

THE EMA MAGAZINE

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**UNDERSTANDING
THE SCOPE 3
LANDSCAPE**

**STARTING
A CAREER
IN ENERGY
MANAGEMENT**

**ENGAGING
STAKEHOLDERS
IN THE NET ZERO
JOURNEY**

**PURCHASED GOODS
AND SERVICES**

**CAPITAL
GOODS**



SCOPE 3: TACKLING CATEGORY 1

SCOPE 3: TACKLING CATEGORY 2

THE ROLE OF ESOS LEAD ASSESSORS

COURSE: Net Zero Fundamentals and Strategies

- Understand what Net Zero can mean for your organisation / client
- Measure and calculate carbon footprint, incl. data sources and collection
- Understand greenhouse gas and emission scopes 1, 2 & 3 with examples
- Create baselines and targets
- Set a strategy
- Understand formal and informal reporting

Format: Live virtual tutor-led half-day course

Date: 11 April 2025



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COURSE: Reaching Net Zero

- Identify where the impact contributing to achieving Net Zero targets can come from within your organisation
- Address scopes 1, 2 and 3 emissions, and apply relevant and practical reduction measures necessary for meeting the targets
- Understand offsetting and offsetting standards
- Understand insetting
- Audit and verify progress towards Net Zero target

Format: Live virtual tutor-led half-day course

Date: 23 May 2025

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Dear Reader,

As we continue to navigate the lingering winter days, the approach of spring brings with it a palpable sense of anticipation, planning and growth. None of this can occur without ideas, collaboration and upskilling to inspire innovative and progressive action.

This edition marks the anticipated new season by focusing on themes that resonate deeply with our community and the EMA's mission of fostering engagement and professional growth across energy management and sustainability.

In our community collaboration is essential, and the interconnected nature of energy management disciplines underscores the importance of a continuous flow of fresh perspectives. It also emphasises the need for both sectoral and cross-sectoral collaboration which will resonate with many energy management professionals and lead to meaningful partnerships.

In this edition, we are privileged to feature the contributions and interviews of energy management professionals whose insights highlight the importance of advancing engagement, challenging conventional practices and inspiring transformative change on themes such as tackling Scope 3 carbon emissions, ESOS and entering the industry.

The EMA Magazine offers an opportunity for practitioners, innovators and solution providers to showcase their work to a wider audience and contribute to the ongoing dialogue around energy efficiency and carbon management practices. Together, we have the potential to transform energy management into a more dynamic industry that is at the forefront of driving demonstrable changes, improving organisational practices, increasing value, reducing risks and tackling climate change.

We hope you find this edition useful.

Warm wishes,
The EMA Team

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The EMA would like to thank to the above contributors for their time and effort in providing the content and making this issue possible. Their willingness to share experience and knowledge is exemplary and inspiring, and we hope it will encourage others to come forward and contribute in the future.

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ABOUT EMA

The Energy Managers Association (EMA) was set up in February 2012 and represents Energy Managers across all industries. Our priority is to improve the position of energy management experts and their profession and act as their united voice. We aim to develop the skills, knowledge and experience of professionals through our training, high-quality peer to peer guidance and best practice exchange.

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Understanding the Scope 3 Landscape

Scope 3 carbon emissions are among the most challenging aspects of carbon management. Encompassing indirect emissions across an organisation's value chain, Scope 3 emissions require a holistic approach to identify, quantify and reduce. This article provides a practical framework for energy managers to tackle Scope 3 emissions effectively, highlighting strategies to avoid common pitfalls and maximise reduction opportunities.

When discussing Scope 3 emissions, it is critical to avoid a one-size-fits-all approach. Each organisation's profile is unique, requiring a tailored strategy. Prioritising efforts starts with quantifying emissions by category, as not all activities have the same level of impact. For example, reducing emissions from business travel may be less relevant for organisations where remote work is prevalent. This underscores the importance of starting with a clear understanding of where your emissions lie.

Start with the "Why"

The first step in Scope 3 management is understanding why emissions are being reported. Your goals will dictate which categories to prioritise, the required

level of detail, and the resources allocated. For instance, Procurement Policy Note (PPN) 06/21¹ is a UK government requirement for carbon reduction plans from companies bidding for public contracts. It mandates reporting on five of the 15 Scope 3 categories (4, 5, 6, 7 and 9) but includes minimum boundaries and optional inclusions. As a result, this reporting framework is neither complete nor consistent. For example, if one organisation had added the optional inclusions, it

Category 1: Purchased goods and services
Category 2: Capital goods
Category 3: Fuel- and energy-related activities
Category 4: Upstream transportation and distribution
Category 5: Waste generated in operations
Category 6: Business travel
Category 7: Employee commuting
Category 8: Upstream leased assets
Category 9: Downstream transportation and distribution
Category 10: Processing of sold products
Category 11: Use of sold products
Category 12: End-of-life treatment of sold products
Category 13: Downstream leased assets
Category 14: Franchises
Category 15: Investments

may look like they are more carbon intensive than one that didn't.

This is especially important when discussing emissions' reductions. If you exclude something that you have a large degree of control over, then you miss the opportunity to make a reduction and have a positive impact.

Leverage Available Information

Scope 3 reporting doesn't need to start from scratch. Many

organisations already collect data for other reporting obligations that can serve as a foundation.

Some categories, such as transportation-related activities (categories 4, 6, 7 and 9), can often be calculated using readily available tools. For example, the UK government's greenhouse gas conversion factor data tables provide emission factors for freight haulage or business². Provided you know the distance travelled and load of your transport, you may make quick estimates.

By mapping current data availability, you can identify categories you can immediately address and where the gaps lie.

Identify Data Gaps

Once you've used existing data to calculate initial estimates, the next step is identifying the missing pieces. This often includes less accessible categories, such as:

- Purchased goods and services (category 1)
- Capital goods (category 2)
- Waste and processing (categories 5 and 8)
- Other downstream emissions (categories 10–15)

These categories often require more specific methods to estimate Scope 3, but by systematically addressing these gaps, you can improve the

¹Gov.UK 2023 (PPN06/21 guidance), pg 3/4 | ²Gov.UK 2023 (greenhouse gas conversion factors)

completeness and reliability of your Scope 3 reporting.

An important note on Scope 3 reporting is to avoid double counting across categories. For example, if transportation is included in a spend based calculation for category 1 reporting. If we double count this, when we reduce, we would be overstating our improvement.

Embrace Iteration

Scope 3 reporting is a process of continuous improvement. Initial estimates will almost always be incomplete, and as you refine your data collection and methodologies, your reported emissions may increase. This is not a failure but a positive step towards greater accuracy.

Each iteration helps identify which categories have the largest impact, enabling organisations to focus on high-priority areas. By moving from estimates or industry averages to actual data / Environmental Product Declarations (EPDs), businesses can

take meaningful action to reduce emissions and improve the reliability of their reporting.

STRATEGIES FOR EMISSION REDUCTION

Once a robust reporting framework is established, the focus shifts to reduction. Strategies vary by category and depend on the level of control an organisation can exert over them.

Working with Suppliers

Suppliers often represent a significant portion of an organisation's Scope 3 footprint. Reducing emissions in these areas requires a structured approach with close collaboration.

Step 1: Identifying High-Impact Goods and Suppliers

The first step is understanding which goods and suppliers contribute the most to your Scope 3 emissions.

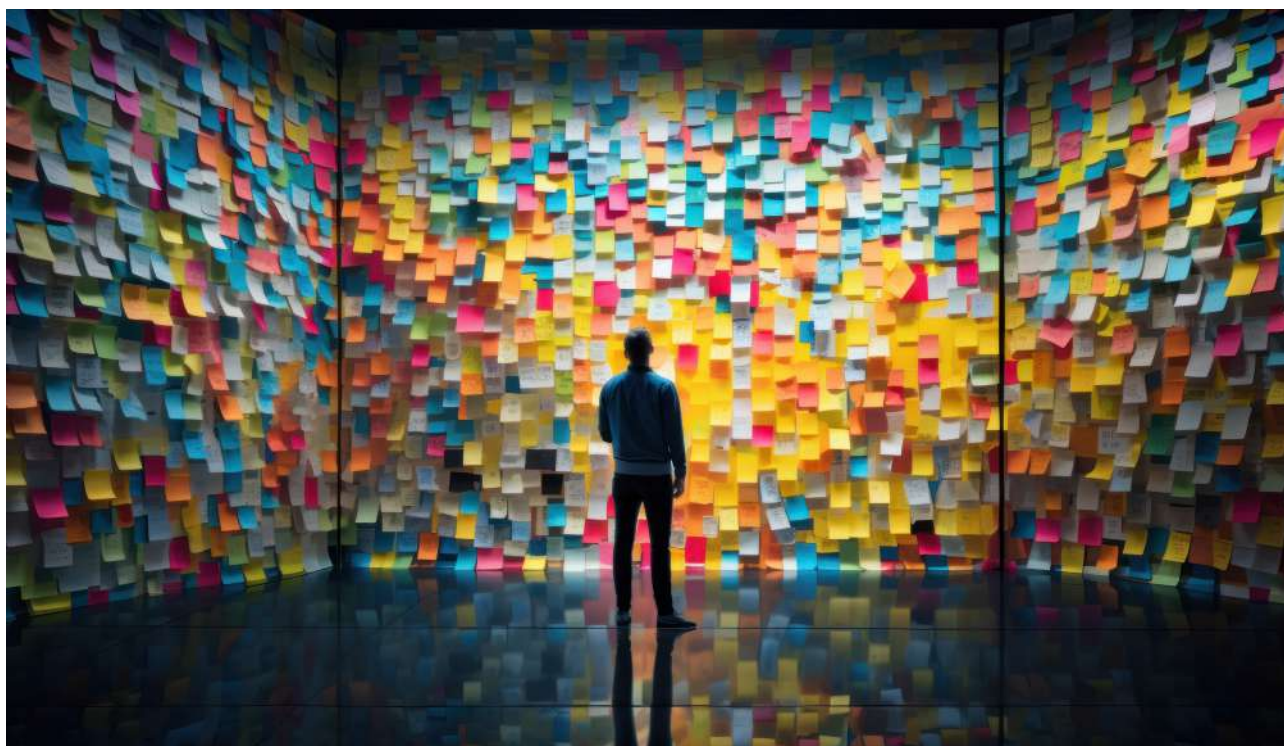
A spend-based calculation can provide valuable insights into these impacts. This is a method of estimating Scope 3 carbon for all the purchased goods and services

used with the organisation by firstly classifying all purchases by their type using standardised data tables such as NAICS (North American Industry Classification System) or CEDA (Comprehensive Environmental Data Archive). These systems assign codes to different product types. Then, after assigning a country of origin to each item, as carbon factors vary significantly between regions, we multiply the cost of each purchase by the carbon factor associated with its code and country of origin. This finally gives us a cost of carbon for each purchase that we may group by type of goods or supplier.

This analysis highlights the "hotspots" in your supply chain - specific suppliers or product types responsible for a disproportionate share of emissions, and is key for the next step of reduction.

Step 2: Engaging High-Impact Suppliers

With key contributors to your Scope 3 emissions identified, the next step is engaging with these suppliers to



explore reduction opportunities. These are the suppliers that have a largest impact on emissions so this is where most efforts or resources should be spent. This can be approached in several different ways.

Request Carbon Data: Ask suppliers to provide detailed carbon data for their products or processes. This could include lifecycle assessments or information on their own Scope 1 and 2 emissions. By asking for the information, this creates an awareness within the supplier that this information is important and worth properly recording – this starts the process.

Explore Low-Carbon Alternatives: Work with suppliers to identify low-carbon product alternatives within their process, perhaps they already have a good alternative to the product that is lower carbon, or a different manufacturing process that could reduce emissions but was not considered. If an alternative supplier already has a low carbon alternative it may be possible to switch to them, or at least tell your supplier you will if they do not supply the same product. Also, “if you build it, they will come”, if there is demand for a low carbon product then that may be perceived as a business opportunity by the supplier who may start investigating solutions.

Collaborate on Solutions: Finally, as the last step, if the need to reduce a specific goods carbon impact is great and the alternatives are sparse, it may be possible to partner with suppliers to optimise operations,

such as improving energy efficiency at their facilities, streamlining transport logistics or funding an entirely new product line. This is obviously an expensive option and involves additional business risk to some degree.

It's important to approach these discussions collaboratively. Many suppliers may already be facing similar requests from other customers, but not all will



have the resources or expertise to make immediate changes. Providing support, such as sharing best practices or co-investing in efficiency improvements, can help build stronger partnerships and drive mutual success.

