Chapter Zero

Energy guide

A guide for non-executive directors on smart and sustainable energy

Chapter Zero
The Directors' Climate Forum

About this guide

This guide provides non-executive directors (NEDs) on the boards of companies that are developing climate plans with an introduction to the steps they can take to reduce emissions from energy supply and use.

It will help NEDs understand smart and sustainable energy, identify risks and opportunities, and recommend the best routes to achieving a net-zero economy.

Read this guide for an overview of how to tackle energy emissions. It is not exhaustive, so we also recommend seeking technical advice from internal or external stakeholders in the development of your strategy.

The information contained may not be as applicable to NEDs on the boards of companies with well-developed and ambitious energy strategies.

To read more about Chapter Zero, visit chapterzero.org.uk

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Introduction

Addressing how energy is produced, consumed and managed is a major step in reducing emissions and mitigating the impacts of climate change.

For the great majority of companies, energy is the single largest contributor to their carbon footprint. As well as tackling climate change, planning to reduce energy-related emissions offers significant cost savings and benefits the bottom line.

Sweeping environmental, social and economic developments mean that energy issues are climbing up the corporate agenda. Climate change, global carbon regulations and rapid developments in energy technologies are megatrends changing the context in which business operates. This is exposing companies to new risks, as well as opportunities and new paths to value creation.

The energy landscape can be complex, with many different solutions and approaches, and no one size fits all. The challenge is to understand the key issues and work out how your company should respond.

Ultimately, energy should be a key part of a company's corporate story – with a driving mission towards net zero.

This guide is designed to help lead a company towards smart and sustainable energy practices.

In this guide

Each of these sections provides context, key recommendations, case studies and useful links where relevant.

1 Energy strategy

As a NED, you should ensure that the companies you are involved in have a robust energy strategy. This will provide enormous opportunities to create new value, improve resilience and reduce risk.

Energy has become a board-level issue. Collectively, companies spend hundreds of billions of pounds on energy every year, and even more indirectly, through supply chain, outsourcing, and logistics costs. New technologies and urgent environmental issues are also changing the context in which business operates. Energy initiatives, like those in any part of the company, require some investment – if not in cash, then in time and organisational focus. At the same time, the substantial benefits they deliver to the company can come rapidly.

Team and governance

A robust energy strategy requires explicit engagement and commitment from the top. An integrated approach also involves energy management at all levels of the company and cross-functional working.

The energy industry is complex. Many different solutions, technologies, approaches, and considerations need to be taken into account in a landscape that continues to evolve. As a result, a certain level of industry expertise is essential – either within the team or from external advisors.

Greenhouse gas emissions

Energy is not the only contributor to global greenhouse gas emissions – typically measured in carbon dioxide equivalents. However, for the majority of UK companies, it is the biggest component of their carbon footprint. Companies wanting to reduce this need to understand both their direct and indirect energy emissions, including those created across their value chain.

- **Direct and indirect emissions:** Responsibility for different greenhouse gas emissions are classified as Scope 1, 2 and 3 (see Scopes panel opposite).
- **Additional factors:** When calculating the contribution energy makes to a carbon footprint, it is not enough to simply measure how much energy is being used. Other critical factors to consider are, for example, how the energy has been produced, the extent to which green options have been used, and what time of day it is being consumed. These issues are covered in Section 2, page 9.

> “Energy has become a C-suite issue. The CFO and president are now actively involved in our energy road map.”
>
> **Rob Bernard, Microsoft**

Greenhouse gas emission scopes

The Greenhouse Gas Protocol, established by the World Business Council for Sustainable Development and the World Resouces Institute, classifies a company’s greenhouse gas emissions into three scopes:

Scope 1: Direct emissions from owned or controlled sources

Scope 2: Indirect emissions from generation of purchased energy

Scope 3: All indirect emissions in the value chain of a company, not included in Scope 2

For more detail, see Scope Emissions Explained.

