AMCL✚

LEADING ASSET MANAGEMENT

Starting your journey to Net Zero

Carbon Accounting

Introduction

For too long concerns about climate change have not been met by coordinated action.

In recent decades, atmospheric concentrations of greenhouse gases (GHG) have increased to their highest levels in

800,000 years

2°C

For 2°C of global warming, heat extremes will more frequently reach critical tolerance thresholds for both agriculture and human health.

The Climate Emergency

There is a direct relationship between the increase in GHG and the increase in average temperatures worldwide, with CO_2 accounting for three-quarters of total emissions.

1.5°C

For 1.5°C of global warming, there will be increasing heat waves, longer warm seasons, and shorter cold seasons.

The result is the current climate emergency: warming of the atmosphere and oceans, changes in the global water cycle, reduction of snow and ice around the polar ice caps, rising sea levels, and changes in the frequency of extreme weather events.

The Intergovernmental Panel on Climate Change (IPCC) has forecast that in the coming decades, the rate at which our climate changes will increase. Considering the rate at which global temperatures have increased in recent decades and the continual increase in carbon emissions, we need to take action and start reducing carbon emissions before it is too late.

NOW
IS THE TIME TO ACT

There is still time for human action to determine the future course of our climate. To slow down and ultimately halt rising global temperatures, we need to stabilise the climate. This requires sustained reductions of GHG emissions and reaching net zero, the state in which GHG emissions going into the atmosphere are balanced by removal out of the atmosphere.

At the 21st Conference of Parties (COP 21) in Paris[1], 195 countries negotiated a binding agreement to limit global warming below 2°C compared to pre-industrial levels and to pursue efforts to limit the temperature increase to 1.5°C. The UK was the first major economy to target achieving net zero by 2050 with many other governments following suit. However, the development of a net zero society necessitates that everyone takes responsibility for the carbon emissions they release into the atmosphere, including both public and private organisations. Businesses emit 26% of greenhouse gases in the UK (see Figure 3) which highlights the importance of leaders and organisations taking responsibility for achieving the net zero targets. At COP 26 in Glasgow, 2021, the private sector made similar pledges; over 90% of the world's assets are now covered by net zero pledges. This has fundamentally changed the global business environment. We all need to play an active role in solving the challenge since no organisation can thrive unless people and planet are thriving.

To achieve net zero, the first step for all organisations is to understand the current level of carbon emissions that they emit. Once identified, organisations will have the data to inform decision making, so that plans and management practices can be developed to reduce emissions across all layers of the organisation, tied to a timeframe that is achievable. This is where carbon accounting – a methodology to quantify emissions – becomes extremely important to help prevent the potential climate disaster.

Transport
28%

Business
26%

Other
6%

Exports
2%

Residential
23%

Agriculture
11%

Waste Management
4%
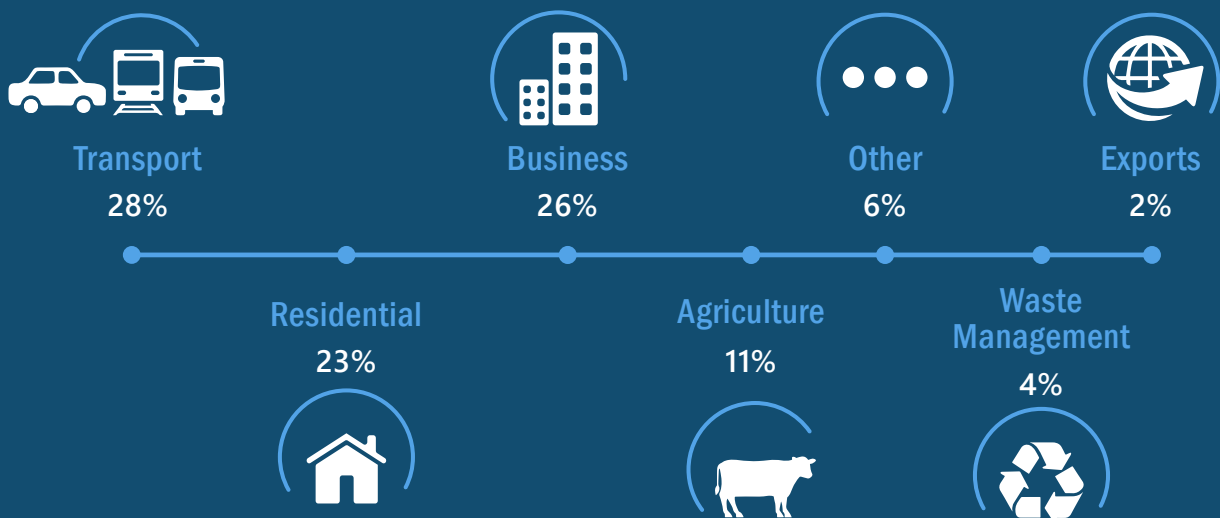
Source: Table 5.1, Final UK greenhouse gas emissions national statistics: 1990 to 2020

