

2024 WHITE PAPER

Overcoming the challenges of implementing energy efficiency and energy transition projects



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EXECUTIVE SUMMARY

In today's challenging economic climate, tackling climate change can appear to be a further drain on scarce financial resources. However, in many cases it makes good business sense to implement energy efficiency and carbon reduction schemes. They not only drive down emissions, they also lower operational costs and exposure to fluctuating energy prices.

Despite these benefits, many organisations meet significant difficulties and barriers to implementing energy efficiency and energy transition projects. These challenges stem from financial constraints (both actual and hypothetical), technical limitations, resistance to change, lack of data, lack of resources and technology complexities.

This white paper examines the most common obstacles to implementing energy initiatives and explores potential solutions to overcome them. By addressing these challenges, organisations can unlock the full potential of energy efficiency and energy transition projects, contributing to both economic and environmental sustainability.

INTRODUCTION

The UK government recently reaffirmed its commitment to tackling climate change at the UN climate change conference in Baku. Committing the UK to reduce all greenhouse gas emissions by at least 81%, of 1990 levels by 2035, aligned with the already mandated net zero by 2050. This sets an ambitious target for the UK, and highlights the need for businesses to play their part by reducing their overall emissions. Businesses can reduce their emissions from energy use via two main routes: reducing the amount of energy or consumption through working more efficiently and effectively; and transitioning to lower carbon fuels, such as using electricity rather than gas for heating.

The government has introduced several regulations over the last 15 years to encourage companies to: first understand their emissions (Streamline Energy and Carbon Reporting, SECR, for example), and then identify how these can be reduced (such as the Energy Efficiency Opportunity Scheme, ESOS). ESOS phase 4 already includes the need to set out an action plan. In future, it is likely to include a wider scope in terms of both net zero assessments and detailed plans to achieve them by a specific date.

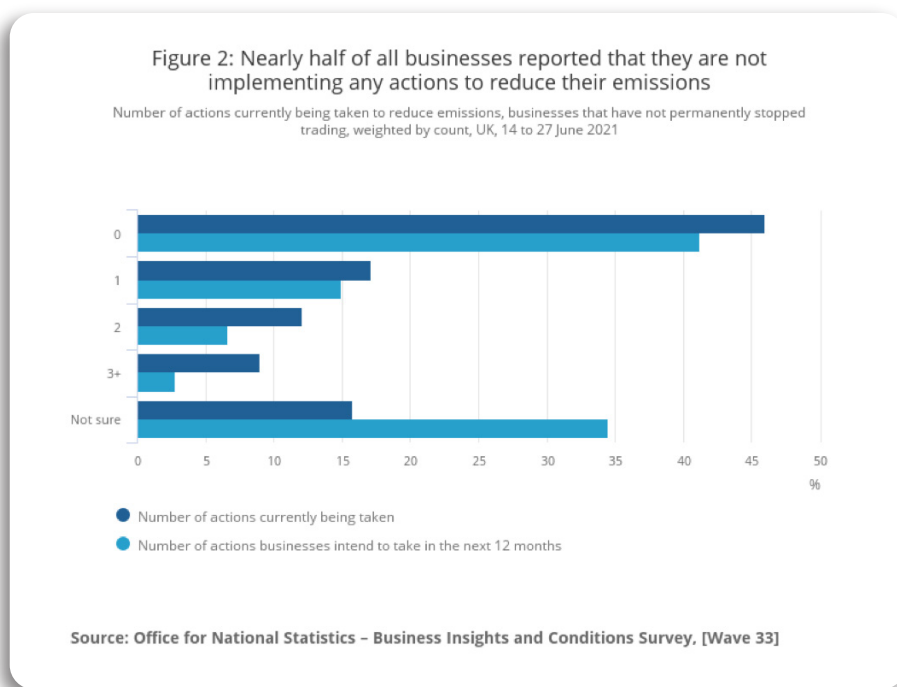
Energy efficiency is one of the most cost-effective ways to move towards environmental sustainability while reducing operational expenses. Energy efficiency projects typically involve upgrading equipment, optimising processes, and utilising smart technology to minimise energy waste. However, implementation is often hindered by obstacles, which can cause delays, escalate costs, and even lead to project being abandoned. This white paper explores the barriers that many organisations who do not have their own in-house energy teams face. Whether an organisation is in the public or private sector, this white paper offers practical recommendations to effectively overcome the barriers.