Energy audit

An energy audit usually includes meter readings, billing data, and carbon footprint calculations, as well as the firm's existing policy, contracts, strategy, and commitments. The complexity of the process will depend on the size and set-up of your organisation and how extensive the data collection needs to be.

Section 4 looks at how to improve your energy monitoring and data systems and why this is important.

Goals and targets

The main driver for reducing energy emissions is a company's overarching climate target. These can be defined in a number of ways, with varying degrees of ambition and commitment.

- **Carbon neutral:** Carbon dioxide released into the atmosphere from a company's activities is balanced by an equivalent amount being removed.
- **Net zero:** Applies to the totality of a company's greenhouse gas emissions, with any remaining emissions being balanced by equivalent removals.
- **Science-based targets:** Reflects the degree and pace of global emissions reductions that scientists have determined are required, sector by sector, to prevent dangerous climate change.
- **Climate positive:** Going beyond net zero to create surplus environmental benefits and maximise positive impact, for example, by removing more greenhouse gases from the atmosphere than are created.

Setting more detailed energy and emissions goals will help reach overarching climate targets. For example, RE100 is a group of companies that have publicly pledged to meet 100% of their electricity consumption from renewable energy Power Purchase Agreements (see Section 2, page 10).[1]

[1] www.there100.org/

Race To Zero

The Race to Zero is a UN-backed global campaign to rally leadership and support for a healthier, resilient, zero-carbon economy. It includes companies, cities, regions, and institutions with transparent action plans and robust near-term targets to reduce emissions across all scopes and meet the Paris Climate Agreement.

RE100 is a group of companies that have publicly pledged to meet

100%

of their electricity consumption from renewable energy Power Purchase Agreements.

Over 300 companies have now made this commitment, including: IKEA, Apple, Accenture, BT, and Diageo.

Key recommendations

- **Secure top-level commitment:** Seek explicit engagement and commitment from the board to make energy an organisational priority.
- **Create the right governance structure:** The board should identify the best way to ensure accountability for the creation and subsequent delivery of an energy strategy – whether appointing a senior executive, management function, or assembling a cross-functional team.
- **Commission an energy audit:** Commission the help you need to pull together energy usage data from across the business and its value chain. This can then be used to calculate your company's carbon footprint and help the board identify what actions to take to reduce it.
- **Examine all responsibilities:** Look at all scopes in the creation of your strategy (see page 5) – the impacts of operations, employees, and the value chain.
- **Set public targets:** This involves both ensuring you have a credible strategy to reach net zero by a target date such as 2030, as well as more granular energy goals such as 100% renewable energy by 2025.
- **Be ambitious:** Aim for your organisation to do the maximum it can and be a positive force.
- **Create incentives:** Once targets are set, incentives can be developed for people throughout the organisation to make energy an operational focus. In particular, the finance team should recognise that energy and carbon reduction is an important factor in the capital allocation process.

2 Energy supply

Making sure you can buy green electricity with confidence, maximising opportunities for on-site renewable energy generation, and exploring supporting local community energy initiatives are all important considerations when looking at energy supply.

In this section we focus on how companies supply themselves with electricity. There are many ways to acquire green electricity and they are not all equal. Energy certificates, green tariffs, and Power Purchase Agreements (PPAs) all have different social, environmental, and economic impacts. What are the different options and how can you evaluate them?

Off-grid purchases of gas and transport fuels also cause emissions, and this is covered in Section 3.

Evaluating how 'green' an energy supply is

For a genuinely green energy supply, there are three important parameters that need to be considered:

- **Additionality:** Energy purchased should stimulate new renewable energy generation, over and above what is currently produced.
- **Proximity:** The benefits of generating energy as close as possible to consumers include reducing the load on the grid, losing less energy in distribution, cutting costs and improving network efficiency.
- **Emissionality:** Clearly, the carbon intensity of energy depends on how you source it. However, it is also dynamic and varies substantially throughout the day, which means that peak time use results in higher emissions – even if you are on a 'green electricity tariff'.