AVOIDING BACK STEPS - UNEXPECTED CHALLENGES

To those outside sustainability roles, Scope 3 carbon emissions are often overlooked. Without proper understanding, it's easy to take well-meaning actions that inadvertently increase overall emissions.

Hidden Pitfalls: Hidden Costs of HVO (Hydrotreated Vegetable Oil)

With the majority of focus on Scope 1 emissions, many organisations in industry are switching to HVO as a low-carbon alternative to diesel due to its biomass content. However, its production carries significant Scope 3 implications, including well-to-tank emissions (category 3.3), land-use changes and resource transportation. Increased demand for HVO can strain sustainable sources, leading to unintended environmental impacts and reduce the carbon saved.

So, we could spend our time looking for the perfect fuel, however if instead we look at the root cause we can make potentially larger impacts. If we look to reduce the amount of fuel we consume in our processes, we can reduce both Scope 1 emissions, Scope 3.3 emissions and reduce our operating costs.

Whatever process you may be involved with, there will likely be situations such as these that may be identified and investigated.

Hidden Pitfalls: From Company Drivers to Franchisees - a Shift from Scope 1 to Scope 3

For a heavy industry organisation, transportation can form a large part of the emissions as it involves the transportation of large amounts of raw and processed materials. This can be done with either company owned or contractor vehicles. The type of transport used determines which Scope it is placed into, Scope 1 or Scopes 3.4 and 3.9. Ultimately, the total emissions are the same, but as a business decision, if a company

were to shift from company owned vehicles to contractor owned vehicles, their Scope 3 emissions may dramatically increase. Depending on what data you were focused on, it may appear as a step forward or back. Instead, we should focus on how the situation has changed and how to reduce the total emissions, which as a result would have the largest positive impact.

If vehicles were company owned, we could dictate which routes our transportation fleet use to minimise travel time or maximise fuel efficiency. We could choose to maintain a fleet of efficient diesel or electric trucks. Or try to maximise our fleet utilisation by making sure a truck is always transporting goods rather than travelling empty. All this makes best use of the fuel we consume to operate the business.

If the vehicles are contractor owned, we may have less managerial control and more financial control. In this circumstance, there are several levers we may use to encourage our contractor to reduce their fuel consumption:

- We may dictate a contract clause that says the contractor must

purchase their own fuel.

- We may offer financial incentives for fuel efficiency targets.
- Or in niche circumstances, we may even allow them to deliver concurrently with a different client to maximise fleet utilisation in exchange for shared benefits.

Regardless of your challenges, the key point is not to become too fixated on one metric, take the time to assess and shift focus if necessary.

CONCLUSION: BUILDING A PATHWAY TO MEANINGFUL EMISSIONS REDUCTION

Scope 3 emissions represent a significant challenge in that they force organisations to interact with each other in ways that extend beyond finance. Avoiding back steps, such as shifting emissions from one category to another, highlights the importance of holistic carbon accounting and the importance of educating key stakeholders.

Ultimately, reducing Scope 3 emissions comes down to two core strategies: minimising consumption and optimising processes. Whether through reducing fuel usage, streamlining logistics or adopting low-carbon alternatives, these

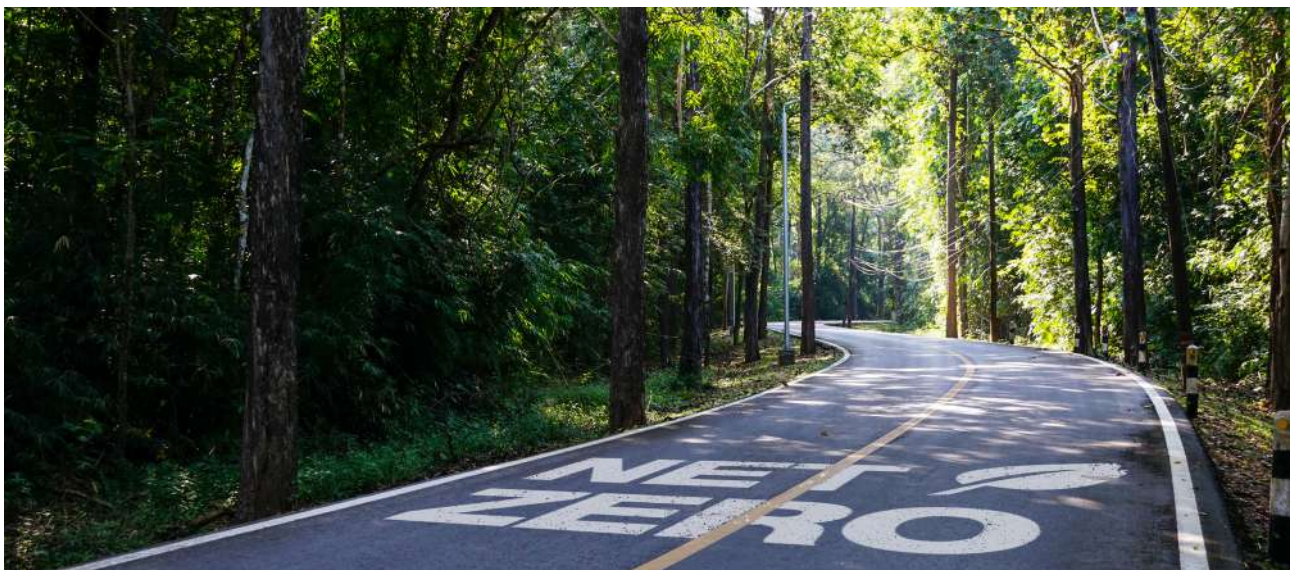
Ultimately, reducing Scope 3 emissions comes down to two core strategies: minimising consumption and optimising processes.

approaches tackle emissions at source rather than shifting responsibility, and require us to look beyond organisational boundaries.

By adopting a practical, iterative approach, organisations can navigate the complexities of Scope 3 emissions and make meaningful contributions to sustainability goals. Hopefully, you may learn some interesting lessons from the above topics and pass the learnings on.

Author's profile:

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Scope 3: Tackling Category 1 Emissions from Purchased Goods and Services

Preparing a complete corporate carbon footprint (CCF) inventory and setting targets aligned with science and organisational sustainability goals presents companies with significant data management and reporting challenges. Whilst a complete CCF requires integrated reporting across scopes 1,2 and 3, this article focuses on one of the most challenging and complex classes of 'value chain' category 1 emissions – purchased goods & services.

Understanding Category 1 Emissions

The Greenhouse Gas (GHG) Protocol provides the following definition of scope 3 category 1 emissions:

"All upstream (i.e. cradle-to-gate) emissions from the production of products purchased or acquired by the reporting company in the reporting year. Products include both goods (tangible products) and services (intangible products)".

Several methods can be used to calculate category 1 emissions based on the guidance presented in the GHG Protocol. The selection is initially and largely dependent on the data maturity and management system quality prevalent in an organisation, and critically, those of its material supply chain partners.

Typically, at the outset of scope 3 reporting, companies will start with 'secondary data' sources such as spend-based reports for the range of goods and services procured, and apply generic emission factors (EFs) for each good or service type. As data quality improves over time companies then develop hybrid approaches using 'average data' measures such as product weight or volume data allowing more tailored emissions factors, e.g. for a specific material type to be applied. Making

incremental progress is a requirement of the GHG Protocol.

"Companies should reduce uncertainties in the quantification process as far as practicable and ensure the data are sufficiently accurate to serve decision-making needs. Reporting on measures taken to ensure accuracy and improve accuracy over time can help promote credibility and enhance transparency".

Ultimately, making the transition to using supplier-specific product-level data (based on cradle-to-gate emissions inventory) is considered the highest point of attainment in the emissions accounting journey, it can also improve the choices made in emission reduction plans.

This article considers the improvement process in a FTSE 100 manufacturing company with a complex supply chain, a large range of products and global supply operations. The journey to improve the data is shared in distinct phases demonstrating the internal evolution - activity by activity. We explore

some of the key learnings and practices adopted, and future good practices required for reporting enhanced category 1 emissions.

Data Management Evolution (2022-2024)

PHASE 1 – As part of the manufacturing company's sustainability strategy development, the central sustainability team took on a project to define the full CCF and, following the appointment of third-party consultants to validate the review, a cross business internal team was assembled to process the data for all categories and formulate the CCF inventory. The initial CCF data gathering and inventory assessment process is outlined in Table 1 on the next page.



Activities	Outputs	Challenges
Initial process of gathering physical and spend-based data from internal colleagues, 3-months	<p>The initial data set presented a base of over 5,000 suppliers with product spend lines requiring significant consolidation into 'major' categories of goods and services</p> <p>Both the scale and complexity of the challenge are realised</p>	<p>Limited availability of physical data relating to purchased goods, e.g. weight</p> <p>Differing accountancy systems & classification coding variances</p> <p>Not all spend data is clearly defined - notably for procured 'services', and all spend values require conversion to a standardised single currency</p> <p>First attempt very time consuming for procurement teams – delivery of the CCF project timeline is extended</p>
Classification of major spend categories, 1-2 months	Key goods began to emerge from divisional business, including plastics & rubber, multiple metal fractions, electronic equipment & controls, liquid & powder chemicals, lubricants, packaging	<p>Goods do not easily match simple itemisations, such as motors which contain more/less electronics</p> <p>Metal and plastic types, e.g. polyurethane/stainless steel not broken down or clearly defined</p>
Exploration of sources of key emissions, 1 month	Utilising and testing emission factors (EFs) against the categories of key goods shows where to focus effort on a 'Pareto' basis and further understand the critical supply chain partners	Difficulty in applying specific EFs without deeper supplier engagement & product analysis
Consolidation of CCF inventory using further supplier knowledge, 1 month	<p>Categories given greater detail for specific larger spend lines, e.g. steel types and emission values for key categories are established</p> <p>Data set meets initial test quality for CCF using GHG Protocol</p>	A variety of 'known unknowns' are still apparent relating to materials and physical data requiring an improvement plan for phase 2
Testing and review, 2-3 weeks	<p>Final CCF for presentation to senior leadership</p> <p>Initial draft of emission reduction activities emerge</p> <p>Data improvement plan</p>	<p>Communication of the CCF and associated strengths and weaknesses of the assessment</p> <p>Resource challenge to sustaining the next phase of assessment</p>

Table 1 Initial CCF Data Gathering & Inventory Assessment



Lessons learned from phase 1 for the assessment team and internal business partners:

- Engage divisional procurement specialists and attend supplier meetings
- Build relationships with key suppliers to inform and educate them in the overall methodology
- Increase the conversion of spend-based data to physical data, such as weight
- Support procurement specialists to define commercial benefits using improved contract data
- Communicate emissions reduction benefits and commercial opportunities to senior leadership and relevant divisional colleagues
- Improve the efficiency of the overall data gathering process and tools used

PHASE 2 - The original CCF inventory required an extension to cover a new business acquisition using the original cross business internal assessment team. Third party consultants were reappointed to help improve

and validate the revised CCF. The undertaken process is outlined in Table 2 below.

Lessons Learned from phase 2 for the assessment team and internal business partners:

- Define which suppliers to engage first and where to direct more effort
- Sort suppliers by relevance according to:
 - the most strategic products within each product category
 - the most emission-intensive product/product category as per the CCF baseline
- Identify suppliers with long lasting relationships and/or higher leverage (e.g. in terms of spend)
- Engage current and future suppliers to collect necessary information for the maintenance of the CCF – reduce impact on internal teams
- Complete the conversion of spend-based data to physical data, such as weight
- Automate the overall data gathering process and tools

Activities	Outputs	Challenges
6–8-week process of gathering physical and spend-based data from internal colleagues	Period for gathering data reduced with process enhancements and improved staff engagement Increased reporting breadth of both purchased good types and business services	Some push back from management as activities encroach on procurement teams' resource and core function Emission results impacted by remaining spend-based data due to currency conversions & inflation, as well as the nature of spend based emission factors
Enhancement of major spend categories and relationship building with partners	Physical weight data increased for key categories reducing the reliance in inaccurate spend-based data Enhanced commercial data, i.e. spend to weight ratio between different suppliers Suppliers engaged with company decarbonisation strategy and quality/ nature of industrial processes start to emerge	Communication of benefits to senior leadership Awareness of the need for data and improved industrial practice in terms of sustainability identified as key risk with certain SME level suppliers
Consolidation of CCF inventory using further supplier knowledge	Emissions from key categories reduced as spend-based EFs change to physical data accounting	Further pressure to increase physical reporting data and supplier inputs to the process
Testing and review	Costs of assessment reduced by third party consultants	N/A

Table 2: Re-baseline Exercise Following Acquisition & Expansion of Emissions Baseline



using internal and external software specialists, and AI solutions

Lessons learned in the procurement process to reduce scope 3 emissions and enhance supply chain performance relating to key emission sources and reductions:

- Define contract terms and conditions which favour suppliers with low emission products and services:
 - for example, metal-based products contracts will specify
 - i) low emission smelting processes such as the use of electric arc furnaces
 - ii) electricity generated or procured from renewable sources
 - iii) the maximisation of recycled metal content
 - for example, in IT and data management services contracts will specify
 - i) low energy hardware, data storage and server technologies
 - ii) sustainable refrigerant use or natural cooling technology
 - iii) electricity generated or procured from renewable sources
- Define methods for applying supplier sustainability targets and emissions reduction activity reviews into the contract management process
- Integrate the emissions target reduction plan with any internal product life cycle assessment (LCA) programme
 - working together to prioritise product assessments and the resulting commercial opportunities

Summary Points

- Evolving the data management process for category 1 between phases 1 & 2 enabled a 30% emission reduction in procured metals' products using better data and more applicable EFs – this will be replicated across other goods and services.
- Improved data engagement with key suppliers goes hand in hand with improved commercial capability as product pricing is aligned with physical attribute data and cost reductions can be negotiated.
- Contract terms and conditions can be enhanced to support suppliers investing in sustainable technologies with reduced emissions compared to rivals with poor product performance and potential reputational risks.
- Data digitalisation will further extend the automation of the data gathering process, reducing team resource demands and allowing specialists to focus upon analysis, commercial support and emissions reduction activities.
- The CCF reduction plans and externally reportable roadmaps become more robust, and the near-term and long-term target commitments become more achievable to realise.

