FDF - Net-Zero for Food and Drink

How to Develop Net-Zero Targets

Presented by:
Bob Robinson
25th May 2021

global **environmental** and **advisory** solutions

food & drink federation
passionate about food & drink

SLR

WELCOME

Bob Robinson – Principal, Carbon and Energy Management, SLR Consulting

Bob is a Principal with SLR and is responsible for developing and delivering projects in the energy efficiency, resource efficiency and carbon management areas. Bob has over 13 years' experience within energy and carbon management and 19 years industrial plant experience covering process development, project engineering to plant management.

Bob was technical author to FDF report "Decarbonisation of heat across the food and drink manufacturing sector"

What we'll cover today

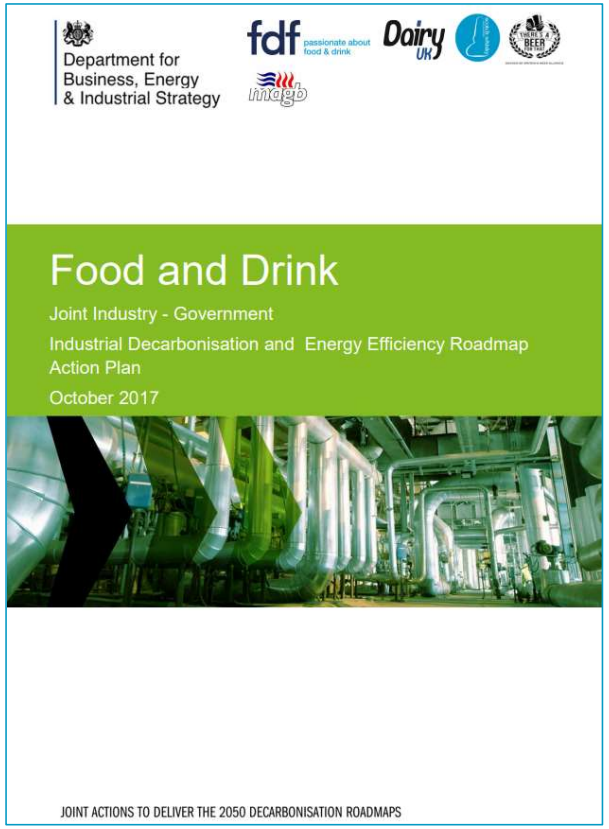
- **Background** to Net Zero Targets and Science Based Targets
- **What is everyone else doing?** – Competitor and customer analysis
- **Know where you are starting from** - set baseline year
- **Know your emissions** - Scope 1, Scope 2 and Scope 3
- **How can you improve?** – Reduce your emissions: Scope 1 and 2
- **How can you improve?** – Reduce your emissions: Scope 3
- **Target calculation and selection**

NET-ZERO TARGETS- BACKGROUND

Targets

In response, various targets have been set both internationally and at the UK level:

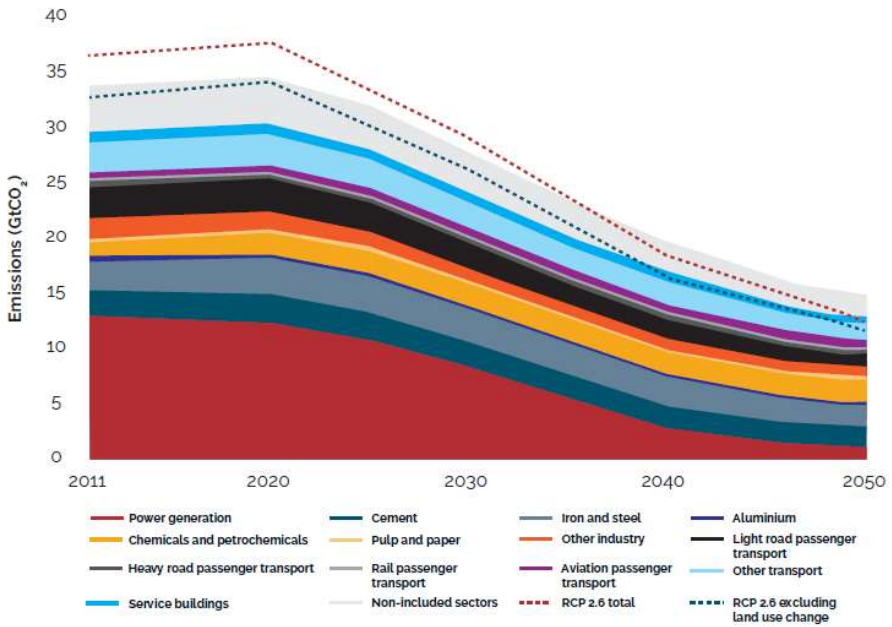
- Kyoto Protocol 2005 - (UK 12.5% reduction in first target period 2008-2012 from 1990 baseline)
- Paris Climate Agreement 2016 - limit global warming to well below 2°C and pursuing efforts to limit it to 1.5°C
- EU - to be climate-neutral by 2050 (net-zero greenhouse gas emissions)
- UK - All greenhouse gas emissions to 'Net-zero' by 2050
  - The Climate Change Act 2008 (2050 Target Amendment) Order 2019