Green certification

The government-backed certification scheme, known as REGO (Renewable Energy Guarantees of Origin) is one of the most common ways to certify green electricity in the UK. REGOs allow companies to claim they are backed by 100% green electricity.

In reality it is more complicated than that, and REGOs could justifiably be considered as greenwashing. Here's why:

- **Additionality:** The energy regulator Ofgem, which runs the scheme, has noted that it may not stimulate new investment in renewables or increase material demand for clean energy.
- **Proximity:** REGOs can be purchased from any generator in the UK regardless of their location. There is no incentive to buy local.
- **Emissionality:** REGOs don't take any account of what time of day the electricity is consumed, which means it's impossible to calculate the true carbon footprint.

Green suppliers and tariffs

Many suppliers offer green tariffs to businesses, although these will not always be available for large consumers. There are three things to consider with suppliers and their tariffs:

- Do they generate renewable electricity themselves or buy it directly from other generators?
- For UK operations, do they cover 100% of their 'green tariffs' with REGOs, giving minimal support for clean generation?
- What additional benefits does the supplier offer? For example, do they fund other environmental initiatives or are they investing in new technology?

> Five years ago, all of the power purchasing and all of the demand was coming from large utilities. Today, corporates are driving demand and sending a message to the energy industry that the grid needs to change." [2]
>
> **Amanda Peterson Corio**
> **Head of Data Center Energy at Google**

Power purchase agreements (PPAs)

PPAs involve cutting out intermediaries to negotiate a supply contract directly with a generator.

- **Financial implications:** Typically, PPAs enable the negotiation of cheaper energy rates and can allow companies to hedge against volatile prices. However, there is a risk of inaccurate forecasts affecting the profitability of the contract.
- **Environmental and social:** Corporate investments in PPAs can stimulate investment in new renewable energy capacity over fossil fuels and can support local projects and communities.
- **Time of use:** PPAs can directly match time of generation with time of consumption. This means the varying carbon intensity of different times of day can be taken into account. The very best corporate PPAs source a portfolio of renewables to achieve 100% renewable energy 24 hours a day.
- **Accessibility:** PPAs can be inaccessible to smaller businesses as they require expertise to manage the process. This means they are more cost-effective for higher energy consumers. However, there are now digital platforms that can simplify the process and help to overcome this barrier (see smart energy procurement platforms panel opposite).

[2] https://www.fdiintelligence.com/article/80086

Smart energy procurement platforms

Digital platforms are creating new and smarter ways to manage the procurement of energy and PPAs:

Zeigo (zeigo.com): Has built an extensive network of renewable energy generators and suppliers. It aims to create a global PPA marketplace so that corporates have access to 100% traceable clean energy without being reliant on certificate schemes, which can be open to abuse.

Renewable Exchange (renewableexchange.co.uk): A PPA marketplace, similar to Zeigo, aiming to simplify the power purchasing experience and get the best price.

WePower (wepower.com): A platform connecting energy suppliers, corporate buyers and energy producers for easy, direct green energy transactions.

FlexiDAO (flexidao.com): This software can aggregate all your renewable energy contracts in one place, including energy certificates, meter data and emissions calculations. It checks where your energy really comes from every hour of every day.

Ripple Energy (rippleenergy.com): Allows consumers to directly own part of a wind farm and save money on their bills. This might be a better option for consumers too small to consider a PPA.

On-site solar

Solar power has become one of the cheapest and greenest electricity supplies possible. Having production on-site reduces network transmission and distribution costs and replaces demand for more expensive, dirtier grid electricity.

