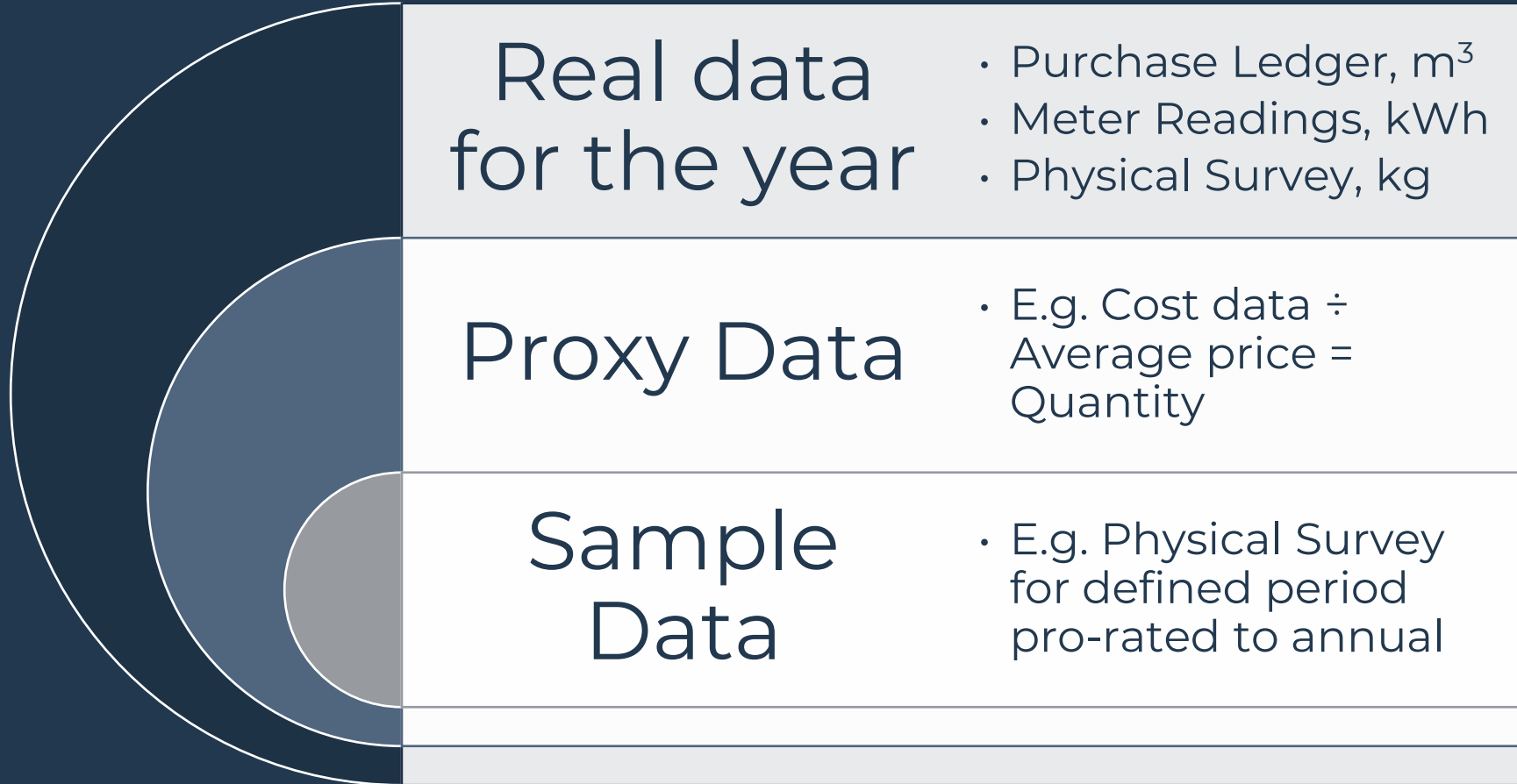
Kinds of Data

- Litres of fuel (diesel, LPG...)
- Litres of refrigerant
- kWh of electricity
- Mileage travelled
- Tonnes, m³ of materials