[1] **Paris Agreement: Next Steps**

Why is Carbon Accounting important to your organisation?

The Business Need

Organisations are coming under increasing pressure to act, not only from environmentalists and scientists but from rapidly awakening public opinion.

Society's expectations of business have changed more in the past two years than in the previous twenty. A pandemic, energy crisis and expanding and ever-more-expensive natural disasters have moved us past a tipping point.

A truly global initiative to address GHG emissions is some way off, but the major industrialised nations and developed countries are taking the lead to initiate formal regulations to mandate change. Both the EU and the USA have introduced and/or are discussing legislation to force affected organisations to publish their carbon emissions and to encourage them to actively reduce their footprint. The UK requires quoted companies to report on their global energy use and emissions, and large businesses to disclose their UK annual energy use and emissions. In corporate terms, stakeholders from all sides are pressuring organisations to adopt cleaner procedures and to become aware of their carbon footprint.

There are typically two main drivers for organisations wanting to calculate their carbon footprint:

- To report emissions accurately to a third party
- To manage and reduce emissions and energy consumption over time.

BENEFITS

Beyond the imperative of protecting our world's climate, the adoption of carbon management practices can also deliver associated business benefits.

Savings in energy consumption

Understanding where carbon emissions are generated is the first step to reducing them and reducing costs.

Public Relations

Companies that voluntarily disclose their emissions and set climate change goals will benefit from stronger public reception.

Business Benchmark

Carbon accounting encourages an outside-in view of the organisation and creates an opportunity to assess why things are done in a certain way and identify areas for improvement.

Talent recruitment and retention

In a competitive labour market, sustainability credentials of organisations are an important factor for current and future employees.

Brand Value and Image

Detailed carbon reporting can set an organisation apart from their competitors, demonstrate a carbon-conscious corporate culture and attract customers, investors and other stakeholders.

Improved data management capabilities

Carbon accounting enhances data collection and management capabilities, enabling the organisation to better use data to drive management decision-making and set strategies and reduction targets.

Futureproofing

Carbon reporting helps business to understand and mitigate the risks of climate change to their organisation and stakeholders, and ensure compliance with new regulations. As carbon management becomes legislated, companies will also look to reduce the carbon footprint of their supply chain. Reducing emissions today therefore protects against future loss of work.

What is Carbon Accounting?

Emissions are not measured with the use of sensors; they are estimated by calculation methods and the use of emissions factors. The carbon dioxide equivalent (CO_2e) produced by a given activity depends on a series of factors, such as the energy mix used to produce electricity, or the type of fuel used. Emissions factors are set by specialised bodies which vary from country to country and are publicly available.

The carbon footprint of an organisation, project or process is estimated by multiplying all activities involved by its emission factors. These procedures were established by the United Nations Framework Convention on Climate Change (UNFCCC) and are based on the method developed by the IPCC to measure emissions.