SBTi – The Target

- Targets must cover a minimum of 5-years and a maximum of 15-years from the date the target is submitted to the SBTi validation
- The baseline must not be earlier than 2-years prior to the year of submission for validation
- Specific methodologies can be applied to the target:
  - **'Absolute emissions contraction'** - This equates to at least
    - a **2.5%** absolute reduction per year for well-below **2°C** alignment
    - or a **4.2%** absolute reduction per year for **1.5°C** alignment
  - 'Sectoral Decarbonization Approach (SDA)'
    - not yet available for F&D Sector
  - 'Economic Intensity Contraction'
    - (appropriate for financial institutions)

Figure 8. Sectoral breakdown of absolute CO_2 emissions budget, 2011–50

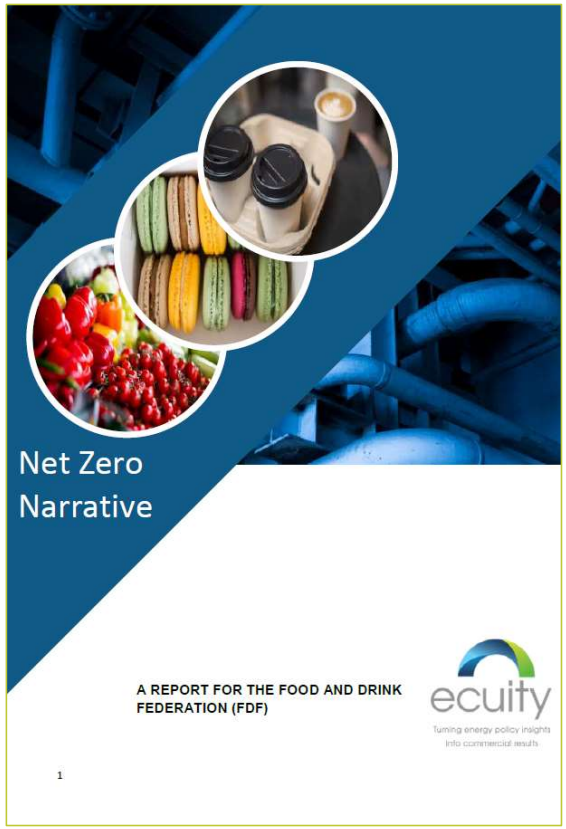


FDF

The Food and Drink Federation (FDF), has ambition on behalf of the sector to reach net-zero emissions by 2040.