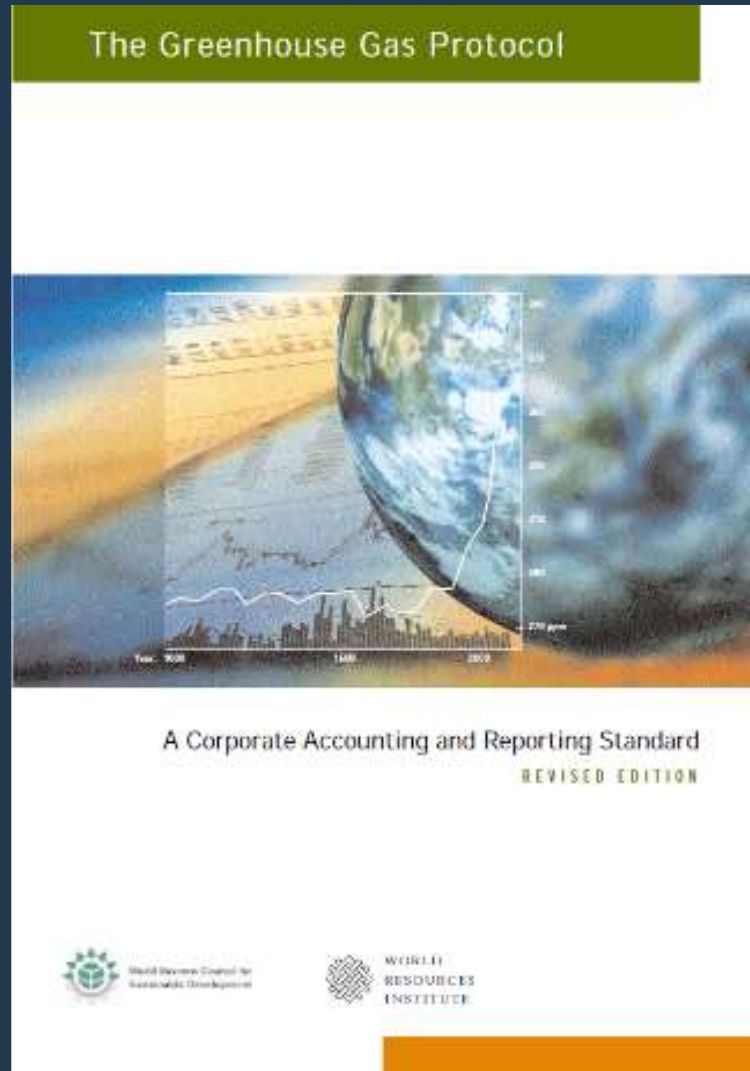
Where is the Data

- Fleet
- Estates
- HR / Travel agent
- Procurement
- Suppliers

Sources of Activity Data



Introduction to relevant standards



Accounting and Reporting of 6 greenhouse gases (Kyoto Protocol)

GHG inventory using standardised approaches and principles

Develop an effective strategy to manage and reduce GHG emissions

Consistency and transparency in GHG Accounting and Reporting

Construction-specific GHG Protocol - Encord

GHG Protocol



How should we report our carbon?

Key Reporting Mechanisms

Legislative


- Streamlined Energy & Carbon Reporting (SECR)
 - Including Mandatory Company Reporting
- Energy Savings and Opportunities Scheme (ESOS)

Voluntary

- Science Based Targets Initiative (SBTi)

National Highways specific

- Carbon emissions calculation tool



Covered in our [Carbon Reporting e-module](#)



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The Science Based Targets Initiative (SBTi)

- Who they are and their purpose:
 - A partnership between CDP, the UN Global Compact, the World Resources Institute and the World Wildlife Fund
 - A method for any organisation to set carbon emissions reduction targets in line with the Paris Climate Agreement that has long term goals for the planet and global economy
 - Identify opportunities to reduce carbon and cost, and report to your clients



Route to Setting a Target: Large organisations

(The SBTi define an SME as a non-subsubsidiary, independent company with fewer than 500 employees)

