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Am I Carbon Literate?

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Abstract

Carbon literacy is not just having an awareness of the carbon dioxide costs and impacts of everyday activities; it's also having the ability and motivation to reduce carbon emissions on an individual or organisational basis. This motivation and ability to contribute to the mitigation of climate change at an organisational level is becoming more important as the market-led decarbonisation approaches adopted to date have not produced the carbon actions and emission reductions expected. This has left the climate in crisis, the planet in danger and businesses at risk.

The understanding of carbon costs and impacts facilitated by carbon literacy has a particular value from a business perspective. In the increasingly carbon conscious B2C and B2B marketplaces, 81% of customers now prefer to buy from a company with an approach to the environment they can trust. Larger companies demand carbon awareness and carbon management practices from their supply chain partners. The question businesses must ask themselves is, "am I carbon literate?"

Key words: Carbon literacy, Carbon consciousness, Carbon action

Introduction

The climate crisis is the defining crisis of the world today. Climate change resulting from greenhouse gases trapping heat in the atmosphere has taken the focus of the world since the Kyoto Protocol in 1997. This was supported globally, signed by 191 countries, and attempted to set a global strategy to protect the planet, people and businesses from the impacts of increasing emissions of gasses such as carbon dioxide, methane, nitrous oxide, and water vapour (termed carbon emissions).

The release of greenhouse gases was originally considered to cause global warming. Now, as the full impacts of the rising atmospheric emissions became understood the term climate change reflects the more significant changes. The impacts are now strongly felt first hand by individuals and organisations, and people are recognising it is more serious, widespread, and damaging than expected. The terms global heating and climate crisis have been adopted (United Nations Development Programme, 2023).

The impacts of the climate crisis go well beyond the previously expected environmental degradation and sea-level rises. Extreme weather events, economic disruption, food and water insecurity, gender violence, displacement of people, destruction of livelihoods, violent conflict and terrorism are becoming progressively more serious future impacts (United Nations, 2020; Stern, 2022; United Nations Development Programme, 2023). Whilst the world's richest may be able to fund mitigation and adaption, those facing poverty rarely have access to the resources (natural and financial) or support required to survive the climate change impacts. Displacement or death are becoming the growing outcomes (United Nations, 2020).

Market and regulatory decarbonisation approaches adopted at the national level have failed to drive carbon emission reduction down sufficiently to make a real difference. 90% of disasters are now classed as weather and climate related. This costs the world economy over \$500 billion per year and is driving 26 million people into poverty (United Nations, 2020). Much of this failure is due to a lack of carbon literacy in those individuals and businesses positioned to make a real change, which has led to carbon anxiety and the avoidance of decarbonisation (Innocenti et al, 2023).

At the UK business level, climate change is increasingly creating risks for organisations of whatever size and sector. Businesses are now overtly faced with direct and indirect demands to decarbonise to meet changing regulatory requirements, the drive for Net Zero¹, growing supply chain demands for carbon consciousness, ethical and sustainable carbon management practices, and emissions reporting. In addition, customers and investors are demanding carbon knowledge-based change. Carbon conscious and carbon literate businesses are the new low carbon normal.

Progress towards Net Zero is limited. Changes to UK emissions reduction targets have been watered down. This presents a bleak picture, but there are actions that can be taken and commitments made to decarbonise. This is the focus of carbon literacy. It breaks down actions that can reduce carbon emissions into bite-size changes with local impact and a focus on actions that are most relevant for each business. This reduces perceptions of climate change being too big to make a difference. Instead, small, manageable improvement actions together can successful decarbonisation. Climate literacy encourages organisations to move from business as usual to low carbon business as the new normal.