A recent survey and analysis across FDF members showed:

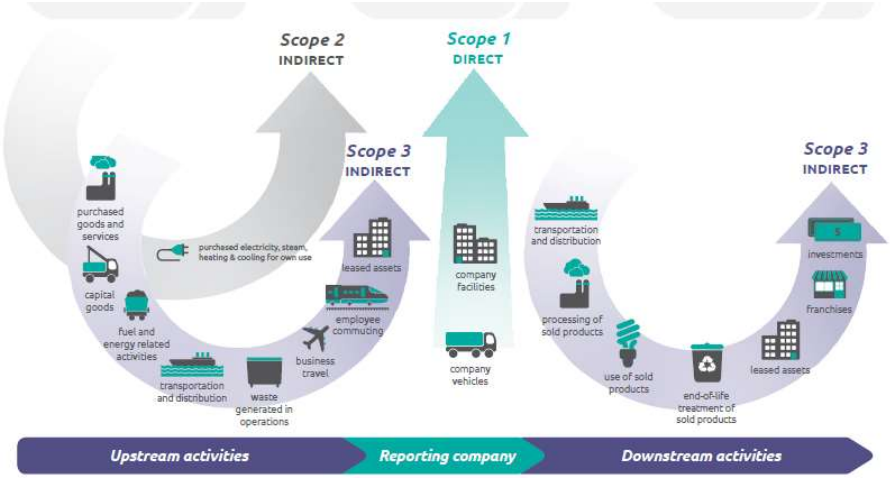
- 65% indicated they do not have climate change and/or sustainability targets
- Many companies who have set targets are inconsistent
  - No baseline year defined
  - May include Scope 1, Scope 2 and/or Scope 3 emissions
  - May not have roadmap and milestones to achieving targets



What are the Scopes of Emissions?

- Under GHG Protocol Methodology – GHG emissions categorised by Scope
  - Scope 1 – Direct e.g. Natural gas, diesel, Refrigerant gases
  - Scope 2 – Indirect from purchased energy e.g. electricity, heat
  - Scope 3 – Indirect (all other) e.g. from waste, water, commuting etc.

Image from GHG Protocol Corporate Reporting Standard



TARGET SETTING PROCESS

WHAT IS EVERYONE ELSE DOING?

Step 1 – Competitor and customer analysis

Understand Competitors

- Understand ambitions of competitors
  - Focus on Scope 1 and 2
  - Include Scope 3

- Examples from SBTi
  - Baseline years 2010-2019
  - Scope 1 and 2 reduced by 30 – 100%
  - Scope 3 reduced by 15 – 45%
  - Target date 2025 - 2030

Understand Customers

- Large food retails are engaging with their upstream supply chains to reduce carbon
  - **M&S** committed to SBTi, cutting 13.3m tonnes of CO2e from their wider value chain. Also signed up to Meat in a Net-Zero World
  - **Tesco** in the UK committed to SBTi, are aiming to reach net zero earlier, by 2035. Tesco also commits to reduce its scope 3 GHG emissions by 17% by 2030, using a 2015 base-year.
  - **Sainsbury's** committed to SBTi, to reduce its Scope 3 Greenhouse Gas emissions by 30% by 2030, together with a net zero target for its Scope 1 and 2 emissions by 2040
  - **Morrison's** to reduce operational emissions on an absolute basis against a 2017 baseline by 33% by 2025, 53% by 2030 and to reach net zero emissions by 2040. Over the next year will be setting a science-based target for scope 3 emissions and will be encouraging our suppliers to work with us on this shared goal.
  - **Asda** 50% reduction in Scope 1 and 2 by 2025, develop measurement of Scope 3

KNOW WHERE YOU ARE STARTING FROM

Step 2 – Set baseline year

Set Baseline Year

- Choose representative year for normal operation
  - 2020 and 2021 impacted by COVID. Could have reduced emissions, impact of social distancing and bubbling measures.
  - Comparable operations. Try and avoid large scale restructuring
  - Peer and competitor comparison.
  - Most companies choose calendar year as baseline
    - Government using 1990 baseline
    - Competitor analysis, most using year between 2016 – 2019 as representative
    - For SBTi must not be more than 2 years before submission
  - May also depend on available data