- **Financial viability:** Rapid technological development has dramatically decreased the cost of solar, which means subsidies are no longer required for financial viability. And the return on investment is continually improving.
- **Exporting solar:** When connected to the grid, surplus solar generation can be exported, creating a potential source of revenue generation. It can also contribute to net negative energy emissions, acting as a carbon offset. The Smart Export Guarantee means suppliers typically pay a rate of 2-5p/kWh. Looking purely at financial return, this is unlikely to justify investment. However, for larger generators a PPA can be used to sell energy directly to end consumers and get a significantly higher price. There are also emerging and alternative export models such as private wire arrangements, Licence Lite and Energy Local that can offer better deals, even to smaller exporters.
- **Additional technologies:** Other devices can complement a solar array and maximise value creation. For example, a combined solar and battery installation or technologies that can directly interface with solar such as electric vehicle chargers and photovoltaic immersion heating diverters.

[2] https://www.forbes.com/sites/davidcarlin/2020/02/20/the-solar-revolution-is-coming-duck/?sh=353ad233716a

> “Solar power has exploded in the past decade, far outstripping energy analyst estimates. Yet despite its impressive growth, the solar revolution still has a long way to go. Climate change demands that solar PV goes from a complementary role in the energy mix to a leading player.”
>
> **David Carlin,**
> **United Nations Environment Programme Finance Initiative**[3]

Battery power

Batteries can provide energy security, flexibility, and back-up. The business case for installing a battery system keeps improving as costs decline and revenue opportunities expand.

- **Solar and batteries:** A combined solar and battery installation can maximise both cost and carbon-saving potential. It can provide a secure and reliable source of renewable electricity, 24 hours a day.
- **Time-of-day optimisation:** Given that the cost and carbon intensity of electricity varies substantially throughout the day, batteries can make use of this by charging up when power is cheaper and greener and discharging at times of peak demand.

Kendall-Jackson Wineries saved

$2m

on energy bills in 2016

Batteries from a Tesla/EnerNOC pilot programme were used to store energy from its solar panels. This lowered the winery’s energy bill in 2016, saving close to $2 million and increasing its resilience to potential power outages.

Community energy

With the rise of renewables, energy generation is increasingly becoming embedded within local communities. This offers the opportunity for communities to democratise energy creation and for companies to be at the nexus of social, environmental, and economic value creation.

- **Community energy:** This refers to the delivery of renewable energy, demand reduction, community energy tariffs or supply projects, owned or controlled by communities – either directly or through partnerships. There are now great opportunities for businesses to engage with community energy, helping to meet social commitments and create value for wider stakeholders.
- **Community and business partnerships:** Businesses can partner with a community to co-own and run a renewable energy development and potentially host it on their premises too. These kinds of partnerships, with a range of potential ownership structures, are becoming increasingly common and can provide a multitude of benefits for all parties.
- **Local community tariffs:** Energy organisations are increasingly offering local tariffs connecting homes and businesses to renewable energy generation on their doorstep. This can save money, be more efficient, and help to support the local community and economy.

> “The energy revolution will require a change not only in the way we capture and store energy, but also a shift in how we finance its construction and who owns the systems. It will inevitably move from a centrally owned and controlled system to one that is distributed and networked.”
>
> **Howard Johns, author, Founder of Southern Solar and Ovesco, former Chair of Solar Trade Association**

Case Study

Patagonia powers UK stores with community-owned renewables

In 2021, Patagonia signed a power purchase agreement to supply its UK stores in Manchester and Bristol with 100% community-owned renewable energy. The supplier will be Energy Garden, a community wind and solar initiative. Patagonia has also agreed to pay an additional premium to support Energy Garden's local community projects. The deal was organised by Younity – a joint venture by Octopus Energy and Co-op Energy for community-led clean power. Energy Garden is a London-wide Community Benefit Society organisation that acquires community-owned renewable energy assets and organises community-led urban ecological projects.

Gower Power – Ecotricity partnership supports local communities

Gower Power is leading the way in Wales in producing and supplying renewable electricity, with all profits going back into the local community. In 2020, Gower Power attached 228 kW storage to the existing Gower Regeneration solar farm and started a local supply partnership with Ecotricity. This enables local homes and businesses who switch to Gower Power and use electricity produced by the community-owned solar farm and storage. Any extra electricity needed will be renewable and provided by Ecotricity.