Climate Crisis and Current Responses

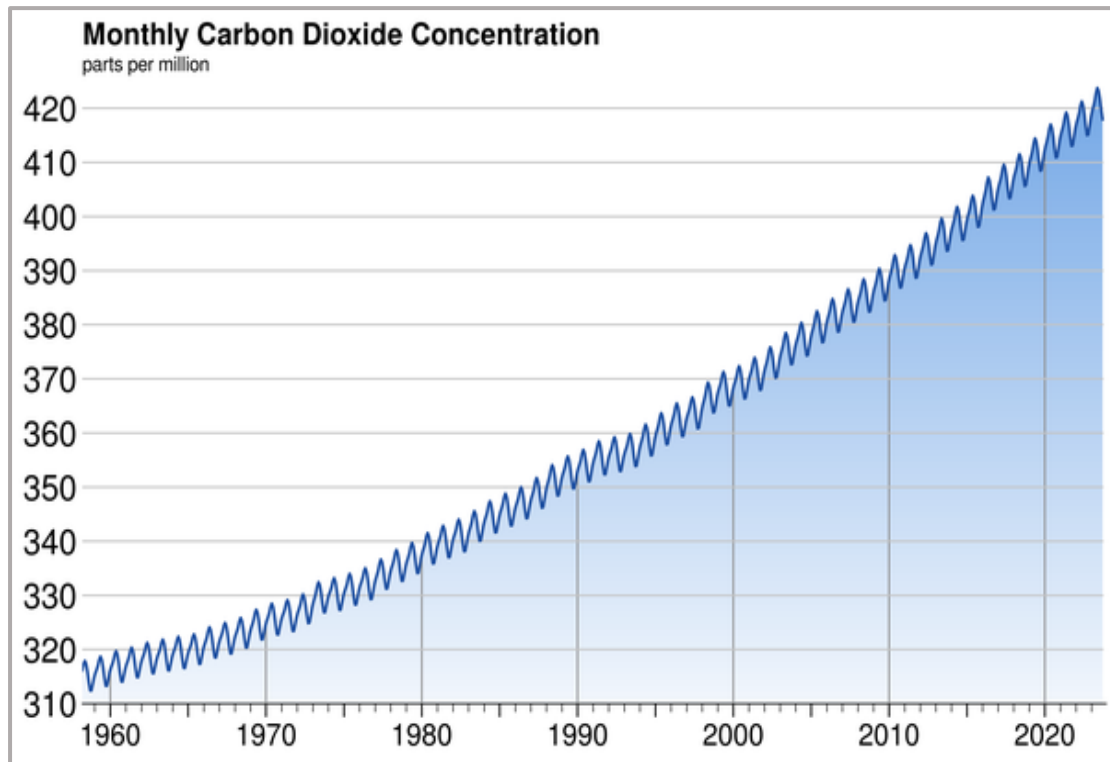
Climate change has caused a worldwide crisis that poses a real threat to the planet and human life (Oxfam, 2023). Whilst there has been, and continues to be, natural climate change from volcanic eruptions, changes in the Earth's orbit and fluctuations in solar radiation, it is now generally accepted that the impact of human activity, particularly the burning of fossil fuels, has taken the Earth out of climate balance, significantly more than natural climate change. This is termed anthropogenic, or human-made, climate change and now accounts for 99% of climate change (Stern, 2022; United Nations Development Programme, 2023). The planet can no longer naturally control the global heating we are experiencing through the release of greenhouse gasses (Royal Society, 2023).

The Keeling Curve in Figure 1 demonstrates the speed and extent of the growth of carbon within the atmosphere which has led to the climate crisis. Measurements of atmospheric greenhouse gases (reported as carbon dioxide (CO₂) parts per million [ppm]) have been taken since 1958 at the Mauna Loa Observatory in Hawaii. This shows steep increases in the release of gases; from 316 ppm in 1958 to 419 ppm in 2023, and 422.9 in January 2024 (Scripps CO₂ Programme, 2024).

Currently humans are releasing an estimated 11 billion tonnes of carbon into the atmosphere each year: 9.5 billion tonnes from burning fossil fuels and 1.5 billion tonnes through changes to land cover including deforestation. Of this approximately 5.7 billion tonnes are sequestered by forests, vegetation, and oceans. The excess 5 billion tonnes of human produced carbon, which cannot be sequestered, remains in the atmosphere raising global average CO₂ concentrations by 2.3 ppm per year. Since 1750, humans have increased the amount of CO₂ in the atmosphere by nearly 50% (Royal Society, 2023; Scripps CO₂ Programme, 2024).