KNOW YOUR EMISSIONS

Step 3 – Calculate your emissions

Calculating a Carbon Footprint

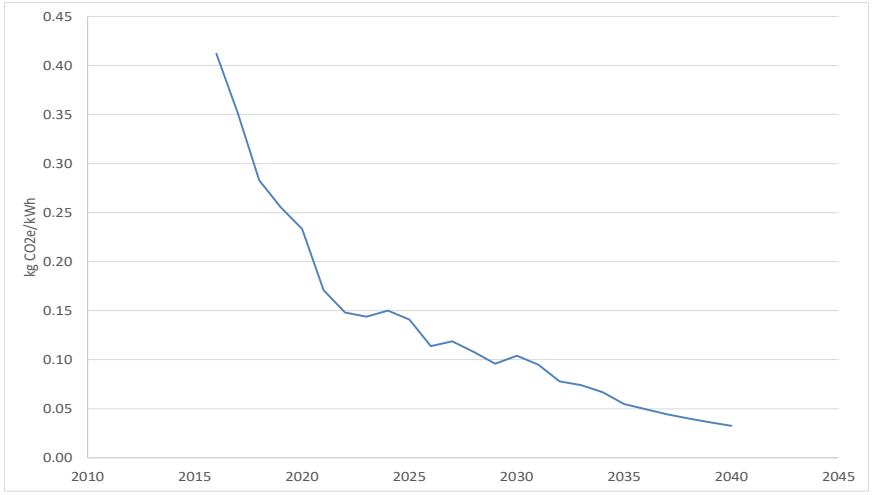
1. Confirm the Boundary
2. Identify Emission Sources
3. Collect Data and choose factors
4. Calculate Emissions
5. Verify Data (optional)

Scope 1 Emissions

- What to include
  - Direct energy consumption – gas, propane, oil, biomass
  - Direct transport emissions – where fuel is paid for directly
  - Direct process emissions – CO_2 from fermenting or inertising
  - Direct fugitive emissions – refrigerant gas losses
  - Other combustion gases – N_2O, methane
- Things to consider
  - Make sure you understand the units of measure
  - Verifiable data sources
  - Same baseline period for all emission sources
  - Can use measured combustion gas composition or government figures
  - Use recognised conversion factors to CO_2 equivalent
    https://www.gov.uk/government/collections/government-conversion-factors-for-company-reporting

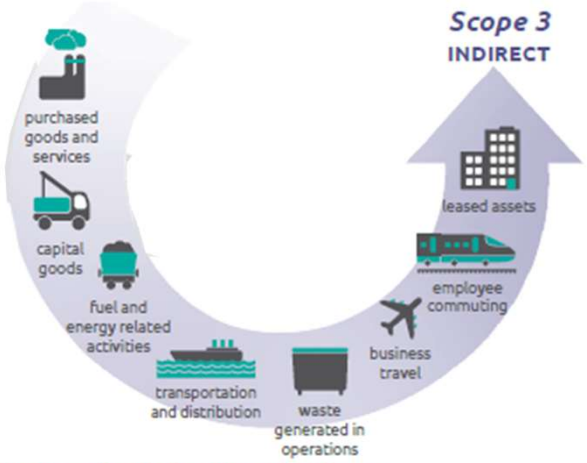
Scope 2 Emissions

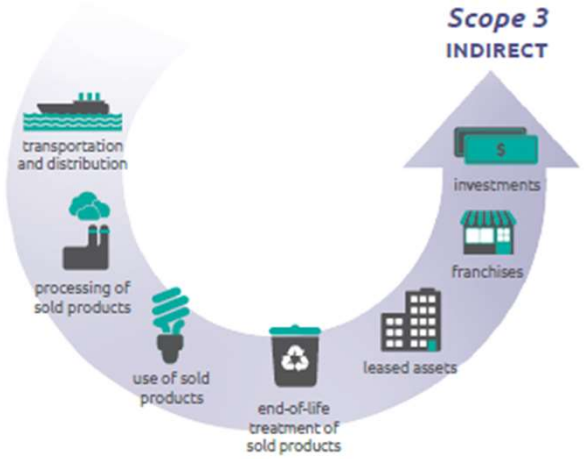
- Grid electricity
  - UK grid decarbonisation – emission factors change every year
  - May have certified renewable electricity
- Other imported secondary energy
  - Private wire or 3rd party CHP
  - Imported heat or steam



Scope 3 Emissions

- Boundary definition will impact Scope 3 calculation
  - "Field to dispatch", "field to shelf, "field to fork", "field to waste".
- Initial estimates using Value Chain Analysis, then more detail in significant areas
- SBTi only mandatory to report Scope 3 if >40% of total footprint.
- Separate FDF Webinar on Scope 3 emissions on 13th July 2021





HOW CAN YOU IMPROVE?