ARE THE BARRIERS REAL?

To date, ESOS has succeeded in raising awareness of energy efficiency and identifying substantial energy-saving opportunities among large UK organisations. Data from ESOS provides a stark indicator that organisations across the UK can identify energy savings opportunities, but more than half of companies are not implementing these schemes and realising the benefits¹.

Data published by the Office for National Statistics also shows a similar picture with nearly half of businesses reporting that they are not implementing any actions to reduce emissions².



DESNZ (Department for Energy security and Net Zero) is continually exploring ways of strengthening the existing ESOS scheme and learning lessons from previous phases. To reach the UK's 20% energy efficiency improvement ambition for businesses by 2030, and the 2035 & 2050 Net Zero targets, the Department is clear that there is a need to maximise the energy savings from businesses¹.

The Energy Security Bill, first published in 2022, included changes to phase 4 of ESOS³ :

- Strengthen requirements for audits and make them more standardised
 - Improve the quality of ESOS audits e.g. through better oversight of assessors
 - Add a net zero element to the audits
 - Require public disclosure of high-level recommendations by participants
- This also included two further options, to be considered for potential future implementation:
- Extend the scheme to Medium-Sized Enterprises
 - Mandate action to improve energy efficiency.

DESNZ also launched phase 4 of the Public Sector Decarbonisation Scheme (PSDS) in September 2024, which will run from 2025/26 through to 27/28. With an aim of supporting more public buildings such as schools and hospitals to switch to cleaner heating and cut their emissions, accelerating to net zero.

¹ Net Zero audits: state of the market and the potential to drive action Final report, 52% of companies said there had been no change in their energy efficiency measures due to ESOS.

² UK business action on net zero and historical energy use, Office of National Statistics

³ Guidance Energy Security Bill factsheet: Powers to strengthen the energy savings opportunity scheme



Barriers to implementation

1. FINANCIAL CONSTRAINTS

CHALLENGE

A primary barrier to energy efficiency and transition project implementation is the upfront cost. Even though these technologies can result in substantial long-term savings, the initial investment may be high. In Optopia's experience many organisations are reluctant to allocate funds to these projects, particularly if the financial return is not immediate. Additionally, energy efficiency upgrades are often seen as non-essential, making them less likely to secure funding compared to core business initiatives.

SOLUTIONS

1. Financing Options:

Organisations can explore financing mechanisms such as energy performance contracts, green bonds, and government subsidies (such as Salix Phase4 for public sector) to reduce upfront costs.

2. Return on Investment (ROI) Analysis:

Providing a detailed ROI analysis can demonstrate the long-term cost savings and help make a stronger business cases. Optopia finds that detailed business cases are needed to assess a range of options. Once they are fully costed, the payback periods for investment can be identified, to push the case forward. By comparing different projects' impact on future emissions, decision makers can identify the optimum mix of projects to achieve their emission reduction targets.



Barriers to implementation

2. GOOD QUALITY AUDITS AND OPPORTUNITY IDENTIFICATION

CHALLENGE

Quality audits, conducted by experienced and knowledgeable assessors, are fundamental to producing effective results. They rely on adequate data collection, a good understanding of operational requirements and collecting up-to-date site information, including any future plans. An audit forms the basis for all future actions and business cases for investment; in our experience, it is only possible for opportunities to leave the drawing board and progress into practical implementation if good quality audits are completed.

SOLUTIONS

1. Partnerships with Experts:

Partnering with specialised firms or consultants, such as Optopia, who bring a team of experienced and knowledgeable assessors is crucial. A team that conducts energy audit and transition surveys across multiple sectors, on an ongoing basis, can provide an independent and up to date view of real opportunities. It also allows for cross-industry learning to be applied.

2. Taking a Fabric First Approach:

Understanding buildings is essential to effectively identify opportunities for heating and cooling projects. Key to these types of project is understanding the energy lost through the building fabric and ensuring that this is minimised in a cost effective way. Any proposed changes to heating and cooling systems must be appropriate to the environment they will operate in.