¹ Net Zero is the balance between the carbon emitted into the atmosphere, and the carbon removed from it. This balance – or net zero – will be achieved when the amount of carbon added to the atmosphere is no more than the amount removed. If a company reaches net zero, it means that its business activities have no net impact on the climate from greenhouse gases (Energy Saving Trust, 2022; Deloitte, 2023).

Figure 1
Atmospheric CO₂ levels, December 1958-January 2024



Scripps CO₂ Programme, 2024

The global response to the climate crisis has been driven through the United Nations Framework Convention on Climate Change (UNFCCC). 195 parties (194 countries plus the European Union) have now formally committed to support these carbon emission reduction targets and work within the Community of Parties (COP) process to establish the institutional arrangements that the UNFCCC, the Kyoto Protocol (1997) and the Paris Agreement (2015) implemented as an intergovernmental response to climate change. Nationally Determined Contributions (NDCs) to the global targets that aim to maintain a threshold of +1.5°C above pre-industrial levels² are established by each signatory and enacted locally through regulations, market-based initiatives, and the encouragement of voluntary actions.

Despite the worldwide commitments to mitigating climate change it is now generally accepted that national responses have failed to tackle carbon emissions, and it is now estimated that +1.5°C will be reached in 2024 rather than by the end of the decade as previously predicted, and +2°C by 2040-50 (Stern, 2022; Beattie, 2023).

Alongside the UK's longstanding commitment to the Convention through NDCs and legally enacted 5-year carbon budgets, in 2019 the government legislated a target to reach Net Zero by 2030. It stated that all sectors of the economy, from profit to non-profit organisations, from micro and SMEs to large multinationals and individuals, would have to decarbonise to achieve

² The +1.5°C target reflects the raised temperature at which people and the planet can survive with extensive mitigation and adaption (Intergovernmental Panel on Climate Change, 2019).

this target (Weatherall & Wilkinson-Dix, 2022). This requires the country to switch to a carbon-neutral economy, which is a fundamental change in all aspects of business life. It involves not only transforming the energy sector but also demands radical reforms across the whole economy to achieve Net Zero (Stern, 2022).

However, progress has been slow. This is due to the lack of knowledge, lack of resources, and lack of long-term planning, along with wavering government commitments that have reduced or delayed actions for change and investment in the necessary infrastructures and training (British Chamber of Commerce, 2023, House of Commons Committee of Public Accounts, 2023). The UK SME sector is of particular concern for two reasons:

- The sector contributes an estimated 44% (160 million tonnes) of UK Scope 1 carbon emissions³
- 90% of SMEs believe they face barriers to taking climate action through cash flow constraints and difficulty finding affordable potential solutions (Sage, 2022). Fewer than 10% of organisations understand what UK Net Zero targets mean in practice or how they can contribute to them (British Chamber of Commerce, 2023).

Despite the bleak position, there is hope for a more positive future if we all decarbonise and reach for a new normal in which all individuals and businesses develop an understanding of, and willingness to reduce carbon emissions. The starting point is to become carbon literate and take bold climate actions that make real change in the way the climate crisis is tackled.

Importance of Carbon Literacy

Carbon literacy is not just being aware of carbon dioxide costs and impacts of everyday activities; it's also having the ability and motivation to reduce emissions, on an individual, community and organisational basis (Carbon Literacy Project, 2023). Understanding carbon emissions is the key to achieving a lower carbon organisation. Carbon literacy learning can reduce risks and enhance reputation (Berners-Lee, 2020).

Despite the adoption of some legislative and regulatory actions such as the emissions reporting required by the Taskforce for Climate-Related Financial Disclosures (TCFD) or mandatory low carbon certification such as ECOVadis to quote for public sector work, businesses are at risk from the changing demands of climate change. Whilst it is recognised that all businesses need to decarbonise to achieve Net Zero, it is also becoming clear that climate change can also be a risk to sustainable business futures (British Chamber of Commerce, 2023; McKinsey and Company, 2023). Individual customers and investors are increasingly demanding climate favourable products and services and seeking businesses that can demonstrate climate literacy. Without action, many smaller businesses whether operating B2B (business-to-business) or B2C (business-to-consumer) will suffer financially as large organisations increasingly cascade regulatory requirements down their supply chains. 81% of individual customers now prefer to buy from companies they can trust to have a positive approach to sustainability and the environment (SmartestEnergy, 2023).