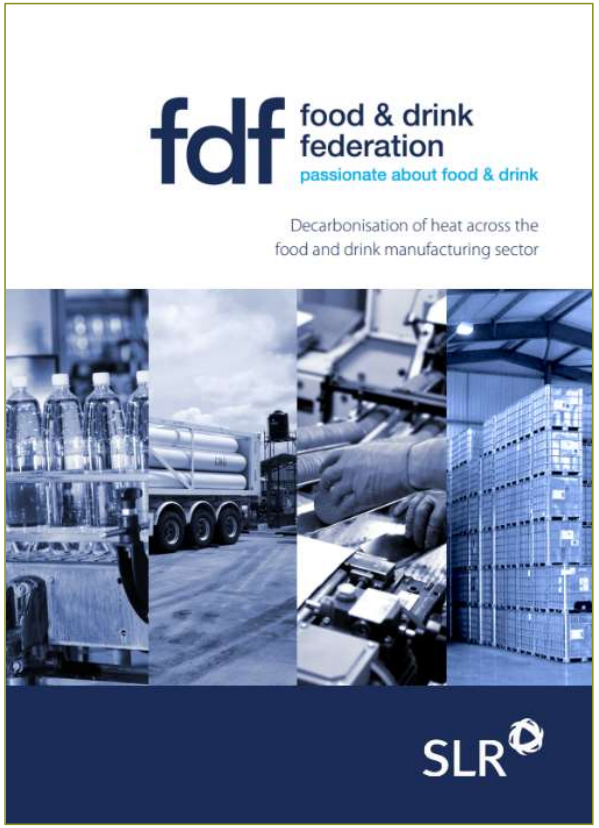
Step 4 – Reduce your direct emissions, scope 1 and 2

Known reduction measures

- Quantify known mitigation measures
  - Grid decarbonisation
  - Energy, resource and carbon efficiency
    - Make the best use of ESOS, ISO 50001
    - Supplement pipeline using ESOS Phase 3
  - Energy sourcing
    - Can you purchase green energy
  - F-gas compliance
    - Reducing F-gas losses

Industry trends and best practices

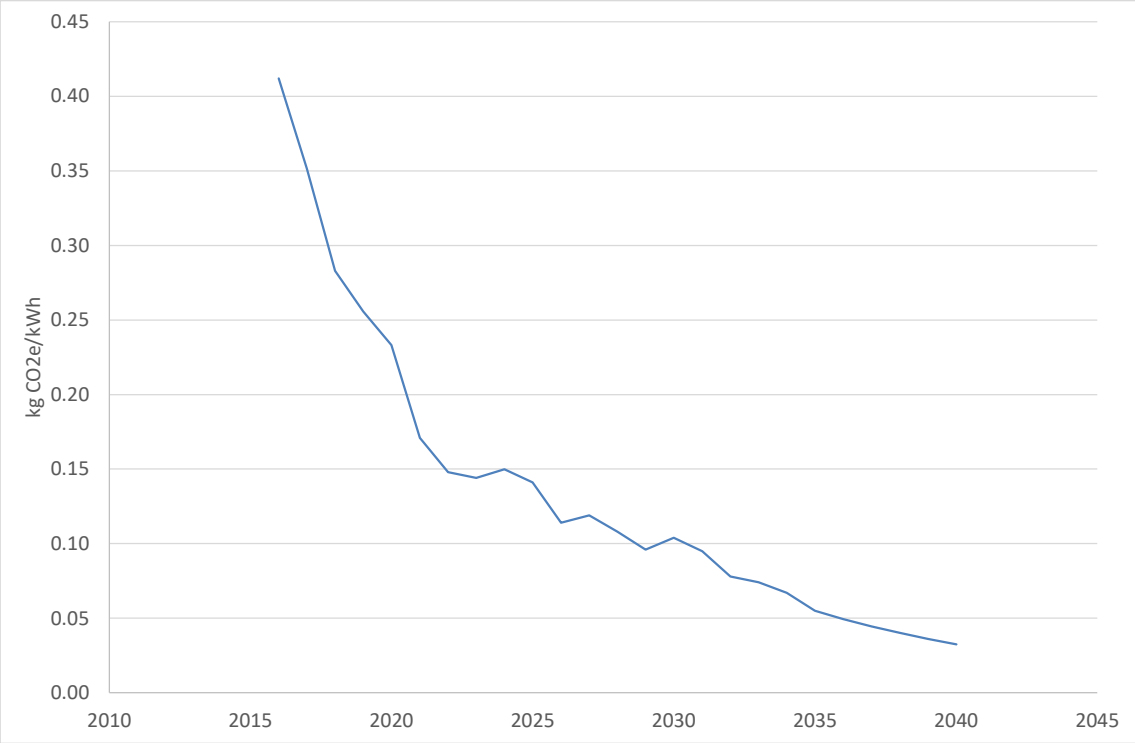
- What new methods and technologies are there to reduce emissions?
  - Consider asset replacement strategy
  - Target date may be 2025, 2030, 2040
- FDF Decarbonisation of Heat
- New emerging energy sources
  - Hydrogen and hydrogen blends by 2030-2040
  - Ammonia combustion development 2025-2030