Author's profile:

Richard is a freelance energy & GHG sustainability professional with over 20 years success in delivering technical and management roles in both industry and the public sector. Located in the Southwest of the UK he supports businesses through interim ESG leadership & project management, strategy planning, energy & environmental audits, legal compliance reviews and staff training & mentoring.

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Scope 3: Tackling Category 2 Emissions from Capital Goods

With increasing regulatory requirements around the measurement and disclosure of carbon emissions, as well as a drive to contribute to the UK government's 2050 net zero target, scope 3 emissions categories now demand focused attention from organisations in meeting their environmental obligations. By having a robust strategy in place to measure and tackle relevant scope 3 emissions categories, organisations are likely to also benefit from improved supply chain resilience, as well as increased commercial value in retaining and winning business. This article focuses on emissions from category 2 of the 15 scope 3 categories - capital goods.

The capital goods category includes all upstream emissions (i.e., cradle-to-gate) from the production of products purchased or acquired by an organisation. Capital goods are final products that are used by the organisation to manufacture a product or provide a service. In financial accounting these are treated as assets or as plant, property and equipment¹. Examples of capital goods include:

- Equipment
- Machinery
- Buildings
- Facilities
- Vehicles

This category can be highly variable from year to year depending on an organisation's level of business activity, e.g. through construction projects or expansion activities. Similar to purchased goods and services, an element of uncertainty in the measurement of emissions from capital goods can occur due to an over reliance on spend-based emissions factors. Emissions from the use of capital goods are accounted for under either scope 1 (e.g., fuel usage) or scope 2 (e.g., electricity usage).

MEASURING EMISSIONS FROM CAPITAL GOODS

Before being able to tackle and influence the impact of emissions from upstream capital goods, it is essential to gather a complete picture of data based on appropriate measurement techniques. Completing this overview of emission hotspots will identify areas for improvement, potential gaps in data as well as valuable context into supplier activity. Based on the GHG protocol², there are four primary calculation methods for scope 3 emissions from capital goods:

- 1. Supplier based data** – will provide the most accurate calculation of emissions based on supplier specific data. Typically, this will come in the form of a Life Cycle Assessment (LCA) or Environmental Product Declaration (EPD) that specifies product level cradle-to-gate GHG data.
- 2. Hybrid approach** – focusses on prioritising supplier specific based data and using secondary data beyond the organisation's value chain to fill any gaps where this is not available. Secondary data sources should typically be sourced from peer reviewed databases, e.g. Defra conversion factors in the UK.
- 3. Activity based data** – involves estimating emissions by collecting data on the mass or number of units purchases (e.g. kg, hours spent), multiplied by the cradle-to-gate emissions factor per unit of mass or unit of a product (e.g. kg CO₂e/kg or kg CO₂e/hour spent).
- 4. Spend based data** – if no other method is feasible (e.g. due to data limitations) then the spend based method should be used by analysing the economic value of purchases, multiplied by a relevant secondary emissions factor, such as industry averages, to estimate emissions.

It should be generally recognised that the data quality of emissions from capital goods will improve over time as data collection and supplier engagement processes become more comprehensive. The intention being to eventually work to a point where the majority of calculations are focussed at the top of the above hierarchy, i.e. from primary supplier based data.

^{1&2} Greenhouse Gas Protocol (2013), [Technical Guidance for Calculating Scope 3 Emissions](#)

Introduction to Whole Life Carbon Analysis (WLCA)

Whilst cradle-to-gate (or upstream emission factors) should generally be used in calculating emissions from capital goods, life cycle emissions factors consider the emissions that occur at every stage of a material or product's life, from acquisition, generation and through to end of life.

Life cycle stages for completing Whole Life Carbon Analysis (as defined by EN 15978:2011) are summarised in Figure 1³ below.

Stages A1-A3 – Product stage (Cradle to gate) – includes raw materials production, transport and manufacturing.

Stages A4-A5 – Construction stage – includes transport

understood. Adopting the whole life cycle analysis at an early stage of the decision-making process gives the greatest chance of embedding circular economy principles. Adopting these principles to integrate re-use, recycled materials and innovative design standards is fundamental in tackling emissions from capital goods.

Introduction to Environmental Product Declarations (EPDs)

EPDs are based on internationally accepted methods for LCA and are critically reviewed by an independent verifier. Specific benefits from generating or obtaining EPDs include:

- **Certification** – in order to achieve credits with environmental assessment schemes, such as BREEAM and LEED.

• Compliance and procurement requirements

– EPDs are increasingly specified as essential requirements in organisations' tender specifications.

• Building LCAs

– EPDs enable building life cycle assessment.

• Product comparison

– enabling different product specifications to be benchmarked against each other.

The scope of an EPD must cover the following life cycle stages:

- **Cradle to gate:** this is the minimum scope for an EPD.
- **Crate to gate with options:** for EN 15804+A2, this is the mandatory scope.
- **Cradle to grave:** this covers the whole life cycle.

Any EPDs for products or materials used for construction projects must cover life cycle stages A1-A3, C1-C4 and stage D.

A BUILT ENVIRONMENT PERSPECTIVE - considering embodied carbon and whole life cycle carbon across construction projects.

According to the World Green Building Council

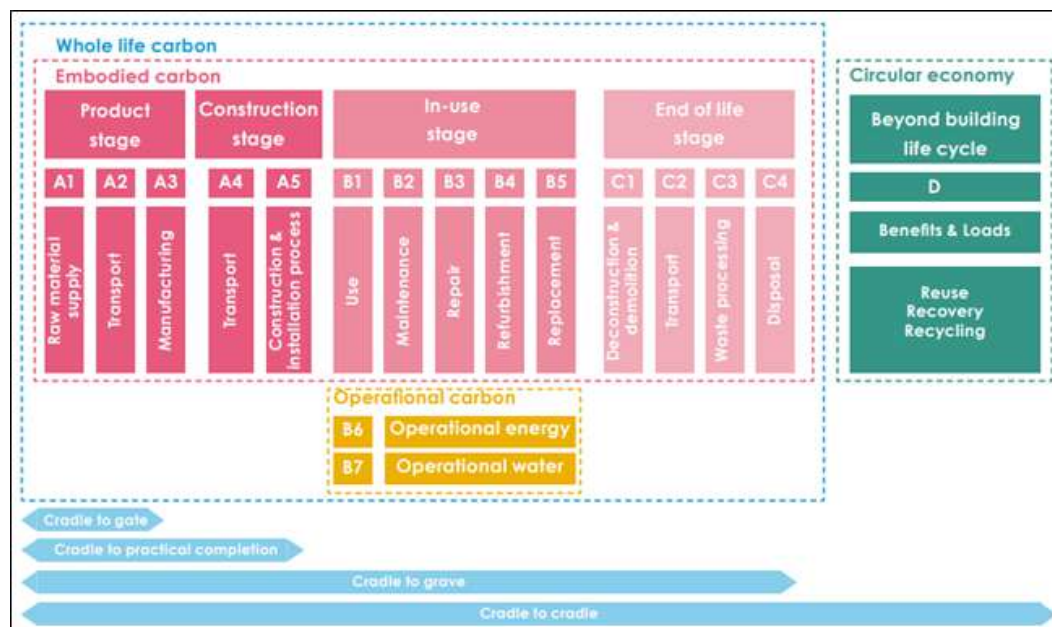


Figure 1³- System Boundary: EN 15978:2011 Display of modular information for the different stages of the building assessment

to site and construction process. When combined with stages A1-A3 forms Cradle to practical completion also referred to as upfront carbon.

Stages B1-B7 – In use stage – includes use, maintenance and repair of equipment as well as operational energy and water use.

Stages C1-C4 – End of life stage – includes demolition, disposal and waste processing. When combined with stages A1-A5 and B1-B7 forms Cradle to grave.

Stage D – benefits and loads beyond the project life cycle – includes environmental benefits from reuse, recovery and recycling.

Only by looking at the whole life cycle carbon of products, materials and projects can the true impact of design choices and opportunities for reduction be

³London Energy Transformation Initiative (2020), LETI Embodied Carbon Primer, Supplementary guidance to the Climate Emergency Design Guide

(WorldGBC), the built environment is responsible for 39% of global carbon emissions⁴, with 28% arising from operational emissions and 11% from materials and construction. In the UK, the construction industry is responsible for 49% of carbon emissions⁵ and therefore represents a crucial area in the efforts to limit climate change, and achieve net zero carbon emissions. Whilst representing an opportunity for the construction industry to lead the way in decarbonising buildings, the regulatory landscape to tackle whole life carbon emissions is evolving, with current proposals under Part Z of the building regulations likely to make the completion of whole life carbon assessments mandatory for all major projects.

Embodied carbon - the level of carbon dioxide and other greenhouse gas emissions from the product, construction, use and end of life stages.

+

Operational carbon - carbon dioxide and other greenhouse gas emissions from the operation of a building from heating, hot water, cooling, ventilation, lighting, cooking and equipment.

=

Whole life carbon⁶

As the decarbonisation journey for buildings evolves, the importance of embodied carbon is growing quickly as it makes up a higher proportion of whole life carbon. As buildings source more energy from renewables and operate more efficiently, the embodied carbon from materials becomes the dominant source of carbon emissions.

Finally, a key fundamental objective in designing for optimal whole carbon, net zero carbon outcomes is the concept of circular economy. London Energy Transformation Initiative (LETI) defines⁷ a circular economy as one that replaces the linear economy 'end

of life' concept with restoration and regeneration, and a shift towards renewable energy and the elimination of waste through the use of materials that can be re-used, repaired and recycled.

Approaching design in this way maximises the potential for carbon recovery reported at stage D, particularly for example, when considering the end of life re-use

process that can be applied to materials such as timber, steel and aluminium.

Further carbon reductions can also be achieved by selecting materials with a high carbon sequestration potential, such as sustainably sourced timber, given its ability to remove and store CO₂ from the atmosphere. This is termed biogenic carbon⁸, which is carbon derived from or contained in biomass.



These benefits must be reported in stage D and not stages A-C, because the carbon storage from timber used may continue after the building's life cycle is complete. For example, if it was to be disassembled and re-used on a new project elsewhere. This approach is often preferable over the use of carbon offsets to achieve net zero embodied carbon, given the potential risks around transparency and effectiveness that can come with offset schemes.

Key Design Considerations

It is crucial that whole life carbon ambitions are considered as soon as possible from the outset and concept design of any project in order to drive significant reductions in embodied carbon. A net zero operational carbon building is supplied by 100% renewable energy and meets energy performance in-use targets in line with national climate change targets. Reducing embodied carbon requires a far more in depth and considered approach across the journey of each project stage.

⁴World GBC (2019)

^{5,6 & 7}London Energy Transformation Initiative (2020), LETI Embodied Carbon Primer, Supplementary guidance to the Climate Emergency Design Guide

⁸London Energy Transformation Initiative (2020), LETI Embodied Carbon Primer, Supplementary guidance to the Climate Emergency Design Guide, page 43, appendix 3

Table 1⁹ below summarises key practical steps that can be taken by project stakeholders to drive embodied carbon reductions, summarised from the LETI (2020) Embodied Carbon Primer, Supplementary guidance to Climate Emergency Design Guide.