Key recommendations

- **Review energy sourcing:** Ask for a review of how your company currently sources energy and make sure it can assess its additionality, proximity and emissionality (see page 9).
- **Ask questions about your supplier:** Ensure the company understands how and where its supply is being generated and what the tariff involves. Make sure that supplier information is available, and the company can be confident and transparent in any future reporting it may need to do.
- **Consider a PPA:** Encourage the company to evaluate the viability of signing up to a renewable energy PPA. This may be more applicable to larger energy consumers, but smaller ones should consider a smart energy procurement platform, such as Ripple (see page 10).
- **Maximise solar:** Encourage the company to review roof and other spaces that might be suitable for solar production and evaluate the trade-offs. Consider whether existing installations could be increased, as well as looking at new sites. This should also consider the value of becoming an exporter of solar energy and the return on investment.
- **Look at batteries holistically:** Encourage the business to review battery technology in the context of a variety of electricity storage applications and opportunities and continue to re-evaluate as battery technology continues to improve in price and performance.
- **Reach out to the community:** If wider social and environmental benefits are important to the business, consider local energy initiatives and how to support these.

3 Energy use

Reducing, optimising, and changing how you use energy is key to minimising your environmental impacts. It makes financial sense too.

Energy efficiency

No energy is free from environmental impact, so wherever it comes from it always makes sense to reduce consumption as much as possible. This applies to electricity as much as any other energy source. There is also a strong business case for energy efficiency, as it can significantly decrease operational costs and boost the bottom line.

- **Company responsibilities:** Energy efficiency is not only an internal issue for a business; it can also be applied to customers, suppliers and even staff (including those working from home). Promoting and incentivising this is part of a company's Scope 3 responsibilities (see Section 1, page 5).
- **Impact of the grid:** UK grid electricity comes increasingly from low-carbon sources, but a large share – more than 40% – comes from burning coal, oil and gas.[4] So reducing energy consumption from the grid reduces greenhouse gas emissions from fossil fuels, whatever tariff you may be on.
- **Energy efficiency in practice:** A wide array of technologies and solutions is on offer, and the landscape is evolving. In lighting, for example, there are smart, responsive, and timed systems, multiple different types of LEDs, and even solar tubes (technology that brings natural daylight though roofs and walls into an indoor space).
- **Financing:** Businesses can consider pay-for-performance financing solutions that enable building owners to implement energy efficiency projects with no upfront capital expenditure – also known by 'as-a-service' offerings. The solution provider pays for project development, construction, and maintenance costs, whilst the building owner makes service payments that are based on actual energy savings. This can result in an immediate reduction in operating expenses and there are many different models to choose from.

[4] Energy Trends UK, April to June 2021, Department for Business, Energy & Industrial Strategy.

"We make energy efficiency imperative in the plant…along with safety, quality, cost, and responsiveness."

Mari Kay Scott,
Executive Director of Global Environmental Compliance and Sustainability, General Motors

Case Study

General Motors incorporates energy efficiency into global business plans

General Motors spends more than $1.2 billion on energy annually. It has woven energy efficiency directly into its global business plans. This includes compensation for individual plant managers tied to energy and environmental KPIs, such as energy used per vehicle produced. If managers fail to hit energy targets, they need to explain why. As Mari Kay Scott, GM's Executive Director of Global Environmental Compliance and Sustainability, puts it: "We make [energy efficiency] imperative in the plant…along with safety, quality, cost, [and] responsiveness."

Flexibility

Energy is changing. It's not just about how much energy is consumed. increasingly, it is about when it is consumed and the interaction with the grid. The UK's transition to 100% low-carbon electricity requires us to be smarter and more flexible. Shifting consumption away from peak times, using smart devices, and operating new grid-servicing technologies can play a pivotal role in this and create opportunities for business.