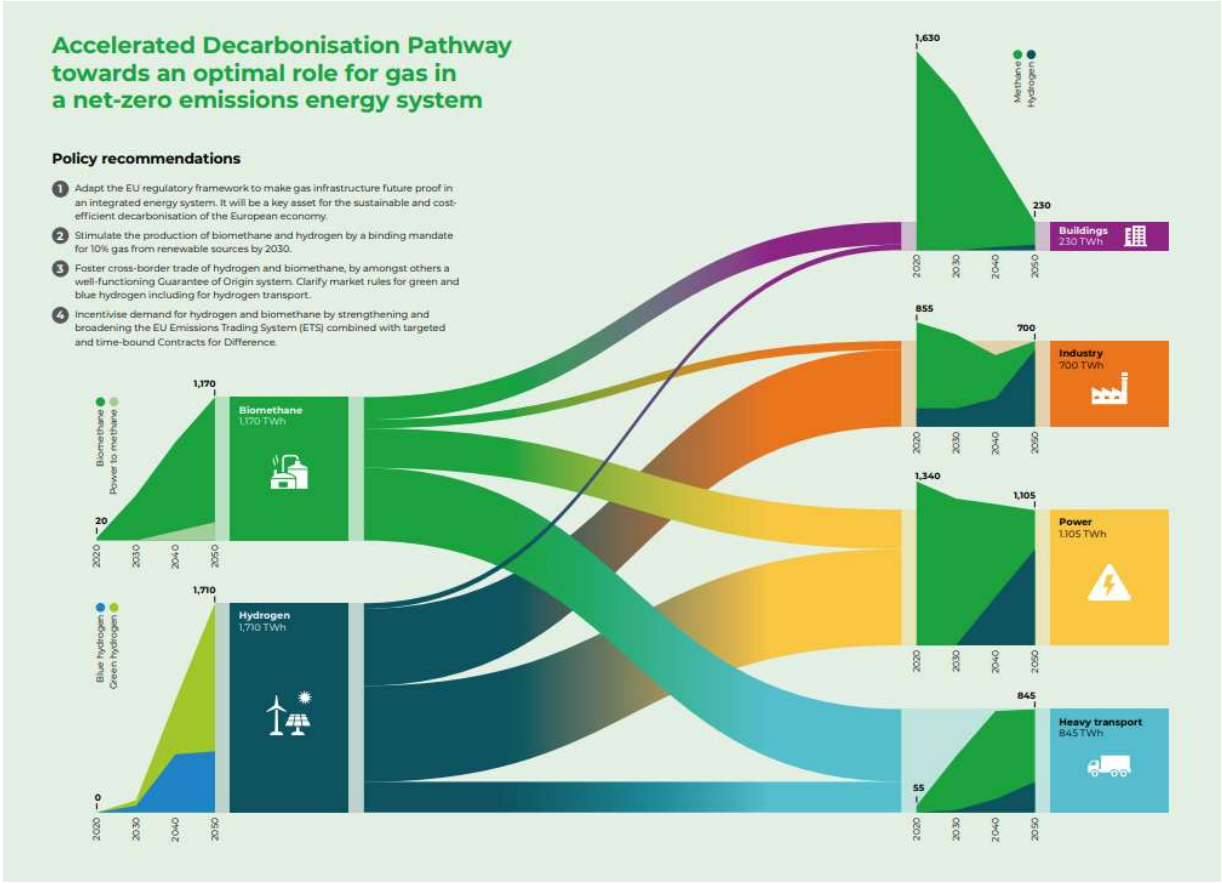
Energy sourcing

- Electricity grid decarbonisation
- Proposed gas grid decarbonisation
- Green electricity tariff, green gas tariff
  - Look to secure Renewable Energy Guarantees of Origin or REGO Certificates
- Renewable energy and energy from waste

Electricity Grid Decarbonisation



Gas Grid Decarbonisation



Cost/Benefit and Risk Analysis

- Calculate benefits and costs for every measure
- Determine risk to reputation, quality, safety Etc
- Determine which are acceptable to consider further

Action	Energy saving	Water Saving	Waste Saving	Carbon saving	Estimated CAPEX	Estimated OPEX	Estimated Financial Benefit	Simple Payback	Costs				Legislation						Customers					Competitors				Risks					