SUMMARY

The insights from designing and constructing new developments for the built environment highlight the importance of all stakeholders working in collaboration to achieve net zero ambitions on major projects, through embodied carbon reduction strategies.

This article has introduced the key concepts and approaches associated with tackling scope 3 emissions from capital goods, emphasising the importance of a holistic approach to whole life carbon based on circular economy principles that can also be applied more

widely to the purchase of goods and services. Particular insight has been drawn from the built environment recognising both the significant challenge and opportunity the construction industry is presented with in decarbonising buildings to reach net zero through a shift to a regenerative, circular design philosophy focussed on the re-use and recycling of natural materials.

Author's profile:

Charles has over 10 years' experience spanning across a number of sectors including healthcare, property management and hospitality. Charles' expertise lies in building services, energy performance contracting, on-site generation and low carbon building design. In his current role, Charles is responsible for delivering the organisation's approach to regenerative sustainability and for all aspects of energy and water provision, including utilities procurement.

Who	Role	Actions
Client / developer	Decision making	<ul style="list-style-type: none"> - Define objectives for achieving net zero carbon and circular economy advancements - Identify employees in the organisation who will be given responsibility - Create a project brief which will specify low embodied carbon aspirations and adopt principles of reuse - Create a carbon reduction strategy which will specify how embodied carbon targets will be met - Appoint an experienced design team - Specify in the contract the duties of the principal contractor, such as monitoring, reporting and compliance with performance targets
Policymaker	Strategy	<ul style="list-style-type: none"> - Adopt a policy that prioritises circular economy principles and reuse/refurbishment over demolition and new construction - Adopt a policy that mandates embodied carbon reduction strategies - Adopt clear embodied carbon targets - Adopt a consistent methodology for monitoring data and whole life carbon analysis - Implement a mandatory requirement for EPDs for essential building components, such as substructure, frame and upper floors
Designer	Implementation	<ul style="list-style-type: none"> - Adopt circular economy principle of reuse/refurbishment over new build - Train the design team to improve in-house capabilities and understanding in the areas of embodied and whole life carbon reduction - Include embodied carbon as a sustainable design metric and calculate embodied carbon of all projects - Request EPDs from all suppliers

Table 1⁹ – Key actions to tackle embodied carbon to support net zero carbon developments

⁹London Energy Transformation Initiative (2020), [LETI Embodied Carbon Primer](#), [Supplementary guidance to the Climate Emergency Design Guide](#)

Engaging Stakeholders in the Net Zero Journey

Engaging key stakeholders is essential for fostering collaboration and driving organisational change. Taking the conversation from talk to action and sustaining the impact requires more than just a clear strategy and communication, particularly when pursuing ambitious long-term goals associated with Net Zero targets. This article shares unique perspectives of contributors who explore practical approaches and lessons learnt in the area of stakeholder engagement.



Caroline Holman
ESG Manager
LCP Group



Gillian Brown
Senior Manager
Sustainable Design
Lloyds Banking Group



Julia Blackwell
Energy & Sustainability
Manager
CBRE



Jonathan Waldie
National Sustainability
Manager
Bourne Leisure

What role does the size or structure of an organisation play in stakeholder engagement?

Julia Blackwell

The type of the organisation is crucial. Quite often within local government, there'll be certain cycles in which they're looking to make their investments, or they have certain timeframes when they're looking at different projects. Getting to understand the drivers for the stakeholders is quite important. It is beneficial to gain understanding of these factors and tailor your questions and applications to them. Particularly as local government budgets run through certain phases, so you may need to think about being prepared for the new budgets coming through. It is advisable to have your projects' business cases ready to go through the different levels of management structure.

Jonathan Waldie

The size of the company impacts the dynamic of certain decision making. In a larger company there is a lot more people that have to be part of the processes so it can take longer to get to the decision that you just want there and then straight away.

There can also be more diversity and complexity when it comes to the actual stakeholder groups as well, so the larger the business is, the more complicated it will be. Whereas a smaller company can offer more agility to get through things a lot quicker.

Caroline Holman

The first stage of engagement for any organisation, irrespective of size, is to actually map out who the stakeholders are. Size really does not matter. Clear, targeted objectives, engagement plans, and a RACI (Roles, Accountable, Consulted, Informed) matrix aligned to the stakeholder map and business strategy are also critical enablers.

Which stakeholder group do you find the most approachable?

Jonathan Waldie

Department heads and managers, and general employees are generally more open to new ideas and suggestions. In addition, you don't have to present such a high level of detail to these groups that the senior management would want to know about.

On the other hand, customer and supplier stakeholder groups can be tricky. For example, it is difficult to engage customers in the hospitality industry when they are on holiday and are looking to switch off and relax.

Julia Blackwell

Quite often it's those employees who are going to be directly impacted by the changes and improvements, who are the most excited because they see how it's going to make improvements to their work environment and to the sustainability in terms of the running costs of their workplace. Generally, employees will be more engaged and embrace the changes if they are taken along with the process.

Engaging employees early on helps them to understand and prepare for the changes. However, they may be more reticent when it comes to the actual installation phase, especially if any installation work needs to be fitted around normal working or delivering services. So, expect and prepare for enthusiasm to wane a little.

Senior management will have additional concerns, such as reputational issues. Especially in the public sector, the concerns about public spending and avoiding poor decisions will be at the top of the agenda for any project approvals, so presenting a solid business case is vital. It may also be beneficial to present proofs of concept which can add a layer of safety to your plans. It may be the case that senior management like to see themselves as being innovative, however it always helps if someone else has proven the concept first, they will be much happier about continuing then.

KEY STAKEHOLDERS



How can you transition from a discussion to a tangible action?

Julia Blackwell

Sustainability is something that can morph itself into a lot of different areas and the benefits don't necessarily always have to be direct or obvious. For example, in local governments the need to continue maintaining leisure and sport facilities viable is driven by the wider commitment to provide a healthy population, which will have less of an impact and demand on health provisions within the area. In such cases you would be engaging with slightly wider stakeholder groups. You would need to also bring in people who might not necessarily be involved in the day-to-day running
(continues on next page)

Caroline Holman

The stakeholder map, RACI and assessment of overall business objectives form the foundation and arguably basis for success. The human psyche and 'what is in it for me' comes into play. If the 'tangible actions' are perceived to be bolt-ons and additional workload; with no consideration of synergies with existing activities, then progress will be at best inhibited. Understanding and playing to the individual and collective strengths of the team(s) is also essential. Senior leadership buy-in and
(continues on next page)

Jonathan Waldie

One campaign that comes to mind is creating green teams. At each of the Haven Holidays' 40 parks we created a team of volunteers who, as well as doing their day job, are the energy management team's eyes and ears on the ground. It took a while to set it up, but it is now embedded in people's job descriptions and we keep the engagement and interest going through league tables and incentive schemes. It is not just the company benefitting as many of those volunteers tell us that they are also being more energy efficient and aware at home, which is always great to hear.

(cont'd)

or management or finance, but who would help to provide impetus for the delivery of the work going forward. Sometimes it's worth looking for that slightly left of centre points and stakeholders, whom it might be slightly unusual to engage with in helping to drive engagement, and to make additional connections which will support the business case and move it to actually being a deliverable.

Part of the problem is also the fact that majority of the energy or carbon reduction projects may not be visible to all stakeholder groups. For example, changes in the plant room equipment are invisible to the management, finance or other employees that are experiencing disruption to services delivered to public or customers. Furthermore, they may lack the understanding of how the new equipment is going to be beneficial for them or the organisation. So, informing and illustrating the savings in a relevant way can help to prevent some negative pushback during a crucial stage of any project's delivery.

(cont'd)

advocacy will also drive and maximise collaboration and delivery.

It is also important to consider whether any stakeholder groups have been overlooked. Not everyone is a carbon / energy professional, or advocate – it is essential to find the common and, in some cases, specific 'hook(s).' This could be operational efficiency, cost savings or co-benefits (e.g. PR, reduced maintenance, asset performance etc.).

And finally use the skills available, e.g. if a member of the team is particularly good at communication, graphic design, etc. use them to help develop the engagement materials – not everybody needs to be a project manager!



How do you measure a success or failure of an engagement strategy or method?

Julia Blackwell

The public sector is still very much driven by the pounds and pence for measurement purposes. We're also educating and guiding our colleagues, and making sure that they understand that we can save energy. Even if the weather's been particularly bad and we've used more electricity or gas, we can use other metrics, such as the impact on our colleagues in the maintenance sectors. For example, whether the number of callouts has gone down over a specific period or whether there were less issues with technological failures. We try to demonstrate that with implemented replacements or maintenance measures we experience less issues in those areas. All those sorts of things are part of how we demonstrate that we've made that success.

Gillian Brown

Everything comes back to a tangible number that you can prove one way or another. At Lloyds Banking Group, we don't necessarily measure success in pounds anymore. We measure success in achievements through specific targets. They're very much about decarbonisation progress in terms of how many branches have been decarbonised, how many LED light installations have been done, etc. We set targets in these areas at the beginning of the year and then our progress is measured in those terms. Some of those changes will create energy savings, some will not, and some will create financial savings and again some perhaps not. Our way of measuring success or failure of decarbonisation projects is different, but it gives us ever so slightly different slant on it.

How do you measure a success or failure of an engagement strategy or method?

Caroline Holman

In reality any program must deliver against the business KPIs. This will, more often than not, include financial performance. Net zero, e.g. energy and carbon, is no different, but there are also other measures such as intensity metrics (e.g. CO₂e or kWh per floor area) which can be used.

Baseload reduction through 'switch of campaigns' are also popular but are dependent on the level of sub-metering and BMS in place.

In the Real Estate Sector, we also consider improvements in building certification or EPC ratings, as well as participation and success at reward and recognition events – both internal and external.

Scorecards and dashboards stimulating competition between teams, groups and departments using any of the previously mentioned KPIs are also a useful measure, and stimulus for sustained performance. Engagement can also be measured in terms of participation and skills/awareness, e.g. surveys, training, CPD, etc.

Linking performance and reward to specific net zero deliverables is frequently the most tangible way of measuring, not only engagement but also performance.

Jonathan Waldie

We set our targets at the beginning of each financial year and use league tables, which are linked to various incentives that we do for the green teams. All of this is reported on a weekly basis to the whole business and it's also discussed with directors on a monthly basis for each of the parks.

Over the years, we found that this level of engagement creates a level of excitement about the topic and keeps everyone engaged. Setting clear targets and having the data to back it up are crucial for the success of the scheme, however key part also play the incentives which need to be enticing for the teams. Historically, we have incentivised the green team with outings and cash rewards.

For this year, we decided to take it to the next level and fund an all expenses paid trip to Costa Rica, which is renown for its sustainable achievements, for the top ten green team members with a secondary incentive of vouchers for the parks' teams that achieve their targets.

In addition to this, we are providing the opportunity for our most engaged green team members to have certified training.

How do you keep stakeholders engaged?

Caroline Holman

Generally, most net zero projects are (and should be) part of the bigger picture and something which gathers momentum, breeding further successes.

A net zero strategy that is linked to key performance indicators and does not work in isolation, will play a crucial role in attracting and retaining talent, providing skills enhancement and development opportunities.

Julia Blackwell

Communication is always key. I also find that demonstrating that we acted on ideas and suggestions from colleagues plays a key role. When people see that they are contributing and are being listened to, it inspires them to do more and be more responsive to future requests. Regular reports on progress can also embed a sense of confidence that if we can handle visible projects, like a lighting refurbishment on a ward, we will be able to handle any other less visible projects as well.

Jonathan Waldie

Our parks welcome over 2.5 million guests annually, which brings its challenges. A lot of effort is dedicated to effectively communicating our sustainability goals and encouraging guests to participate in our initiatives. Feedback from guests can be surprising as they may have differing perspectives. They're on holiday and if they wish to have their heating on high in the caravan with the doors open, then that's their right. However, at the same time, we all need to be conscious of the environment. So, it is a challenge to get the right message across to our guests as stakeholders, simply because it's a very varied and large group.

If there's one thing that could be done to influence stakeholder engagement for the purposes of achieving net zero targets. What would it be?

Caroline Holman

Articulate the 'why' for stakeholders. Clear, succinct and targeted communications, which engage and stimulate diverse audiences and participants.