There are different international standards available that provide transparent frameworks to calculate emissions, such as:

- International Organisation for Standardization, ISO (ISO 14064)
- GHG Reporting Protocol - Corporate Standard
- Climate Disclosure Standards Board (CDSB)

Depending on the purpose of carbon accounting, two different methods can be used:

- Attributional methods, which create an inventory of emissions and traditional product lifecycle assessments; or
- Consequential methods, which quantify the change in emissions caused by decisions or interventions. This method is also called intervention accounting.
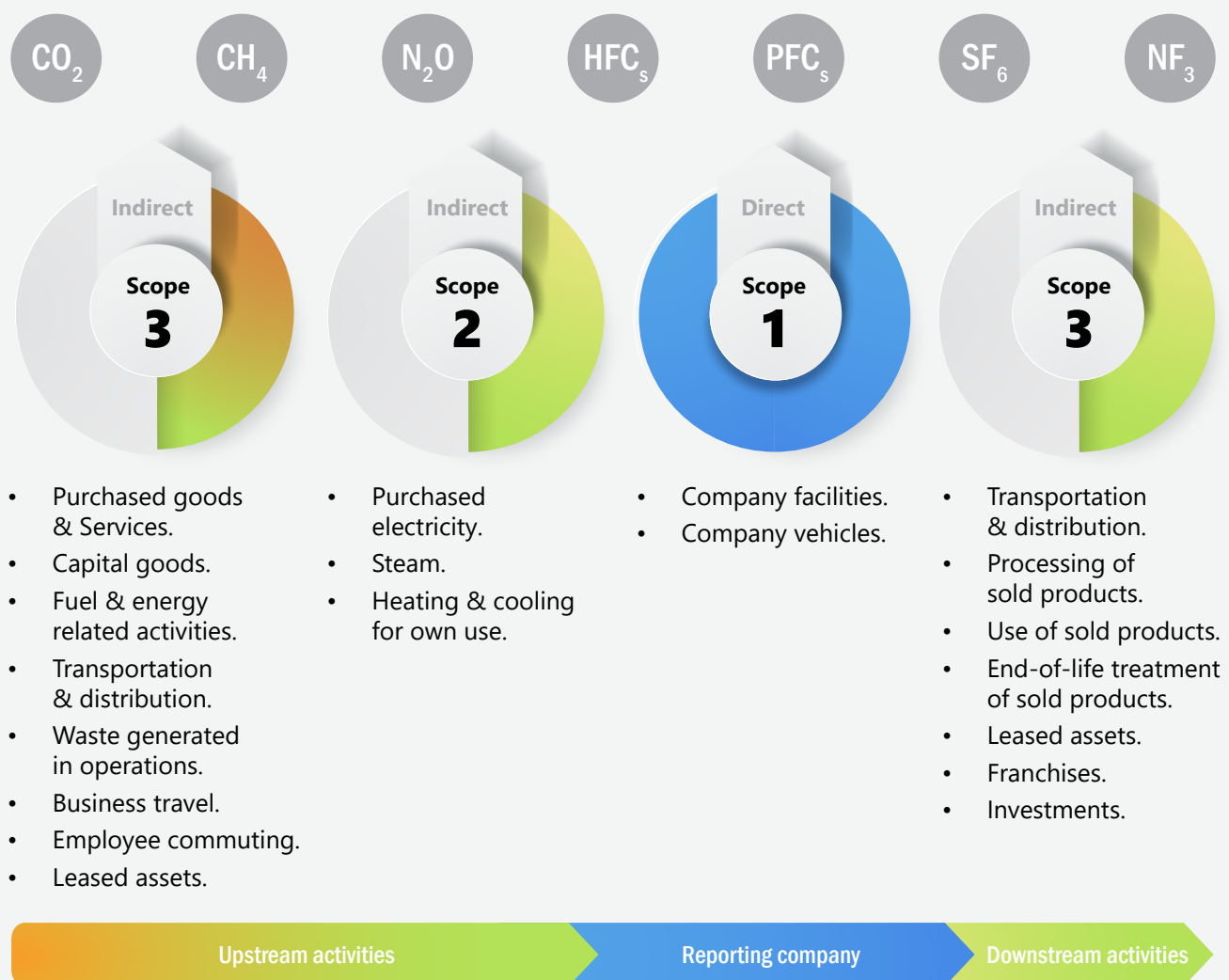
Scope 1, 2 and 3 Emissions

Carbon emissions are divided into three tiers, called scopes, depending on their source:

- **Scope 1 emissions:** Emissions released to the atmosphere as a direct result of an activity or series of activities at a facility level (also referred to as direct emissions). Examples include emissions produced from manufacturing processes, fugitive emissions such as methane emissions from natural gas extraction, or the onsite production of electricity by burning coal.