									Energy Costs	Waste cost	Water/waste water	Operational Cost	SECR	Packaging waste: producer responsibilities	Environmental Permitting	Consent levels	F-Gas	MCPD	M&S	Tesco	Sainsbury's	Morrison's	Cash and carry	ABC Company	DEF Asscoaites	GHI Foods	JKL Bakery	Food hygiene	Safety	Quality	Yield	Waste	Community
	kWh/yr	m^3/yr	tonnes/yr	tCO_2e/yr	£	£/yr	£/yr	no. of yrs																								
Buy green electricity	0	0	0.0	2,000	0	0	-20,000	0.0	Y	N	N	Y	Y	N	N	N	N	N	Y	Y	Y	N	N					N	N	N	N	N	Y
Buy green gas	0	0	0.0	3,500	45,000	0	-45,000	0.0	Y	N	N	Y	Y	N	N	N	N	N	Y	Y	Y	N	N					N	N	N	N	N	Y
Energy efficiency	75,000	0	0.0	17	50,000	5,000	23,546	2.1	Y	N	N	Y	Y	N	N	N	N	N	Y	Y	Y	N	Y	Y	N	Y	Y	N	N	N	Y	N	N
Lighting	130,000	0	0.0	34	100,000	0	35,621	3.0	Y	N	N	Y	Y	N	N	N	N	N	Y	Y	Y	N	Y	Y	N	Y	Y	N	N	N	Y	N	N
Refrigeration upgrades	451,023	2,000	0.0	105	420,000	23,000	180,000	2.4	Y	N	N	Y	Y	N	Y	N	Y	N	Y	Y	Y	N	N	N	N	N	N	N	Y	N	N	Y	Y

HOW CAN YOU IMPROVE?