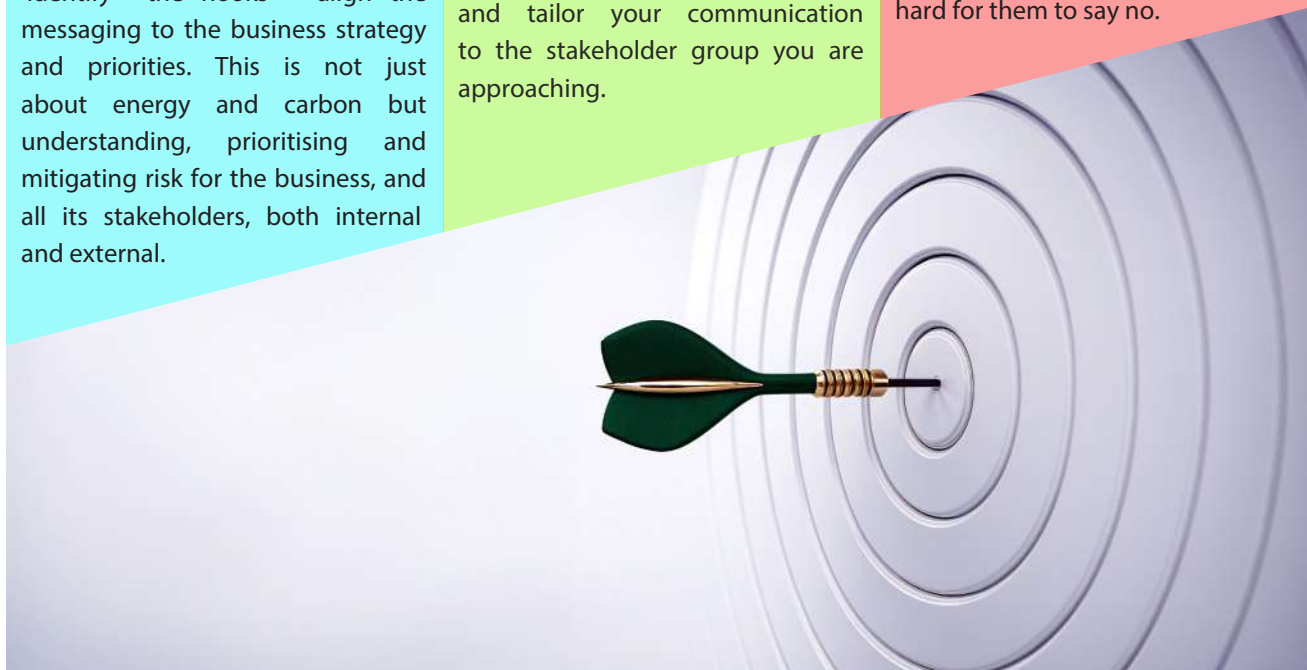
'Identify the hooks' - align the messaging to the business strategy and priorities. This is not just about energy and carbon but understanding, prioritising and mitigating risk for the business, and all its stakeholders, both internal and external.

Jonathan Waldie

It's definitely all about clear and transparent communication, making sure that everyone is completely on board with what you're trying to achieve. Make sure they also understand what is in it for them and tailor your communication to the stakeholder group you are approaching.

Julia Blackwell

Do your homework. Find out what the drivers are for each of those stakeholders. Find that hook and drive the engagement with enthusiasm so that you're providing an answer to their problems. Make it hard for them to say no.



Authors' profiles:

Jonathan Waldie, National Sustainability Manager, Bourne Leisure

Jonathan has worked in the holiday park leisure industry for over 20 years in various roles before moving into a central role overseeing aspects of facilities and sustainability for all the Haven estate. He manages capital and planned preventative maintenance for all mechanical and electrical plant, swimming pool plant operations, water infrastructure, drainage and energy management, including team engagement and behavioural change.

Julia Blackwell, Energy & Sustainability Manager, CBRE

Julia has over 20 years' experience working in the public sector. Within previous roles she was responsible for managing energy saving programmes, managing installations of new equipment through SALIX and Re:Fit, providing business cases and carrying out measuring and verification. She is currently responsible for energy management and sustainability at Imperial College Healthcare NHS Trust.

Gillian Brown, Senior Manager – Sustainable Design, Lloyds Banking Group

Gillian is an accomplished energy and sustainability senior manager with over 20 years of experience. Within previous roles, Gillian covered all areas of energy management and led a number of large scale energy projects in some complex and highly critical buildings. Gillian now leads a high performing team driving down carbon emissions from a large and complex multi-site estate.

Caroline Holman, ESG Manager, LCP Group (part of M'Core)

Caroline is an engineering and sustainability professional with experience across various sectors including automotive manufacturing, water, and real estate. She is a Fellow of the Institute of Engineering Technology (IET), Chartered Environmentalist (Institute of Environmental Managers and Assessors - IEMA) and Chair of the EMA Board of Directors.

Starting a Career in Energy Management

The Energy Managers Association is dedicated to promoting and facilitating the entry of more professionals into the energy management and environmental roles. Through elevating the industry's visibility and providing valuable insights into the career advancements and successes of energy management professionals, we are paving the way for a more diverse and dynamic workforce in the sector.



In this edition, we have interviewed Dr Sean Casey, Lead Energy Engineer at Environmental Strategies Limited to gain insights into his career in energy management so far.

What made you choose a career in energy management in the first place?

I'm guessing, like many people in the industry, I somewhat stumbled into this career. I had come from a background of Engineering with a Segway into lecturing and Higher Education management for a few years. By mid-2023, I was beginning to think about a career change. I had a chance meeting with a friend on a park bench where they asked me my opinion on why it was so hard to recruit someone into an engineering role they had recently advertised. When I asked about the job description, I realised that the role was perfectly suited to me, however it was something that I had never considered.

What was your first role in the industry?

My first and current role in the industry is that of Lead Energy Engineer for Environmental Strategies Limited with responsibility for all energy related aspects of the business. I entered

the business in January 2023, during the lead up to ESOS phase III, which would constitute the majority of my work for the first year and a half working as a consultant. This included a variety of tasks such as energy auditing, data analysis, report writing and liaison with customers and stakeholders.

Environmental Strategies Limited is a small consultancy and working for them was absolutely fantastic for me transitioning away from working for large HE organisations. The support I received was second to none with one to one contact with the other consultants available at all times. A culture of openness and honesty in the consultancy also really helped as there was no blame culture and mistakes, which were numerous at the start of any role, were used as learning tools. I also had the opportunity to shadow the other consultants, which I felt was vital in learning both how the business was run but also in developing some of the practical aspects of my new role.

From your experience so far, what are the three most important skills energy management professionals need for their day-to-day job?

Based on my role as an Energy Engineer, the three most important skills any energy management professional needs in their day-to-day job would include the following:

Energy Auditing – Before a business can put any sort of energy management or sustainability policy or plan into action, they need to understand their energy baseline. In order to generate that baseline, an energy audit of the business will need to be conducted. In addition to this, a good energy audit will also provide recommendations on energy improvements and efficiencies that the business can undertake to reduce their energy consumption and carbon emissions.

Motivation and Communication

– Key to the success of any energy management or sustainability policy is the engagement of your

stakeholders. This can include people both inside and outside of the organisation, and having good motivation and communication skills is vital to bringing those people on board with your plan. I also believe that targeting your communications to the receiving audience is vital to ensure uptake of your policy, therefore adjusting the language of your communications is critical.

Information Technology –

Understanding and correctly utilising the most up to date IT provides valuable data and analytics that can inform better decision-making processes for your energy management journey. Having the ability, through the use of IT to identify trends, predict future energy requirements and develop strategies based on data, to meet those needs efficiently is vitally important to success. At the very basic level, strong spreadsheet skills are fundamental for your data analysis, but increasingly, the use of Artificial Intelligence can also help with data analysis and predictions.

Can you share an example of a project where you needed to acquire new skills?

As mentioned previously, I joined the consultancy during the lead up to ESOS phase III, which would constitute the majority of my work for the first year and a half. In the previous ESOS phase, all ESOS work carried out by the consultancy was signed off by an external ESOS lead assessor. It was decided at an early stage that it would be advantageous if this could be brought in house. To achieve this, I needed to become both a Low Carbon Consultant and also an ESOS Lead Assessor. I undertook training through CIBSE, which was

a very steep learning curve for me, however, I was successful and gained both qualifications within the first year in my role.

When carrying out energy audits it is important to be able to provide the most accurate and appropriate energy efficiency recommendations to the client. To do this, you must have the appropriate knowledge. During the last two years, I have also attended numerous CPD courses to increase my knowledge of various technologies and subjects including Heating Ventilation and

“Energy auditing is like a constant treasure hunt - you get to uncover hidden inefficiencies and identify opportunities for saving energy.”

Air Conditioning (HVAC), Half-hourly Data Analysis, Scope 3 Emissions and Non-Domestic Energy Assessments.

What skills do you believe will be most important to develop in the future?

I feel like the industry has moved away from a predominantly personal interaction model towards more of an off-site, IT or internet driven model in recent years. Whilst this does offer some remarkable benefits to clients, making it easy to generate key information like carbon footprints or energy baselines without anyone ever having to physically come to your site, the lack of personal interaction

and onsite inspection will no doubt lead to some key efficiencies being missed.

As with all things in life, I expect at some stage in the future, this trend will reverse, and companies will desire people to be on-site rather than at the end of a copper wire. I think it is therefore important that communication skills be developed and maintained.

Which part of your role do you enjoy the most?

That's a simple one – Energy Auditing. Not only do you get to go to different sites, uncover different processes and technologies on every audit, you get to meet a multitude of different people at all levels of business. Energy auditing is like a constant treasure hunt - you get to uncover hidden inefficiencies and identify opportunities for saving energy. Each finding feels like a small victory for your client.

Energy auditing also involves a lot of problem-solving and learning, where you often encounter technologies and processes that you were previously unfamiliar with. To provide the best recommendations to your client, you have to stay updated on the latest energy-efficient technologies and practices, making it an intellectually stimulating field. I particularly like thinking outside of the box during an audit. I tend to use all my senses to identify issues and inefficiencies and try to take a holistic approach, gathering in multiple pieces of information that slot together like a jigsaw to form a recommendation.

I am also somewhat of a data geek. I love nothing better than playing with thousands upon thousands of rows of data to find patterns

that may be invisible to other people. The joy of working with spreadsheets is you can play with the data as much as you want and simply revert to the original data if what you're trying is not successful. An example of this would be half hourly data that is available from most electricity suppliers where customers have SMART meters. Simple tricks like applying a heat map to the raw data can form a very strong visual tool for the client to immediately identify areas of intense energy usage or overnight base loads that are higher than expected.

Which part of your role do you enjoy the least?

For me this is split into two categories, report writing and travel.

As discussed previously, being able to communicate effectively with your clients is I feel a key skill in the

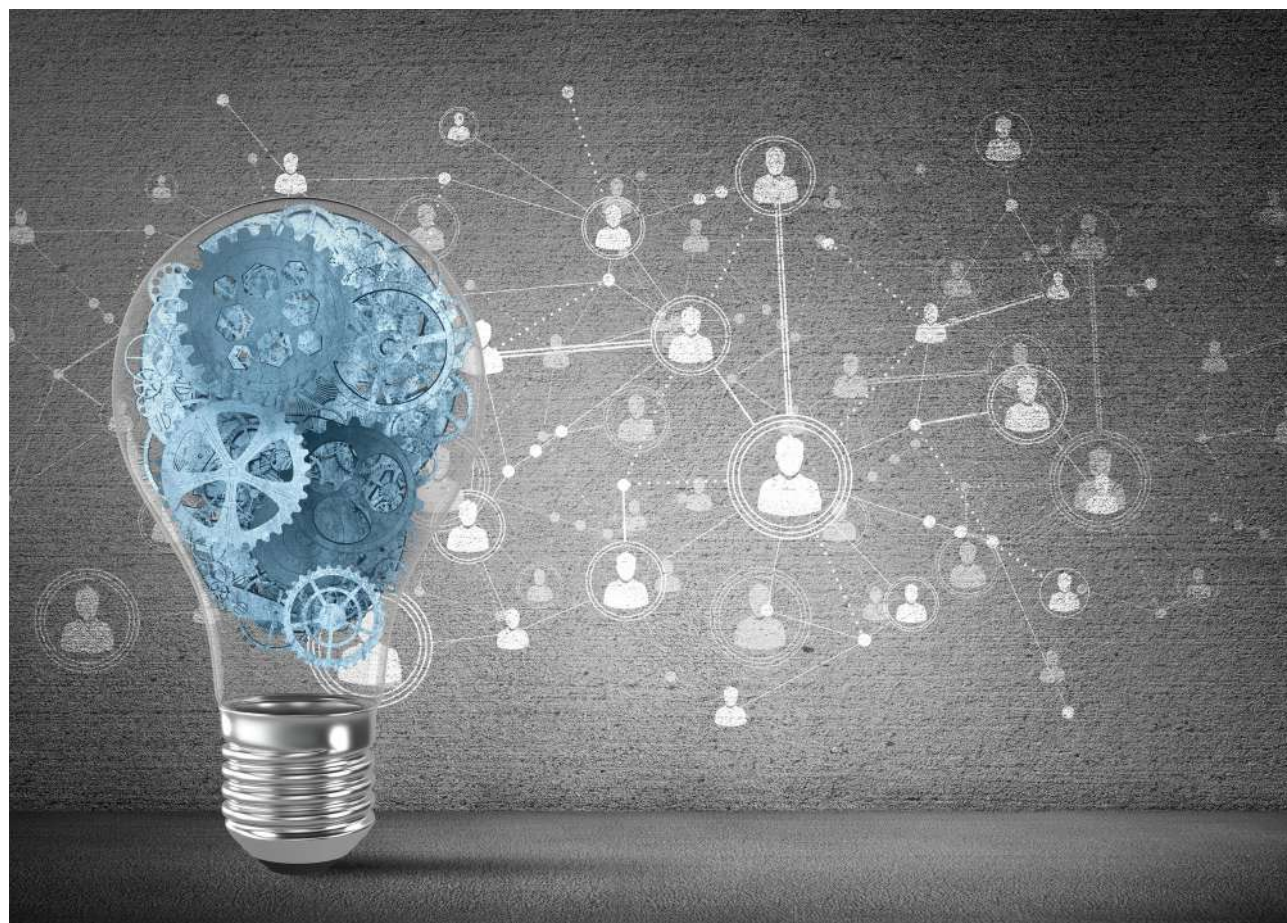
energy management industry. A necessary part of this is being able to generate meaningful reports for the clients. Whilst I can do this and hopefully do this successfully, it is not something that I necessarily enjoy doing. I find however, that using concise language that is targeted to my audience helps with my report writing. In addition, good use of key charts and graphics within a report helps portray sometimes very technical ideas across in an easy-to-understand way.