- **Scope 2 emissions:** Emissions released to the atmosphere from the purchased electricity, steam, heating and cooling (also called indirect emissions).

- **Scope 3 emissions:** Indirect emissions other than Scope 2 emissions that are generated in the wider economy. They occur as a consequence of the activities of a facility, but from sources not owned or controlled by that facility's business. Scope 3 emissions are sometimes referred to as supply chain emissions.

Figure (1) Overview of GHG Protocol scopes and emissions across the value chain

CO_2 CH_4 N_2O HFC_s PFC_s SF_6 NF_3

Indirect — **Scope 3**
- Purchased goods & Services.
- Capital goods.
- Fuel & energy related activities.
- Transportation & distribution.
- Waste generated in operations.
- Business travel.
- Employee commuting.
- Leased assets.

Indirect — **Scope 2**
- Purchased electricity.
- Steam.
- Heating & cooling for own use.

Direct — **Scope 1**
- Company facilities.
- Company vehicles.

Indirect — **Scope 3**
- Transportation & distribution.
- Processing of sold products.
- Use of sold products.
- End-of-life treatment of sold products.
- Leased assets.
- Franchises.
- Investments.

Upstream activities → **Reporting company** → **Downstream activities**

What are Carbon Accounting tools?

Overview

Carbon accounting tools, or carbon calculators, enable nations, organisations, and individuals to develop inventories of their carbon emissions. These estimate CO_2e emissions and track their progress towards achieving their climate goals.

They range from focussing solely on estimating emissions to enabling organisations to trade carbon credits. The market, however, is changing rapidly and the number of companies offering carbon accounting solutions is significant, making it difficult for organisations to evaluate options available and commit to a solution.

APPROACHES

Historical analysis

These carbon accounting tools are typically straightforward to use and provide a good point of entry, particularly for companies that do not have a strategy for proactively managing business risks associated with climate change and energy consumption. These tools typically enable participation in reporting initiatives, GHG registries, and GHG trading programs. The most basic example is the suite of Microsoft Excel-based tools provided by the World Resource Institute in support of the Greenhouse Gas Protocol.

Lifecycle analysis-based

Companies interested in product carbon footprinting should consider tools that estimate a product's total carbon impact based on a lifecycle analysis (LCA). Carbon emissions for a product are estimated based on macroeconomic assumptions about process emissions.

Supply chain-based

Some tools focus on gathering data from a company's supply chain partners. Unlike LCA-based tools, these tools focus on gathering primary data from suppliers. If taking this approach, companies should prioritise key suppliers to focus on, such as major manufacturers or logistics and transport providers. In some tools, carbon data gathering can also be integrated into supplier labour compliance assessments.

Enterprise-based

Enterprise carbon accounting tools use a hybrid methodology, which blends LCA, spend-based and activity-based data to calculate an overview of emissions, allowing a more comprehensive and scalable approach to carbon accounting. These tools could include other features, such as projections and scenario planning, or may focus just on historical accounting and analysis.

Historical analysis plus forward projections

Many tools not only provide a backward-looking accounting of emissions, but also a forward-looking projection based on different scenarios. Projections can include a range of areas, including business-as-usual emissions trajectories and project-specific emissions forecasts. These are particularly helpful for enterprise resource planning (ERP).

Each of these approaches is dependent on a robust understanding of the data and information systems that underpin it. In this regard, carbon accounting is no different from any other digital change programme. Navigating the technology marketplace, developing the information systems and delivering technology change is a complex process which presents its own challenges.

KEY CHALLENGES

Carbon accounting relies on well-understood and well-maintained data combined with a robust management system and technology solution that meets the requirements of the organisation. As with all technology adoption, there are key challenges that organisations are likely to face.

Solutions chosen without a full understanding of the business requirements

With such a variety of tools available, selecting the right solution can be difficult. Creating a set of requirements is essential for all business needs and assets to be captured. The development of a systematic approach to assessing cost versus benefit for each solution will further support implementation.