Step 5 – Reduce your direct emissions, scope 3

Scope 3 Reductions

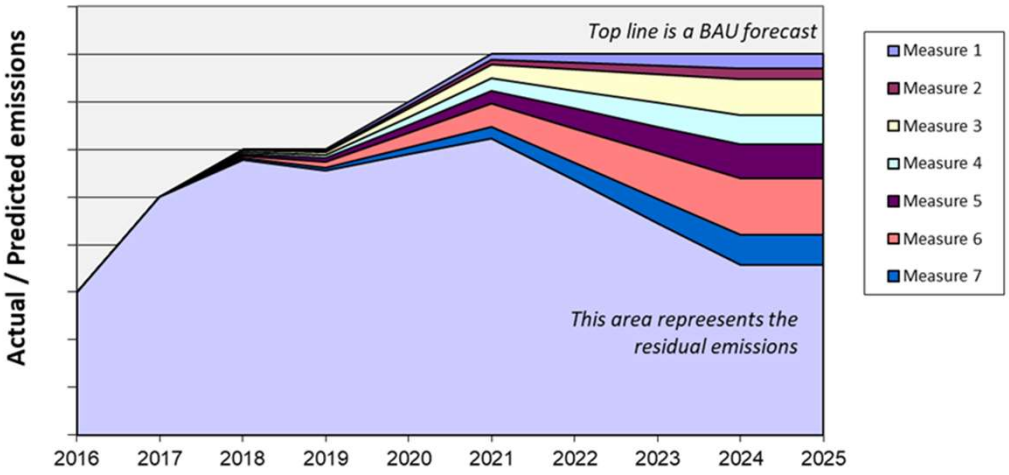
- These emissions are partially outside of your control. The first step is to understand where Scope 3 emissions are and how they could be influenced
- Some concrete measures to reduce
  - Change raw ingredient sourcing
  - Reduce food wastage through pack sizes, formulation etc
  - Reduce carbon impact of waste processing and disposal;
  - Reduce process waste, waste segregation, encourage energy from waste
  - Packaging changes impact upstream supply chain and downstream disposal
  - Distribution logistics impacts 3rd party haulage and warehousing
- Speak to your suppliers and customers
  - They may already be reducing for you

TARGET CALCULATION AND SELECTION

Step 6 – Target

Target – Scope 1 and 2

- Include measures outside your control
  - Grid decarbonisation etc
- Select
  - Measures to implement
  - When
- Calculate
  - Predicted change in carbon per year
  - Cost per year
  - Cost to offset residual emissions
- Optimise
  - To meet customer requirements
  - To reach net zero
- Target Scope 1 and 2
  - Agree with senior managers
  - Employee awareness



Target – Scope 3

- Estimate benefit from each measure
  - Packaging
  - Transport
  - Waste etc
- Estimate impact from customer and supplier commitments

Recognised Off-Sets

The entity shall reconcile the amount of carbon offset credit required to offset the reduced GHG emissions to achieve carbon neutrality. The offsets should meet the following principles:

- Represent genuine, additional GHG emission reductions
- Meet the criteria of additionality, permanence, leakage and double counting
- Be verified by an independent third party verifier
- Be issued after the emission reduction project has occurred
- Credits to be retired within 12 months from the date of the declaration of achievement
- Be supported by publicly available project documentation
- Be stored and retired in an independent and credible registry e.g.
  - Kyoto Complaint Off-sets – Certified Emission Reductions (CERs)
  - EU Allowances
  - Voluntary Remission Reductions (VERs) e.g. Gold Standard, Voluntary Carbon Standard

FURTHER INFORMATION

ADDITIONAL INFORMATION

PAS2060

https://www.bsigroup.com/en-GB/PAS-2060-Carbon-Neutrality/

GHG Protocol

https://ghgprotocol.org/

Science Based Targets

https://sciencebasedtargets.org/

CDP

https://www.cdp.net/en/

Scope 3 Databases

No Standard database for Scope 3

- Some basic factors
  https://www.gov.uk/government/publications/greenhouse-gas-reporting-conversion-factors-2020
- Scope 3 - Upstream Transportation and Distribution, Business Travel, and Employee Commuting
  https://ghgprotocol.org/ghg-emissions-calculation-tool
  Life cycle databases available (over 50)
  https://ghgprotocol.org/life-cycle-databases
- CEDA – Comprehensive Environmental Data Archive
  https://www.vitalmetricsgroup.com/environmental-databases
- Commercial database
  https://carbonchain.com/products/producers
- Scope 3 – High level Scope 3 assessment
  https://quantis-suite.com/Scope-3-Evaluator/
- IPCC guidance
  https://www.ipcc-nggip.iges.or.jp/public/2019rf/vol4.html

QUESTIONS

Thankyou

Bob Robinson
brobinson@slrconsulting.com
07814 050812

global **environmental** and **advisory** solutions