- **A changing electricity grid:** Originally, the grid was built to support centralised fossil-fuel plants that can be fired up on demand. Renewable power is generated intermittently: when the wind blows or the sun shines. This puts strain on the grid when renewable electricity is not being created at a pace that matches demand. Electrified heat and transport will add further strain. This is why a smarter and more flexible system is essential to unlock low-cost, carbon-free electricity.
- **Demand response:** This involves increasing, decreasing, or shifting electricity use to help balance the wider electricity system. In return businesses can receive strong financial incentives, accelerate the renewable transition, and reduce their carbon footprint.
- **Frequency response:** When the UK grid is slightly unbalanced, the electricity supply frequency starts to deviate from the standard 50Hz. There are market opportunities for businesses to provide frequency response services to the grid to help mitigate this.
- **Smart tech:** There are several smart technologies that can automate and optimise demand response activities. This can reduce the need for manual demand response changes that can be difficult to monitor and enact.

Plunge pricing

There are times when customers can actually get paid to consume energy, when national wholesale prices go negative. This happens when there is a massive amount of renewable power being generated but not enough demand. For example, during a windy night, demand is low but generation is high so this would be an ideal time to charge batteries. Conversely, sometimes wholesale energy prices can rapidly spike if demand outstrips supply. Apart from resulting in savings for customers, this serves as a real incentive to switch power use from high-impact peak times.

Case Study

Open Energi and Prefect Controls unlock demand-side flexibility

An innovative partnership between Open Energi and Prefect Controls is unlocking real-time flexibility from student accommodation at Oxford Brookes. "We're seeing direct benefits by way of revenue for participating in Demand-Side Response (DSR), but equally it's enabling us to have an impact beyond our estate and help drive positive change in the electricity system as a whole."

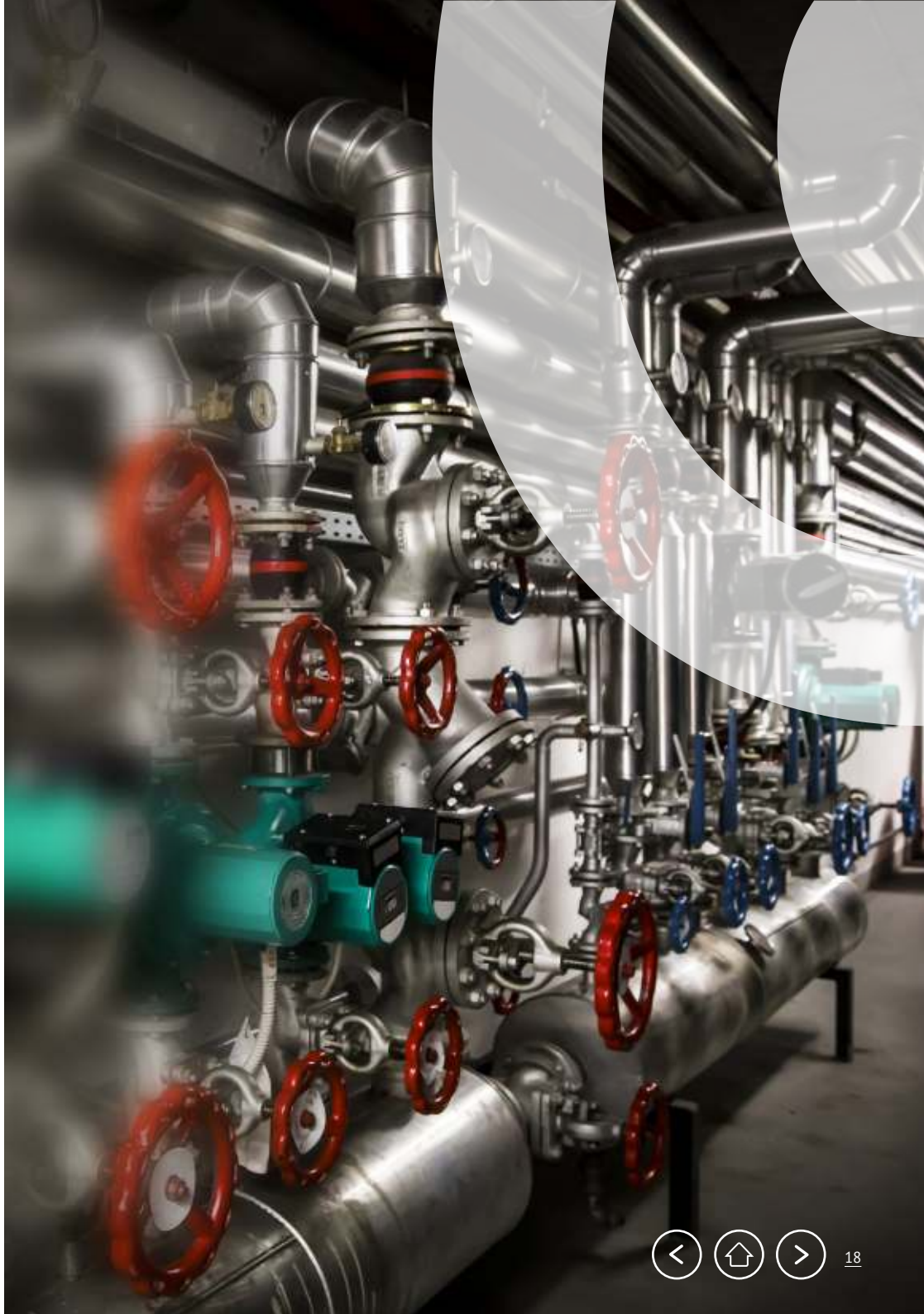
Gavin Hodgson, Oxford Brookes University