Part of the job spec for any energy auditor is travelling to the site where the audit has to take place. Given most of my remit is auditing industrial type businesses, it is rare that you can hop on a bus or a train to get to your destination and therefore use of the car is necessary. As a result this generally means

some motorway travel for most audits and the consequent traffic jams associated with that. When this does occur, it does have an added benefit that gives you time for thinking, particularly on the return journey from an audit where you have time to digest what you have observed and to start forming some outline recommendations for the client.

Reflecting back on your first months in the industry, is there anything that would have made your day-to-day job easier?

For me, I was lucky with my introduction to the industry as the consultancy I joined was very supportive. However, I would have liked to have had easier access to some form of peer mentoring outside of the consultancy with a view to developing my chartered status.



Take a Proactive Approach to Upskilling



No week goes by without a reminder of the UK's longstanding skills and productivity challenges. Employers across all sectors, including energy, are facing skills shortages, and some of the workforce feel they lack the skills they need. But – worst of all – they may not be supported by employers who encourage or invest in their professional skills' development.

Investment by employers in upskilling their energy managers is a mixed picture, according to the findings of one of our past surveys. Among our respondents, over 21% receive no professional development funding from their employers, and a further 26% receive less than £1,000 per year to upskill. Given the ever-evolving nature of energy management and the expanding role of energy managers, this is a significant flaw, one that requires a proactive approach and attention from corporate learning and development teams, those planning next year's budgets and individuals working in our industry.

Energy Management Skills

Pairing individuals with the right upskilling options can almost always unlock new opportunities and improved practices. However, more needs to be done to match training opportunities with the demand for the right energy management knowledge and skills. Good energy management practices cannot be learned overnight or even within six months. The learning journey certainly doesn't end with attending a handful of courses or achieving professional status or membership either.

The intricacies of energy management – from understanding what it is, what it means, and what it represents across organisations, to knowing what energy managers do, what technical and non-technical capabilities are required, and what knowledge and skills are essential to conduct energy audits and assessments, manage and implement reduction projects, grasp regulatory requirements, plan and deliver Net Zero strategies, and influence (and often inspire)

stakeholders – are just a few of the considerations when seeking to deliver meaningful work and achieve energy and carbon reductions.

At the EMA, we aim to ensure that those attending our courses gain applicable, practical knowledge, skills and ideas. Learners are encouraged to bring up their own challenges and practices during training, ask questions relevant to their organisation's energy management setting, and truly find and learn about solutions that are right for them.

Our aspiration to increase knowledge, skills and expertise aligns with the goal of increasing pay grades and ensuring that skilled professionals are retained across organisations and can match the external expertise of energy management technology and service providers.

In this way, individuals' course attendance not only benefits their professional development but also enhances the organisation or clients they work for.

Energy Management Means Lifelong Learning

Learning and development isn't just for those entering energy management as novices – many roles, careers and practices change over time, and in the case of energy management, often within a very short period. Those involved need consistent upskilling.

Worryingly, we found that only 6% of our respondents are required to complete professional development driven by their employer's requirements. The picture improves somewhat when we look at other drivers of professional development activities, such as the need to maintain professional recognition or an individual's aspiration to stay up to date with the industry. Let's

remain optimistic – and some early signs and industry progress already suggest this – that many more employers will recognise the importance of investing in upskilling their workforce as crucial to boosting their energy management practices.

If you are an individual looking to understand what capabilities you need as an energy management professional, or how you, your colleagues, or your workforce measure up against the skills norms set by the energy management industry, we share the range of skills that would be expected of those in energy management. The EMA recommends embedding a range of core and ancillary energy and carbon management competencies within all organisations, and these are as follows:

Core competencies:

- **Technical and Operational** – By understanding all types of energy equipment and systems found on site, energy management professionals can identify techniques for energy and carbon savings. This competency represents approximately 40% of any energy and carbon management practices.

Upskilling options:

[Fundamentals of Energy Management course](#)

[Energy Management in Building Services course](#)

[Lighting – Basic Understanding course](#)

[Essential HVAC Control and Optimisation course](#)

- **Energy Auditing /Assessments** – By understanding and being able to conduct onsite audits (also incl. a plant room), energy management professionals can identify poorly performing or inefficient equipment that would benefit from optimisation, upgrade or replacement and results in energy efficiency and energy and carbon reduction.

Upskilling options:

[Energy Auditing Techniques course](#)

- **Energy Monitoring, Targeting and Validation**

– By understanding and conducting data analysis (analysing utility bills, meter readings, energy management system reports, etc), interpreting and monitoring energy consumption data regularly, energy

management professionals can identify patterns, trends, anomalies and areas of inefficiency in organisation and support development and implementation of energy conservation measures.

Upskilling options:

[Energy Monitoring, Targeting and Validation course](#)

- **Regulation, Compliance and Voluntary Schemes** –

Energy regulations and their compliance and reporting requirements have an impact on organisation's operations. Some legislative demands can be sector specific but understanding the most significant ones such as SECR, MEES or ESOS helps energy management professionals to identify their applicability and boundaries to their operations and stay up-to-date with ever changing regulatory landscape.

Upskilling options:

[SECR Compliance course](#)

[Become an ESOS Lead Assessor course](#)

- **Carbon Management** – By understanding carbon

emissions scopes, carbon footprinting, measuring and tracking carbon emissions accurately, professionals can set reduction targets aligned with international standards, and implement initiatives that reduce the footprint and mitigate environmental impact.

Upskilling options:

[Net Zero Fundamentals and Strategies course](#)

[Calculating Carbon Footprint – Scopes 1, 2 and 3 workshop](#)

- **Behavioural Change, Motivation and Communication** – Implementing and communicating

energy management processes and their impact on operational practices can be significantly challenging. All stakeholders, regardless their position within the organisation could play a pivotal part in improving energy management practices. By understanding people's behaviours, actions and attitudes, energy professionals can ensure the success of any energy and carbon reduction initiative.

Upskilling options:

[Understanding and Delivering Behavioural Change course](#)

- **Energy Management Strategy and Plan** – By understanding typical energy and carbon management



strategies and plans, and what Net Zero can mean for an organisation and what routes to take to achieve it, energy management professionals can prepare plans and strategies that organisations can adopt and follow.

Upskilling options:

[Reaching Net Zero course](#)

- **Energy Procurement** - Energy procurement represents one of the most critical areas of organisational energy management, and understanding its risks, uncertainties and opportunities can lead to adopting correct procurement strategies and identifying savings.

Upskilling options:

[Energy Procurement course](#)

- **Onsite Electricity Generation** - By understanding the varying on-site generation technologies, their suitability for implementation, income streams, ongoing costs and grid connection requirements, which can be complex and are different for every site, energy professionals and their organisations can use on-site generation of electricity to reduce grid consumption and reliance on fossil fuel.

Upskilling options:

[Onsite Electricity Generation course](#)

- **Business Case Development** - By understanding business case development for energy and carbon reduction projects, energy management professionals can identify their requirements, feasible solutions, payback methods and typical periods, how to scope any project and estimate costs, identify benefits and alignment with wider organisations' strategies and any available funding streams and financing options.

Upskilling options:

[Business Case Development in Energy Management course](#)

- **Energy Project Design and Delivery** - Energy management projects have a clear commercial case which informs the design of any project. Energy manager's core role is a design of project and therefore they require to understand the relevant energy efficiency concept, required steps to bring it into reality in their organisation, tendering, commissioning and demonstration of project outcomes.

Upskilling options:

[Energy Project Implementation and Management course](#)

- **Energy Budget Management** - Sound budget management knowledge and skills allow for identifying energy deviations, aggregate financial and market data, monitor the ROI of investments and control of billing.

- **Leadership** - Leadership in energy management is connected to all stages of professional development. Leadership is demonstrated through motivating others, assessing performance of staff, acting as a mentor as well as influencing sustainable actions and resource efficiency within the organisation and wider sector.

Upskilling options:

[Contribute to the EMA initiatives](#)

Become a Mentor - [email us](#)

Ancillary Competencies:

- **Water Management** - Water use within buildings and processes is very often a grey area for those dealing with building operations but the focus on how water is metered and monitored and how to analyse consumption and carry out a basic water audit can lead to identifying likely areas of consumption and techniques that may allow reductions in water consumed.

Upskilling options:

[Water Management course](#)

- **Waste Management** - Essential knowledge of mapping waste streams, undertaking waste auditing, identifying improvement opportunities, and setting SMART waste targets and KPIs, as well as measurement, monitoring and reporting techniques relevant to waste data help organisations to develop more waste efficient practices.

Upskilling options:

[Waste Management course](#)

- **Energy Efficient Transport** - Fuel emissions can be significant contributors to organisation's carbon footprint and reviewing transport use and related operations, and



embedding fuel efficient practices, can significantly reduce emissions.

Upskilling options:

Reducing Fuel, Electricity and Carbon Emissions in Fleets workshop

Fleet Management guide

- **Information & Communications Technology** – IT assets and operations are often ignored in energy and carbon management strategies but for some organisations with research and data centre facilities, their energy

consumption can represent a significant proportion of costs and emissions.

If you wish to discuss your energy management upskilling or your team's analysis of energy and carbon management skills or wish to recruit energy managers, please contact us with your requirements.

For detailed requirements of each of the mentioned competencies, read the Energy Manager Skills Mapping document.



4 MAR

14:00-15:00
ZOOM

PAS 51215-1:2025 AND ITS RELEVANCE TO ESOS

PAS 51215-1:2025 Energy and decarbonization assessment – Part 1: Process specifies the process requirements for conducting an energy and decarbonisation assessment, as well as the output of such an assessment. Recently, it has been announced that the PAS can be used on a voluntary basis for ESOS compliance in Phase 4. This workshop will be delivered by Kit Oung, the technical author of PAS 51215-1:2025, who will explain what the PAS covers, its application to ESOS and the differences compared to the 2014 version.

6 MAR

14:00-15:00
ZOOM

OPTIMISING ENERGY MANAGEMENT TO REACH CLIMATE TARGETS

This workshop will highlight INEOS's strategic approach to sustainable energy management within their climate roadmap. Join Hür Bütün, INEOS's Group Environmental Data Manager, to discover how they plan to leverage hydrogen fuelling, green power procurement and process optimisation to reduce their climate impact in the future. Learn what practical steps the company is taking to progress towards its climate goals while ensuring sustainable growth.

13 MAR

14:00-15:00
ZOOM

HOW TO APPLY WHOLE-LIFE CARBON ASSESSMENTS TO OPTIMISE EMISSIONS IN THE BUILT ENVIRONMENT

This workshop will examine the whole-life carbon, emphasising its significance in sustainable practices. It will cover: the definition of whole-life carbon, its importance in reducing environmental impact, methods for measuring it accurately, and brief strategies for effectively optimising emission depending on where you are in the supply chain and the level of emission control you might have. The presentation will also outline a worked example of preparing a carbon budget focusing on "cradle-to-gate" life cycle Product Stage (A1-A3) of concrete, steel and timber, and then fuel and electricity for construction processes at the Construction Stage (A4-A5).