DAY 1



COMMIT

Company submits a letter establishing its intent to set a science-based target



DEVELOP

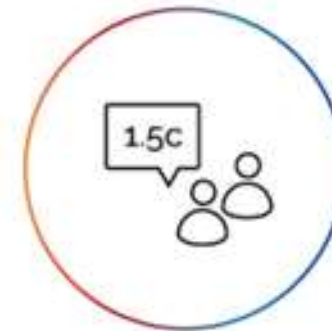
Company works on an emissions reduction target in line with the SBTi criteria



SUBMIT

Company presents the target to the **SBTi for official validation**

24 MONTHS



COMMUNICATE

Company announces the target and informs stakeholders

AFTER APPROVAL

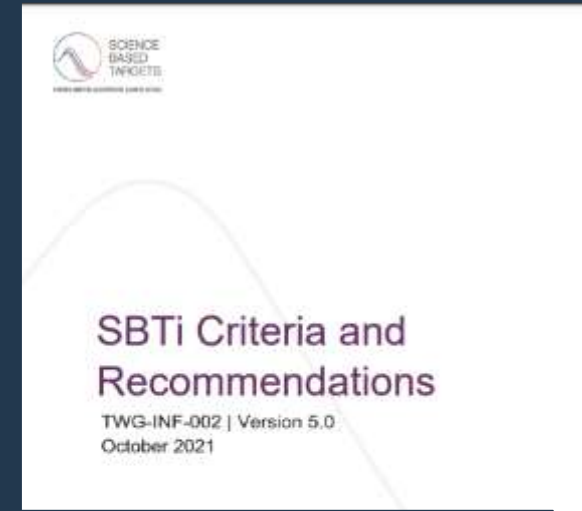


DISCLOSE

Company report its emissions and progress against targets on an annual basis

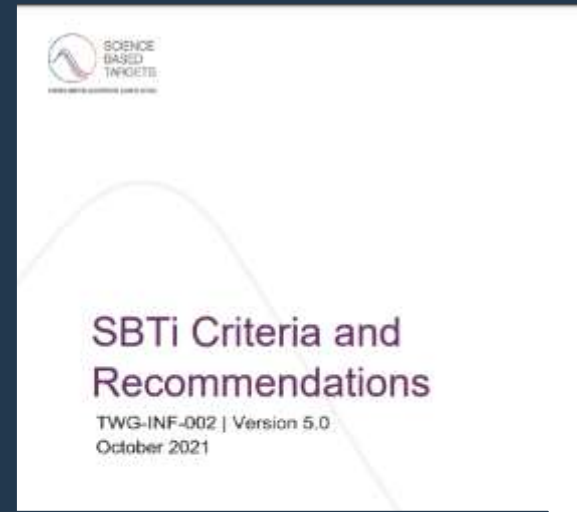
Criteria for Developing a Target

- **Boundaries (organisational and operational)**
 - Set at parent company level and must include **at least 95% of your company-wide scope 1 and 2** GHG emissions, consistent with GHG Protocol.
 - State whether location- or market-based accounting for scope 2.
 - Can include procurement of **renewable electricity** for scope 2 target
- Must do a **scope 3 screening exercise** to understand significance
- If **scope 3 emissions (up- or downstream) accounts for 40%** or more of your total GHG emissions (scopes 1, 2 and 3) then must include **at least 67% of your scope 3** emissions.
- Indirect scope 3 emissions are encouraged but outside the 67% min coverage for the target boundary.
- Fossil fuel sales sector **MUST** include scope 3 at 1.5C ambition. Fossil fuels production sector can not get a SBT
- **Biogenic emissions** also must be reported (out of scopes)
- But **avoided, reduced and carbon credits** (offsets or removals) can not be counted for SBTi (SBTi NZ Standard)