3. Taking a Systems Based Approach:

A holistic view of organisations and their operations is also key to overall efficiency and energy transition projects. Focusing on individual areas of the business in isolation, whilst important in some projects, is generally less effective than considering the whole operational environment and how changes in one area may impact another. Optopia has particularly strong capability in this area, which was recognised by the Energy Managers Association in 2024, where Optopia and our client Portsmouth Water won the Energy Efficiency Project of the year award for our project which delivered significant energy, cost and emissions savings for our client.





Barriers to implementation

3. RESISTANCE TO CHANGE

CHALLENGE

Resistance to change is a common organisational challenge, as employees and stakeholders may be hesitant to alter familiar processes. Energy efficiency and transition projects can involve significant changes to daily operations or routines, leading to push back from staff or managers. Additionally, in our experience, organisations can find it hard to prioritise even cost effective energy savings if there is resistance to prioritising sustainability at the leadership level.

SOLUTIONS

1. Leadership Support:

Securing commitment from top management can help foster a culture that embraces sustainability and energy efficiency as core values.

2. Employee Engagement:

Involving employees in energy-saving initiatives and effectively communicating with them about the benefits can build support and reduce resistance to change.

3. Risk Management:

Comprehensive risk management is imperative to successful project delivery, particularly when dealing with process industries. Working with clients collaboratively to understand risks to implementation, and how to mitigate these also builds trust when implementing change projects.

4. Clear Communication:

Transparently communicating the purpose, benefits, and expected outcomes of energy efficiency and energy transition projects can ease concerns and build trust within the organisation.



Barriers to implementation

4. LIMITED ACCESS TO DATA AND PERFORMANCE METRICS

CHALLENGE

Effective energy efficiency and transition projects rely on accurate data to identify areas for improvement, track progress, and measure results. However, many organisations lack the necessary monitoring systems or analytical capabilities. Without reliable data, it's challenging to quantify energy savings, justify investments, or verify the effectiveness of implemented measures. Accurate and reliable data can help operational teams in their day to day activities, allowing them to operate more efficiently, monitor performance and bring their teams along the energy efficiency/transition journey.

SOLUTIONS

1. Implement Energy Monitoring Systems:

Installing energy sub-meters and sensors can provide real-time data on energy use, helping to pinpoint inefficiencies.

2. Gap analysis:

identifying gaps in data within business and how best to plug these gaps is an important part of assessments. This is particularly important when undertaking system based reviews and in forecasting future emissions and growth within businesses.

3. Utilise Data Analytics:

Leveraging data analytics tools can transform raw data into actionable insights, making it easier to track energy usage patterns and assess the impact of efficiency measures.

4. Pre and Post project assessments:

Optopia regularly provide post project assessments to clients to independently show the effectiveness of implemented solutions, this can provide assurance to the effectiveness of projects and can help in justification of future schemes.



Conclusion

Energy efficiency and transition projects represent an essential step towards a sustainable future, and overcoming these barriers is key to unlocking their full potential. Organisations can enhance operational resilience, reduce costs, and create long-term value alongside reducing their environmental footprint. By ensuring access to the right skills and technical expertise, organisations can turn net zero into an opportunity that delivers material cost savings and reductions in emissions.

Optopia – How can we help?

Optopia's mission is to deliver actionable, impactful guidance to help companies reach sustainability and net-zero goals. The company, led by founder Mark Mills, provides hands-on support through a team of seasoned consultants across multiple disciplines, all dedicated to mitigating climate change. Optopia differentiates itself by blending energy and carbon reduction expertise with strong project delivery capability, achieving real changes in companies' operational emissions.

This approach enables Optopia to work alongside businesses to ensure that sustainability efforts go beyond compliance to create meaningful, measurable environmental improvements. The company's services range from targeted energy efficiency strategies to comprehensive carbon reduction plans tailored to meet each client's unique goals. Through this holistic support, Optopia not only aims to reduce carbon footprints but also equips organisations with the confidence and capabilities to independently sustain and advance their environmental progress.

Optopia brings an experienced team, who work collaboratively with organisations to help overcome these challenges. Our projects deliver emissions reductions without impacting your operational effectiveness. In addition to identifying cost savings, Optopia helps overcome barriers to energy efficiency projects, improving operational resilience and efficiency.

In summary, whether viewed as sustainability consultants, net-zero advisors, energy efficiency assessors or project delivery experts, Optopia offers clients practical pathways to cut energy use, lower emissions, and achieve ambitious environmental targets.