18 MAR

10:00-11:00
ZOOM

PAS 51215-2:2025 AND ITS RELEVANCE TO ESOS LEAD ASSESSORS AND ASSESSMENT TEAMS

PAS 51215-2:2025 Energy and decarbonization assessment – Part 2: Competencies of lead assessors and assessment teams specifies the competencies necessary for a person to be deemed capable of planning an energy and decarbonisation assessment, leading an assessment team and reviewing and approving the output of an energy and decarbonisation assessment. ESOS participants and Lead Assessor can use the PAS on a voluntary basis to determine whether an assessor is suitable to carry out an assessment according to PAS 51215-1:2025. This workshop will be delivered by Kit Oung, the technical author of PAS 51215-2:2025, who will explain what competencies the PAS covers, their application to ESOS Lead Assessors and assessment teams, and the differences compared to the 2014 version which still represents the competency standard for ESOS Lead Assessors for Phase 4.



Navigating the Shifting Role of ESOS Lead Assessors

ESOS Lead Assessors have a critical role in the ESOS compliance process ensuring that organisations complete their compliance projects, and using their knowledge and experience to influence positive change to the better energy and carbon management practices. ESOS Lead Assessors should look beyond energy audits and reporting, and work with businesses to help them understand their energy use, and give them plans and solutions that are relevant and achievable to the business and lead to demonstrable and meaningful outcomes.

A good ESOS Lead Assessor must have a blend of specific skills and experience to plan an ESOS assessment, manage an assessment team, and review and approve the outcome of an assessment. Of course, they must also be registered with one of the approved registers for ESOS lead assessors. In broader terms an ESOS Lead Assessor should have:

Industry Experience:

Demonstrated by a solid background in energy management and energy auditing, preferably in sectors covered by the ESOS scheme. Experience in conducting onsite energy audits (incl. plant/boiler rooms) to identify poorly performing or inefficient equipment that would benefit from optimisation, upgrade or replacement is essential.

Knowledge of ESOS Regulations:

Demonstrated by a deep understanding of the ESOS regulations, which amongst many other aspects also include understanding the qualification

criteria, how to apply the available ESOS guidance, how to identify energy savings opportunities, energy usage patterns, and being familiar with any legal requirements and implications of non-compliance.

Technical Expertise: Demonstrated by technical expertise in energy systems (such as heating and water systems, cooling systems, pumping systems, air handling systems, lighting, compressed air, small power such as IT, kitchen, etc.) and their controls, low carbon solutions and behavioural change. They should be able to demonstrate their ability to carry out an assessment of all types of energy systems and equipment found onsite and in operational processes, and be able to identify techniques for energy savings and carbon reduction, and/or be able to review and approve assessments of other competent and skilled assessors.

Commitment to Self-Improvement and Development: Keeping up to date and

understanding energy management developments and energy-saving technologies is also key for an ESOS Lead Assessor, and should be part of good practice and ongoing professional development of all. This helps in providing insightful assessments and identifying opportunities for improvement for their own organisations or clients.

For Phase 5, ESOS Lead Assessor applicants will also be required to demonstrate their decarbonisation assessment experience.

Communication Skills:

Demonstrated by excellent communication skills to convey findings, suggest improvements and work with various stakeholders, including senior management, to implement energy-saving initiatives effectively.

Project Management Skills:

Demonstrated by experience in planning and overseeing energy audits and teams, reviewing and approving assessments and their outcomes. Being able to manage multiple projects, timelines and

teams effectively is crucial.

Problem-Solving Ability:

Demonstrated by the ability to assess energy consuming systems and energy management practices, analyse energy data, identify inefficiencies and recommend cost-effective and practical solutions.

Be Independent and Objective:

All ESOS Lead Assessors should be impartial and ensure assessments are thorough and fair, without bias or influence.

Belong to a Professional Register for ESOS Lead Assessors:

All ESOS Lead Assessors must be accredited by an authorised professional body, such as the Energy Managers Association. This ensures the individual has the required knowledge and experience in energy management and audit practices, and has been through an appropriate approval process.

For fully defined competencies and responsibilities of ESOS Lead Assessors, refer to the core competencies, knowledge and skills published in the [*PAS 51215-2:2025 Energy and decarbonization assessment – Part 2: Competencies of lead assessors and assessment teams – Specification*](#). This Specification, alongside the [*PAS 51215 1, Energy and decarbonization assessment – Part 1: Process – Specification*](#), can be used on a voluntary basis for ESOS compliance. Further guidance on voluntary use of these PASs will be published in due course by the Environment Agency and DESNZ.

The existing competency *PAS 51215:2014 Energy efficiency assessment: Competence of a lead energy assessor – Specification*, will continue to be used as the competency standard for ESOS Lead Assessors for Phase 4.

If you are unsure where to start, reach out to the EMA and begin planning your ESOS journey today. To gain a deeper understanding of the ESOS Lead Assessor role, explore our interviews with two EMA accredited ESOS Lead Assessors.



Paul Thorn
Director
Direct
Efficiency Ltd

Can you describe what it's like to hold the role of an ESOS Lead Assessor?

I've been an ESOS Lead Assessor registered with the EMA since 2015 and gained my accreditation in time for ESOS Phase 1. At that time, I was already experienced in undertaking energy surveys as a consultant for the Carbon Trust. The ESOS Phase 1 just followed on, and I found similarities in completing an ESOS energy survey with the old Carbon Trust surveys.

Most of the time I work on my own, I conduct surveys from the start all the way to the ESOS compliance submission. When someone contacts me, (or finds me through the EMA), I explain the ESOS requirements to them, complete the energy surveys and put all the survey reports together, collate all the data for the total energy / transport consumption document etc. I then help my clients through the online ESOS submission process on MESOS and will normally hold a meeting while they complete their notification online.

Then there's another side to my ESOS involvement, where I just complete energy surveys and reports, and someone else acts as an ESOS lead assessor.

In my Carbon Trust days, I used

to visit a lot of different types of industries and businesses, and I've always felt quite confident about going into different types of environments. I can easily adapt to working with a hotel or restaurant chain as well as a manufacturing site.

How do you balance the demands of your job with other professional obligations or projects?

Working on ESOS assessments is a bit of a work flood and famine experience. The flood normally happens in the last two years of the four-year period, and especially in the last year. Participants seem to want everything done in the fourth year, when what they should be doing is getting the process completed over the four-year period. Ideally, all the energy surveys would be completed in the early period, and then by the time we get to the final submission date, all that should be left to do is getting the total energy consumption document completed.

I have some long-term clients who I've worked with over many years now and who I've coached into getting their energy surveys undertaken and completed in the first two years of the ESOS cycle. I am now beginning to remind them that they should be getting on with it for Phase 4, and we'll probably start getting the energy surveys done later this year.

You could say that the ESOS compliance continuity is there, but the first two years of the ESOS cycle could be the worst period workload wise and it can go very, very quiet. Unless there is an overlap between phases, which is happening now, when some companies are still completing their Phase 3 late

and there still is some ESOS work around.

That's why I've got other work. I complete heat meter surveys in buildings where I look at the feasibility of putting heat meters into commercial buildings to measure tenant floor LTHW and CHW energy consumption. I also undertake plant conditions surveys, and there is quite a high element of energy efficiency associated with them. I also undertake plant asset and planned preventative maintenance (PPM) registers and try to vary my different revenue streams between all those areas.

Whilst this could be the worst time for ESOS compliance from a consultant's view, there is still other work out there.

I haven't been involved with ESOS Action Plans yet as my clients have all just got on with them themselves, but I'm expecting maybe one or two might come back to me soon because they've maybe forgotten about them.

How does your professional status as a registered ESOS Lead Assessor impact the level of responsibility and influence you have within your clients' organisations?

As mentioned, I try to encourage some of my long-term clients to get their energy surveys undertaken early, but that very much depends on the individuals I am dealing with. People move around within jobs a lot and you very often find that the person that you maybe have been dealing with previously has moved on or gone into a different role. The continuity and opportunity to influence or embed knowledge can get fragmented a little bit, but I'd like to think that I try to give as best a service and advice as I can.

The responsibility is quite high because there are not many ESOS Lead Assessors, and a lot of work goes into completing ESOS assessments. You also want to make sure that people and organisations appreciate the fact that ESOS can work for them, and it shouldn't just be a tick in the box exercise. I also try to get across to them that this is going to be a long-term process, and they've really got to take part in it and get the most out of it.

However, I do feel that some clients



from smaller organisations shouldn't be in ESOS, as they don't have many buildings or a big transport fleet, yet they still qualify through qualification through staff numbers or turnover. For them, I get feedback that they feel ESOS is another bureaucratic hoop to get through, and all they want to do is to get on running their business.

Luckily many people I work with seem to want to embrace ESOS and get the most out of it. It can be quite a good experience for them and for you as a lead assessor, because they're learning about some of the

energy related dynamics behind their business and the energy they consume, and where within the organisation, because they might not always understand this in a bigger organisation.

What impact do changing regulations have on your role?

You really must keep your wits about you at the moment on the ESOS regulation side of things. I try and keep up with any updates and developments as much as I can through newsletters from the Environment Agency (EA) and updates from the EMA. I also disseminate the information out to clients because I think they need to know about any changes and to just keep on top of them. With ESOS you must keep an eye on the different upskilling and awareness opportunities too.

As I work on different types of projects and not ESOS compliance only, I have to make sure I keep on top of the regulation and updates as much as I can as part of my responsibility as a Lead Assessor, and also as a reviewer of ESOS Lead Assessor applicants.

Keeping on top of Phase 3 was difficult, mainly due to the changes applied by the EA during the Phase. Any changes maybe should have been proposed and discussed during Phase 3 and then introduced in time for Phase 4. It worked in the end only because of the extended deadlines, but it put many people under pressure with having to play catch up in some areas.

I did an ESOS survey for a company at the beginning of Phase 3 but with some of the ESOS Phase 3 changes, I had to keep making sure everything in my assessments was in line with the evolving regulations.

So, whereas I could have probably got it completed quicker. I felt for some clients as well because they wanted to get it done early but ended up not being able to move on when some of the regulation changed, and were almost punished for starting Phase 3 early.

Having said that, a lot of the information that you must now include, should have already been included anyway. To put a positive spin on it, I think the Phase 3 changes have tightened the whole ESOS assessment regulations up.

One of the biggest changes will be the inclusion around carbon regulations and reporting in ESOS from Phase 5. The energy savings opportunity is in the name of the scheme, so it was all about energy reduction and savings. If you aim to save CO2 emissions, for example by installing a solar PV system, you're not actually saving energy. For me there's a little bit of a conflict there between what was previously reported on and what will be expected in the future from lead assessors. Ultimately, you should follow the regulations and include what you feel is right for a site or an organisation.

Even though it's taken 10 years since the introduction of ESOS, I think Phase 4 is going to be a lot better, a lot tighter and the clients – participating organisations are getting more used to it, and realise they have to comply with it, especially as there's Phase 5 in

the future as well, which we must prepare for.



Adam Fairman
Senior Energy
Analyst
Welsh Water

Can you describe what it's like to hold the role of an ESOS Lead Assessor?

I've been a lead assessor since phase 2 of ESOS. I'm an internal Lead Assessor so I am only responsible for our own ESOS submission. We have a dedicated energy team who are continually looking to identify and deliver energy saving opportunities, so my role in ESOS is about making sure what we are doing aligns with the requirements and ensuring this is recorded and summarised in a compliant way. This streamlines our ESOS submission, minimising the amount of additional work needed to comply with the regulations.

How do you balance the demands of your job with other professional obligations or projects?

There are two sides to my role, data for regulatory reporting and data for business intelligence. We must report regulatory data on energy consumption to Ofwat with annual peaks between April and May, so fortunately it doesn't clash with the ESOS submission deadlines which helps to manage workload. The business intelligence work is important, but doesn't have the same hard deadlines so this fits

around the regulatory reporting.

How does your professional status as a registered ESOS Lead Assessor influence the level of responsibility you have within your organisation?

As an organisation in a highly regulated industry, regulatory compliance is taken very seriously. So, adding compliance to the cost saving opportunities puts the work higher up the agenda in the organisation. Because our ESOS submission must be signed off by directors, this increases the visibility of the work at a senior level. The fact that we have the internal competencies to comply with ESOS within our energy team, rather than relying on consultants, enhances the credibility of our team with senior leadership and continually enhances our internal capabilities.

What impact do changing regulations, or new ESOS Lead Assessor competency specification have on your role?