> Heat represents nearly 40% of UK emissions – we will not get to net zero without radical change here."
>
> **Avieco, sustainability consultancy**

Heating

Heating buildings remains one of the largest sources of greenhouse gas emissions in the UK and decarbonisation efforts lag well behind those in power, waste, and industrial emissions. This has started to change as new technologies and a drive for action are spurring the implementation of lower carbon and more sustainable heating.

- **Taking a tailored approach:** There is no 'one size fits all' approach to decarbonising heat for business. Adopting a tailored approach and evaluating the applicability of each solution at the individual building level is essential. Solutions include heat pumps, district heat networks, combined heat and power systems and heat-as-a-service. There is also green gas which includes gas derived from non-fossil fuel sources, although companies should carefully appraise what carbon savings a switch to green gas could achieve and what the wider environmental impacts could be.
- **Improve energy efficiency:** Many new heating technologies operate most effectively in conjunction with energy efficiency upgrades. For example, a thermographic imaging survey can provide a low-cost and non-intrusive way to identify heat flows and losses in buildings.
- **New build and refurbishment:** Ensure that reductions in energy use and low- or zero-energy sources for heating, cooling and ventilation are key considerations in appraising any new building or plant, or any refurbishment project.



Efficient, greener travel and transport

Businesses need to assess and understand their total energy consumption from travel and transport. This should be followed by a plan to ensure that all travel is adding value and uses the lowest-carbon systems available.

- **Greener meetings:** Some face-to-face meetings will always be beneficial or even essential, but businesses should exploit the rapid advances in internet-based communication to minimise travel to meetings, whether they are domestic or overseas.
- **Lower-carbon travel:** Public transport, walking, cycling and electric vehicles should be prioritised and incentivised over the use of petrol and diesel cars. Scope 3 responsibilities require companies to look at indirect transport emissions associated with their business: how employees go to and from work, how customers get to and from a point of sale, and how suppliers operate their delivery network.
- **Working from home:** Companies need to take energy consumption and greenhouse gas emissions fully into account in assessing working from home versus working at a central workplace. The COVID-19 pandemic sharply accelerated the shift to home working. It's important to take into account energy and carbon emissions, as well as other environmental impacts, when considering the pros and cons of this on an ongoing basis.
- **Logistics and distribution:** Companies that need transport to distribute products and services should assess the associated energy consumption and emissions, then plan to reduce these. They should ask their suppliers to do the same.