Despite this growing recognition of the need to speed up climate action, as well as direct and indirect market pressures driving smaller business to decarbonise, there may be long-standing barriers. A lack of understanding of what can be done, limitations through building ownership and financial pressures frequently prevent action, even when there is a willingness to change (Emblen-Perry & Duckers, 2017; Jouven, 2022; Weatherall and Wilkinson-Dix, 2022). This is where climate literacy can make a difference and the question all businesses must now ask themselves is, "am I carbon literate?"

³ Scope 1 emissions are the direct greenhouse emissions released from sources that are controlled or owned by an organisation.

Benefits of Being a Carbon Literate Organisation

Carbon literacy takes a positive stance and focuses on what can be done, not what cannot. This positive approach can develop carbon advocates; individuals and companies who become activists, champion sustainability, work to make a difference, and inspire others to do the same (Grosvenor, 2021). This active response, encouraged by and delivered through the questions posed by carbon literate employees, will promote a collective journey towards a low carbon organisation. It promotes co-creation of interventions that drive carbon consciousness and deliver carbon actions that contribute to Net Zero and create the carbon credentials that customers, investors and employees now expect (Grosvenor, 2021; CBI, 2022).

Carbon literacy can deliver overhead cost and resource savings through efficiency improvements. It can increase sales, enter new markets, and improve employee morale (George, 2022; Scottish Enterprise, 2023; Steinmann et al, 2023). The opportunity to save money is an attractive driver of carbon action to support climate change mitigation. Another saving is not to use resources so that they are not a cost, nor do they use energy. This drives both carbon and cost savings. For example, turning off lights and computers and reducing heating by 1-2°C requires no upfront investment but can save around 20% in energy costs and 5 kg of carbon per employee per year (Energy Saving Trust, 2022; ESG Pro, 2023). The Institute of Chartered Accountants in England and Wales (2023) consider this saving in energy costs has a bottom-line benefit equivalent to a 5% increase in sales. These small savings can be reinvested in other carbon reducing actions such as LED lighting, PIR sensors, carbon efficient transport, etc. to develop a low carbon business and contribute further to an organisation's carbon credentials.

Carbon credentials are also becoming significant within the labour market (Wadsworth, 2023; Scottish Enterprise, 2023). Job seekers are increasingly choosing to work for organisations that demonstrate carbon consciousness and offer opportunities to become climate literate and a climate advocate within their role. They are exploring potential employers' climate credentials and commitment as part of their job search. Meeting this expectation through clear messaging and demonstrating a serious commitment to climate action is critical to compete for future employees.

Implementing carbon action can also promote an internal low carbon culture that shows current and future employees that this is not just lip service to the new low carbon normal, but genuine concern for the environment along with positive action (Wadsworth, 2023). This can help to foster a motivated workforce who realise their actions can make a difference both locally and globally, and enhance staff retention. This is one of the most significant actions the country can take to become a sustainable Net Zero economy (City & Guilds, 2023). Ensuring a workforce is carbon literate with the knowledge, behaviours, capabilities, and technical skills required, will enable an organisation to tackle growing environmental challenges and unlock opportunities for growth which are increasingly emerging (Deloitte, 2022). This individual and organisational awareness and motivation is also critical to overcoming Net Zero inertia and maintaining the + 1.5°C thresholds which will enable the planet to survive.

Conclusion

The climate crisis is the defining crisis of the world today and is beginning to overwhelm us. Without bold actions carbon emissions will continue to rise, exacerbating hunger and destroying livelihoods and the sources of income for many. Although regulations are forcing businesses to rethink their approach, voluntary organisational changes are urgently needed to re-establish low carbon business as the new normal and ensure the risks from changing expectations of customers, investors, and potential employees can be managed. Changing the question of 'am I carbon literate?' to the statement 'I am carbon literate' is the key to achieving this new low carbon normal.

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