Data is stranded in silos across the business

As part of the carbon accounting process, data is captured from a variety of sources. This increases the opportunities for silos and miscommunication across the organisation, making data difficult to access in a consolidated way for reporting and decision making. To mitigate this, the organisation should define a data model that ensures a 'single source of truth' and supports 'mobility of data' so that the selected technology can integrate and interface with the data collected across the various asset indicators.

Time and cost to report on sustainability performance is high

Organisations often struggle to estimate the resources required to report on their sustainability performance. Without specific technology solutions, estimating carbon emissions is labour and time intensive. Adopting a technology solution may have a higher up-front cost, but the benefits vastly outweigh traditional, less technical options through time savings, improved accuracy of reporting and greater functionality to analyse and interpret data.

Data quality is inconsistent and unreliable

Producing financial-grade reports requires confidence in the data at every step in the process. Data captured manually may be inaccurate or incomplete due to manual errors. To mitigate this risk, data should be managed as an asset and should be progressively assessed. An effective information management framework, data quality management system and appropriate data governance procedures will help organisations to improve their data quality and, therefore, their carbon accounting.

Ongoing sustainability performance is poorly understood

Without access to consolidated, accurate data, it can be difficult to monitor and manage sustainability performance on an ongoing basis and track the effectiveness of sustainability projects. Staff should understand the value of good quality information and take personal responsibility for data quality. If required, asset data training can be used to embed a good practice data culture and relevant competence management frameworks should be continually monitored and updated to reflect how employees' capabilities change.

Carbon accounting may be a new requirement for many organisations, but the underlying principles are the same for any technology implementation programme. AMCL are specialists in supporting asset-intensive organisations to avoid the common pitfalls associated with technology procurement and implementation, defining data and information requirements, and maintenance of data throughout the lifecycle of the change. Our tried-and-tested tools, techniques and understanding ensure the correct technology is procured to meet the organisation's needs and identify any data quality issues that would prevent the maximum benefit from being realised from the solution.

HOW
CAN AMCL HELP?

It is likely that all UK Companies will be required by law to report emissions data by 2025. This expected legislation, joined by a considerable shift in public opinion and stakeholder pressure, has made carbon accounting an expected practice.
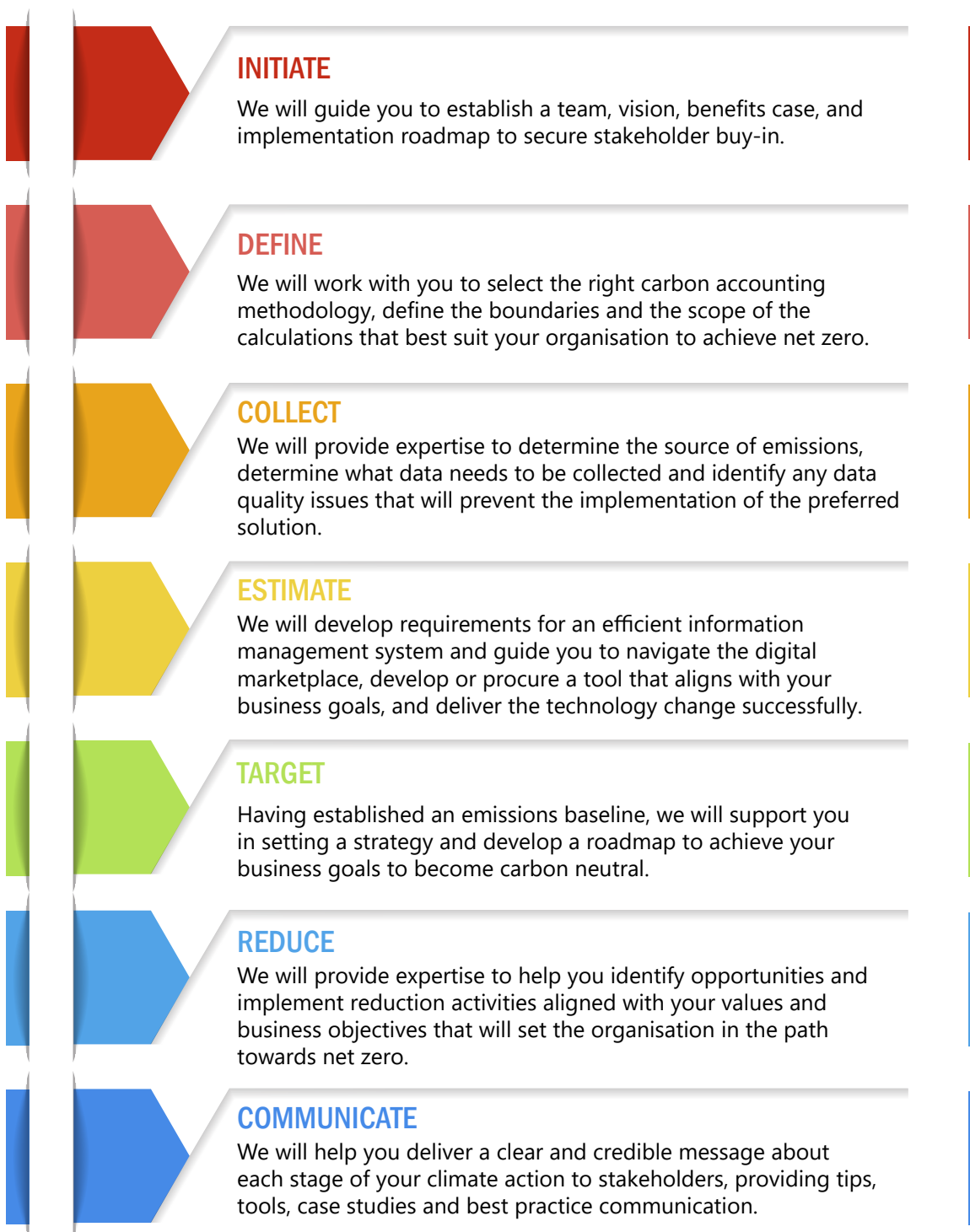
Organisations are under increasing pressure from all their stakeholders to go beyond what is expected as a minimum and, indeed, to champion the cause. There is also significant opportunity in carbon accounting, from cost savings to enhanced reputations.