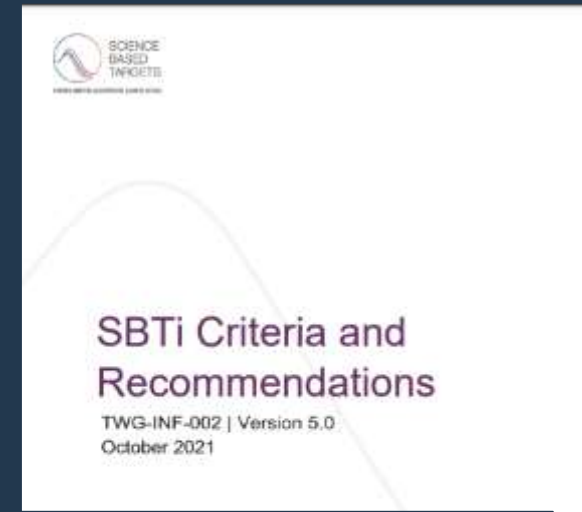
Criteria for Developing a Target

- **Ambition for minimising temperature rise**
 - **From 15th July (v5):**
 - For scopes 1 and 2 it must at a minimum be consistent with the level of decarbonization required to **keep temperature increase to 1.5°C**.
 - For scope 3 it must, at a minimum, be aligned to a **well-below 2°C warming scenario**
- **Gather data for the baseline year for targets**
 - Base year of earlier than 2019 if submitted in 2022, otherwise 2015 is earliest base year
- **Timeframes**
 - **From 15th July (v5):**
 - Set near term targets between **5 to 10 years** into the future



Criteria for Developing a Target

- **Progress**
 - Both the target timeframe ambition (base year to target year) and the forward-looking ambition (most recent year to target year) must meet the ambition criteria.
- **Communicate, Disclose and Recalculate**
 - Publicly **communicate** SBT within 6 months of approval
 - Publicly report GHG emissions inventory and progress against SBT on **an annual basis**
 - **Recalculate** target at least every 5 years, or sooner if significant change
- **Develop an action plan**
 - The actions you will take to ensure you hit your reduction target in the 5 – 10 year near term timeframe, including your supply chain (**this is NOT assessed by SBTi as it is company-specific**)
- **USD 9,500 for Large Organisations**



SBTi Tool

Science-based Target Setting Tool
Version: Version 1.2.1
Support: info@sciencebasedtargets.org

Section 1. Input data

Target setting method	Absolute Contraction Approach	Note: the approach not applicable to Power Sector
SDA scenario	<input type="checkbox"/>	Select SDA scenario
SDA sector	<input type="checkbox"/>	
Base year	2019	Optional
Target year	2034	Optional
Proposed total measure	<input type="checkbox"/>	
Base year output	5 000	
Target year output	16 000	
Scope 1 emissions (tCO2e)	300	tCO2e
Scope 2 emissions (tCO2e)	300	tCO2e

IMPORTANT NOTICE:

This Tool is intended to support companies in their setting of science-based emissions reduction targets, as well as to assist companies and interested third parties in assessing and evaluating companies' targets. However, to be approved by the Science Based Targets initiative, companies need to make sure their target(s) fulfil the SBTi criteria. Please review the SBTi Step-by-Step guide to access the latest criteria and resources: <https://sciencebasedtargets.org/step-by-step-guide>

Also please note that the SBTi assesses "forward-looking" ambition of target(s) by using the year the target is submitted to the initiative (or the most recent IRG inventory).

Please help us improve this tool by reporting issues related to functionalities and formatting.

Update notification:
Please note that companies may continue to submit targets using SBTi Tool version 1.1 until January 1st 2021. Version 1.2 is no longer supported, please see current version 1.2.1 on [sciencebasedtargets.org](https://www.sciencebasedtargets.org).

Section 3. Absolute Contraction Approach

Well below 2 degree scenario (WBC)
[Review all target possibilities](#)

	Base year (2019)	Target year (2034)	% Reduction
Scope 1 emissions (tCO2e)	500	313	37.5%
Scope 2 emissions (tCO2e)	300	188	37.5%
Scope 1+2 emissions (tCO2e)	800	500	37.5%

1.5 degree scenario (1.5C)
[Review all target possibilities](#)

	Base year (2019)	Target year (2034)	% Reduction
Scope 1 emissions (tCO2e)	500	180	63.0%
Scope 2 emissions (tCO2e)	300	111	63.0%
Scope 1+2 emissions (tCO2e)	800	290	63.0%