One of the main changes from this ESOS cycle is the requirement to submit an action plan and annual update. To minimise the amount of additional work, I have changed our internal energy savings opportunity tracker to automatically populate the information required for the action plan template. This way, opportunities get included in our action plan as part of the routine management of our energy saving programme, rather than creating more work and recording the same information in two different places.



Keep on Top of the Energy Savings Opportunity Scheme (ESOS)

ESOS Phase 3 not quite wrapped up yet

For the majority of ESOS participants, the Phase 3 notification of compliance is now complete. However, as part of Phase 3, those companies that qualified and completed their notification on MESOS were also required to submit an Action Plan by early December 2024 with the caveat that the Environment Agency would not take a remedial action against those who submit their Action Plan by 5 March 2025. Additional important dates to note include 5 December 2025 and 5 December 2026, which are for progress updates on the Action Plan.

Anticipated ESOS Phase 4 changes NOT going ahead

The Government and the Environment

Agency have also begun communicating and making significant announcements regarding Phase 4 (2023-2027).

In the Government's Response to the ESOS consultation in July 2021, the previous administration announced the intention for Phase 4 of ESOS to require participants to

include net zero considerations in their ESOS audits. However, due to delays in the introduction of Phase 3 legislation and guidance, and to allow organisations sufficient time to prepare for such a major change, the new government has decided to postpone the introduction of net zero requirements until Phase 5 of ESOS (2027-2031).

Other proposed and anticipated changes to the qualification thresholds for ESOS, aimed at

Therefore, the Phase 4 qualification criteria and qualification date (31 December 2026) will remain unchanged and as outlined below.

Any UK organisation must comply with ESOS if it is a large undertaking, or part of a corporate group that includes another UK undertaking, and meets either one or both of the following conditions:

- has 250 or more employees, or
- has a turnover exceeding £44 million annually, and an annual balance sheet total exceeding £38 million.

Smaller Phase 4 changes that are still expected to go ahead

Some proposed changes for Phase 4 are still expected to proceed, subject to parliamentary time and scrutiny. These include:

- Removal of Display Energy Certificates

(DECs) and Green Deal Assessments (GDAs) as compliance routes.

- Inclusion of progress against action plan commitments in the ESOS assessment.

- Requirement for participants to provide an explanation if action plan commitments have not been met. DESNZ is expected to provide



aligning with Streamlined Energy and Carbon Reporting (SECR) requirements, will also not be taken forward in Phase 4. Any changes to qualification thresholds will be addressed as part of ongoing work to consider ESOS's role within the wider business energy and emissions reporting landscape.

further details on these changes. The necessary legislative updates, full guidance, and modifications to the Manage your Energy Savings Opportunity Scheme (MESOS) IT system are planned to be in place by early 2027, ahead of the notification of compliance deadline for Phase 4, which is 5 December 2027.

Option to report voluntarily on Net Zero in Phase 4

DESNZ recognises that ESOS participants and lead assessors may already be undertaking work that covers some elements of a net zero assessment. It is suggested that the recently finalised Publicly Available Specifications standards (PAS 51215-1:2025 Energy and Decarbonisation Assessment – Part 1: Process – Specification, and PAS 51215-2:2025 Energy and Decarbonisation Assessment – Part 2: Competencies of Lead Assessors and Assessment Teams – Specification) referred to in the Government's Response to the ESOS consultation, may be used on a voluntary basis for ESOS compliance in Phase 4.

Participants wishing to demonstrate their commitment to net zero can follow the process set out in PAS 51215-1:2025 to carry out an assessment which:

- Includes GHG emissions related to the energy currently covered by ESOS,
- Assesses governance and risks associated with achieving net zero across those emissions, and
- Proposes an implementation plan to achieve net zero by 2050 across those emissions.

DESNZ is expected to confirm when they will provide guidance to ensure that participants using PAS 51215-1:2025 comply with the requirements for an ESOS audit under ESOS regulations.

Updates to the MESOS digital system for Phase 4 will include

provisions that allow participants to disclose their use of PAS 51215-1:2025 as part of their commitment to achieving net zero.

Organisations that voluntarily follow the PAS 51215-1:2025 process in Phase 4 will have the opportunity to familiarise themselves with the specification and provide feedback to DESNZ to inform decisions for Phase 5. DESNZ expects to communicate further regarding Phase 5 plans and opportunities for feedback on the implementation of the PAS documents later this year.

If you have any queries regarding this policy decision, please email DESNZ.



EMA ESOS FORUM

A dedicated forum on matters related to the compliance with the Energy Savings Opportunity Scheme (ESOS).

JOIN TODAY → www.theema.org.uk





The Carbon Dilemma: Global Challenges and National Growth

The first time that the term 'carbon' entered into my working life was during my electrical apprenticeship in the 1960s - the carbon in question being the carbon brushes that were used in electric motors and generators. Then, later on, working in an office using carbon paper to make copies of letters and forms.

The term 'carbon' now has a completely different meaning and form in my work as an energy management consultant. No longer is it a piece of material used to transmit electrical current and provide resistance, but it is predominantly referred to as a gas. Its correct title being Carbon Dioxide or CO₂ in its abbreviated form. This gas is principally emitted when fossil fuel is burnt to produce energy and it is one of a number of gases which comprise what is commonly referred to as Greenhouse Gases (GHGs). They are named such because their presence in the atmosphere is considered to be mainly responsible for the climate change being experienced throughout the world, by trapping heat within the Earth's atmosphere similar to that experienced in a garden greenhouse.

It is therefore obvious why this subject is now such a high profile

global issue, and which the world leaders urgently need to address by working harder and closer together in an effort to reduce the effect of global carbon emissions. Unfortunately, the resolution is not progressing as well as expected, and in my opinion the situation is fraught and frustrated by international vested interests and political ideology.

Within our own country, there are several government initiatives and mandatory edicts associated with the UK's carbon reduction programme. However, it appears that the government is concentrating most of their energy pursuing a path towards Net Zero 2050.

According to the Department for Energy Security and Net Zero in their 2023 UK Greenhouse Gas Emissions Report - Provisional Figures; the total amount of GHGs emitted in the UK in 2023 was 384.2 million tonnes (Mt). As part of this total CO₂ was the largest GHG, comprising some 78.8%. To demonstrate this into some form of physical representation, 1 tonne of CO₂ is equal to 556 m³, or roughly the size of a hot air balloon. If my maths is correct, this equates to around 302 million hot air balloons being released into the atmosphere

from the UK every year. It appears, therefore, that the use of the word carbon is more commonly used when discussing Greenhouse Gases and their reported, and generally acknowledged detrimental effect to our planet.

If we consider the global carbon emissions from the UK's point of view, then as a nation, we produce less than 1% of total global GHGs. The largest is China at 30.9%, USA at 17.1% and India at 7.9% (Source: Global Carbon Atlas-2021). Reviewing these figures, it is not uncommon to understand the viewpoint that since the UK is producing a considered minimal amount of GHGs compared to the world's total, why does the subject of carbon reduction receive such high profiling and priority in a quest to hasten the UK's reduction and achieve Net Zero.

This statement could possibly be perceived as negative which is understandable, and it is a point often raised by clients. Why the race to reduce our GHGs when it is so small in comparison? This is a situation which I feel some affinity towards. My experience within my profession, especially within the industrial and manufacturing sector, is that actions required to achieve this goal could be financially

challenging, possibly leading to a reduction in competitiveness and position within the 'market place'.

I am passionate about my work within energy management and being able to assist organisations in their efforts to reduce energy consumption, in identifying solutions which will enable a more efficient energy use without detriment to the operational efficiencies of the business. I firmly believe that this statement is extremely important because I'm also proud of our British industry and I fear for its future. The majority of our consumables and even a great deal of electric vehicles are now produced in South Asia, such as China, where they are consuming electricity produced largely from coal fired power stations, emitting billions of tonnes of CO₂ into the Earth's atmosphere.

I must admit that this modus operandi does irk and worry me somewhat, considering the UK's government edict in pursuit of our carbon reduction and net zero emissions. Like any coin, however, there are always two side to look at and a positive response to the UK's position and situation is that any reduction in carbon will be mainly achieved by a reduction of energy consumption by the practice of good energy management principles. This is an unmistakeable approach to reducing overhead costs, enhancing financial viability, competitiveness and growth. I would like to suggest that whilst using fossil fuels, in my opinion energy management should be

considered to be an essential component of carbon management as they effectively go hand in hand.

There are many advantages of energy management and the associated benefit of carbon management. However, in my opinion, the three main benefits are:

- a)** Reduction of the organisations' operational costs by reducing energy consumption.
- b)** Reduction and sustainability of fossil fuels that have been freely provided by our world during its creation.
- c)** Reduction of Greenhouse Gasses being emitted into the atmosphere



in an effort to combat the consequences and threat of climate change.

It could be argued that it is more important to reduce the amount of GHGs and combat the effects of climate change rather than to enable the UK's industry to be more competitive and provide opportunities for growth by practising energy management methods. I am against this view point and therefore, I would suggest that there are distinct advantages to a programme of reviewing and reduction of energy consumption

prior to undertaking any further action towards carbon reduction. Possibly in terms of installing renewable energy technologies, which most organisations appear to favour as a means of carbon management and the road to Net Zero.

I have experience of some clients pursuing the route to Net Zero using so called 'paper' exercises, in terms of purchasing renewable and certified electricity and carbon offsetting programmes. This action, whilst noble in its required outcome, is counterintuitive to the advantages of a committed and correct approach to a viable

energy management system. Adopting a 'paper' scheme, in my view, is missing the point and is misleading, similar to placing a veil over the carbon and/or papering over a crack in the wall. I would argue that the costs associated with the purchase of energy through such schemes can be significantly greater than by operating a detailed energy

management programme, and benefiting from the associated cost reductions arising from the proven methodology of the process.

As an example, last year I undertook an ESOS audit for a company whose sole energy consumption was derived from the national electricity grid and the building was certified Net Zero due to Renewable Energy Certification. Completion of the report identified energy savings in the region of 80mWh/year compared to the recorded annual consumption of 500mWh/year. This

enabled the company to be in a position to implement some 16% energy and cost savings. However, because the company had a contract with the electrical supplier regarding renewable energy, it was therefore unrealistic to specify what quantity of carbon reduction could also be anticipated. Electricity provided by renewable energy is some 10% more expensive than 'normal' grid electrical energy and its associated carbon emissions.

Renewable Energy Certification only applies to electrical energy and therefore the challenge when using fuel oil and/or natural gas is greater when considering carbon management and reduction. Fossil fuels such as Fuel Oil, and more commonly used Natural Gas are mainly consumed in buildings' heating and hot water provision equipment. Whilst this equipment can be made more efficient, leading to a reduction in carbon emissions, the fact is that there will always be some carbon emissions associated with such fuels. Therefore, this produces a huge challenge in terms of technology and cost, whilst considering the requirements of Net Zero. Systems such as gas fired hot water boilers can effectively be replaced by electrical supplied heat pumps or electric boilers. However, the circumstances are more difficult if the boilers are large and used to provide steam for process operations. Equipment of this type, along with gas fired furnaces and ovens are capable of being converted or renewed to be supplied from electricity, however the financial implications will be a major issue regarding the possible purchase of new equipment, and the inevitable increase and upgrade of the electrical supply infrastructure

to furnish the required additional electrical loads.

Another alternative is to use hydrogen derived from renewable electricity as a fuel to replace gas, this could be less expensive regarding equipment modification/ replacement as the existing burners should be compatible with hydrogen. Unfortunately, the lack of storage and pipework infrastructure along with associated high costs are prohibitive at this point in time. We can only hope that this might receive the same high profile as Net Zero.

Climate change and the effects of GHG emissions are very much, in my mind, in my professional role as an energy management consultant. I find that my passion in working alongside UK industry to maintain, sustain and grow their businesses through energy management principles and improving energy efficiency is considered extremely important, and I experience lack of motivation to primarily work towards the ethos fully embracing the Net Zero programme and target. Indeed, this also appears to be the view of our present Chancellor of the Exchequer when asked whether she would choose to prioritise the economy or tackling climate change. Her answer was "growth was her number one mission", adding: "it's obviously the most important thing".

It is not very often

that I agree with some of our MPs, but like she also said "it is a matter of priorities". Net Zero aspirations by the UK are to be admired and like all good energy management practices it is always important to have a reduction target. My caveat to this is to state: "yes, targets are part of a good planning as long as the target is achievable without causing detriment to the operational efficiencies of the UK businesses in terms of production, finance and growth".

Author's profile:

Astley is an ESOS Lead Assessor with over 50 years' experience within the building services sector and 35 years' experience with industrial power and process control systems. His specialities include power distribution, lighting, motor drives, HVAC controls, compressed air systems, building services design and maintenance as well as running stakeholders' engagement campaigns in his previous role as energy manager at GSK.



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