Carbon accounting is often overlooked, but any company that aims to effectively respond to the mounting pressure and establish a comprehensive climate strategy must take carbon accounting seriously. Calculating carbon emissions can be relatively simple for companies with only one site and a limited supply chain, but for companies with larger operations it can become a complex challenge unless the carbon emissions information is readily available and easily managed in a central system that tracks emission sources to the asset level.

There are numerous carbon accounting tools and carbon emission management software solutions currently on the market that claim to make the carbon accounting process simpler, providing automation, enhancing reporting, or even suggesting reduction opportunities. However, delivering the technology change to embed carbon accounting tools requires a robust understanding of the business and data requirements. Therefore, before going to the market and procuring a solution, organisations need to understand what they want to achieve, the level of information currently available, the maturity of their asset information management system, and the the tools available that best meet their objectives.

OUR APPROACH

At AMCL, we have developed a framework to guide organisations through the carbon management journey and help them to achieve net zero. We provide international, cross-sector expertise and a suite of tried-and-tested tools and methodologies. Using this approach we ensure our clients' management approach to carbon accounting and associated information systems deliver value for them, their stakeholders and their supply chain.

INITIATE

We will guide you to establish a team, vision, benefits case, and implementation roadmap to secure stakeholder buy-in.

DEFINE

We will work with you to select the right carbon accounting methodology, define the boundaries and the scope of the calculations that best suit your organisation to achieve net zero.

COLLECT

We will provide expertise to determine the source of emissions, determine what data needs to be collected and identify any data quality issues that will prevent the implementation of the preferred solution.

ESTIMATE

We will develop requirements for an efficient information management system and guide you to navigate the digital marketplace, develop or procure a tool that aligns with your business goals, and deliver the technology change successfully.

TARGET

Having established an emissions baseline, we will support you in setting a strategy and develop a roadmap to achieve your business goals to become carbon neutral.

REDUCE

We will provide expertise to help you identify opportunities and implement reduction activities aligned with your values and business objectives that will set the organisation in the path towards net zero.

COMMUNICATE

We will help you deliver a clear and credible message about each stage of your climate action to stakeholders, providing tips, tools, case studies and best practice communication.

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