Absolute emissions targets | WBC

Absolute emissions targets | 1.5C

The Tool can be accessed here: [link](https://www.sciencebasedtargets.org)

Route to Setting a Target: SMEs

(The SBTi define an SME as a non-subsubsidiary, independent company with fewer than 500 employees)



Route to Setting a Target: SMEs



- Special, quicker route for SMEs (less than 500 employees and not part of parent company)
- The SME can go straight to setting a SBT for their scope 1 and 2 emissions
- The business must choose one of temperature pathways, and within that choose one of the three pre-defined base-year options (2018, 2019 or 2020) in the Target Setting Letter
- Whilst the SBTi does not approve SME's scope 3 targets, the SME does have to commit to measuring them
- As with large organisations, SMEs must communicate their targets and publicly disclose their emissions inventory and progress against targets on an annual basis
- Costs USD 1,000 to get validated

The Target-setting form for SMEs is at <http://form.jotform.co/targets/sme-target-validation>

Key Reporting Mechanisms

Legislative

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Voluntary

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National Highways specific

- Carbon emissions calculation tool



National Highways carbon reporting tool

Why is it important to measure and report Carbon emissions:

Primary reason for measuring Carbon Emissions is It supports NH Net Zero Action Plan (July 2021) which sets out our target to be net zero for our maintenance and construction activities by 2040. We can only deliver our net zero ambitions with the support and involvement of our supply chain.

Our targets are supported by our standards, including GG103: Introduction and general requirements for sustainable development and design, which requires that carbon emissions (greenhouse gases or carbon dioxide equivalents) associated with the whole life of a project shall be minimised.

Carbon Accounting Reporting Tool:

- Use the latest version 2.5 from the website – It will be updated once a year
- All suppliers are currently reporting Quarterly but will be expected to report monthly going forward (April 2023)
- If we do not receive a return this will result in QMP in line with Metric 7.1 c in the CPF
- Link to the latest Carbon Accounting Reporting Tool

<https://nationalhighways.co.uk/suppliers/design-standards-and-specifications/carbon-emissions-calculation->

Resources – Free Carbon Data & Tools

- **Carbon Reporting and Carbon Footprinting e-learning modules** available through the Supply Chain Sustainability School
- **PAS 2080** available for free through BSI
- **Guidance Document for PAS 2080** available for free through ICE
- **Defra 2022 Greenhouse gas reporting conversion factors**: the UK Government's database of carbon factors for fuel, energy, transport, and materials, updated annually
- **Bath Inventory of Carbon and Energy (ICE) database**: a well-established database of embodied carbon factors for a variety of materials, updated periodically.
- **The Embodied Carbon in Construction Calculator (EC3) Tool**: a database of EPDs for construction products
- **Carbon Trust Carbon Calculator** for SMEs: The Carbon Footprint Calculator has been designed to help UK based SMEs measure their corporate emission footprint following GHG Protocol Guidance, including direct emissions from fuel and processes (Scope 1 emissions) and those emissions from purchased electricity (or Scope 2 emissions) for the assets they operate
- **National Highways Carbon Emissions Calculation Tool**: Free-to-download Excel tool to calculate carbon emissions for operational, construction and maintenance activities undertaken on behalf of National Highways that draws on Defra and Bath ICE dataset. Includes guidance
- **National Highways Net zero highways plan**
- **Hawkins\Brown: Emission Reduction Tool**: An open source Revit-based tool that enables design teams to quickly analyse and clearly visualise the embodied carbon emissions of different building components and construction material options at any time during the design process
- **Science Based Targets initiative** step by step process guide
- **SBTi Target Validation Application for SMEs**
- **Greenhouse Gas Protocol Corporate Standard**: The handbook of carbon footprinting
- **Greenhouse Gas Protocol Scope 3 Guidance**: Specific help on calculating emissions from the value chain

Thank you!

Naomi Pratt

- Consultant at Action Sustainability
- naomi@actionsustainability.com
- www.actionsustainability.com
- @Action_Sustain



Saroj Bhatoa

- Head of Strategic Delivery
- Saroj.Bhatoa@nationalhighways.co.uk