[5] https://www.bbc.co.uk/news/business-57253947

"We are in the middle of the biggest revolution in motoring since Henry Ford's first production line started turning in 1913. And it is likely to happen much more quickly than you imagine."

Justin Rowlatt, BBC Climate Editor[5]

Electric vehicles (EVs)

Transportation is one of the largest sources of global emissions. All transportation is shifting away from fossil fuel sources. The future is electric and it's just getting started.

- **Battery technology:** The cost of battery-powered EVs is decreasing substantially – **97% in the last three decades** – and they are on the verge of mass adoption.
- **Legislation:** The UK Government has taken a historic step by **banning the sale of new petrol and diesel cars from 2030**. Similar legislation is being developed all over the world.
- **E-mobility:** EVs doesn't just mean cars. It includes electric trucks, ships, and aircraft, as well as bikes, scooters and mopeds.
- **Electricity supply:** EVs can only contribute to reducing emissions if the electricity used to charge them comes from genuine low-carbon or zero-carbon sources.
- **Charging infrastructure:** The global shift towards EVs will mean a surge in demand for recharging from customers, suppliers, and employees. There are already a variety of business models available to meet this demand and more will emerge.
- **EVs and the grid:** EV charging can be modulated and optimised for when energy is cheapest and greenest. EV batteries can also act as a storage resource, discharging energy from the vehicle to the grid or a local microgrid, although this technology is in its infancy.

Case Study

Bristol workers beat the traffic with electric bikes

Bristol City Council is helping businesses encourage their employees to make sustainable travel choices for work journeys through its electric bike loan scheme. The project, which has been running since 2014, has seen dozens of electric bikes bought from Jake's Bikes in the city centre and loaned out to people needing transport to business meetings and visits.

"Let's get more people to leave their cars at home and help reduce carbon emissions and improve air quality."
Bristol Metro Mayor, Dan Norris

Skanska helps power the EV revolution

Skanska UK, one of the UK's leading development and construction groups, has had 67 electric vehicle charge points installed at its Hertfordshire office for its employees and visitors, with the potential for all 243 bays in the multistorey car park to offer electric vehicle charging in future. Pod Point's back office Smart Reporting tool can centrally control access to the facilities, monitor usage, and has the option to set custom electricity tariffs to cover electricity costs.

Key recommendations

- **Improve energy efficiency:** Ensure the company looks at all aspects of its energy consumption, heating, lighting, transport, industrial operations, etc., to review current energy usage and identify potential opportunities for reduction and optimisation.
- **Involve all stakeholders:** Make sure there is sufficient understanding of how stakeholders across the company are using energy and what efficiency measures are being taken. Set minimum standards, offer incentives and create reporting mechanisms.
- **Explore time-of-use flexibility:** Find out your company's peak usage compared to off-peak and assess the potential of being more flexible. For example, could it run any power-hungry operations at night or more dynamically? Also consider what technologies might increase flexibility opportunities.
- **Assess all heating needs and solutions:** Ask the company to commission a review of its premises to find out where, when and how heating and cooling is used, and how it might be improved. Compare the many different options to find the best low-carbon heating solution for your organisation.
- **Assess transportation:** What forms of transport are being used across your value chain – including the supply chain, employees and customers? Does the company calculate Scope 1 and 3 travel emissions?
- **Embrace electric vehicles (EVs):** Encourage, support, and facilitate the EV revolution. As well as internal operations, look holistically at customers, employees, and suppliers. For example, putting financial pressure on tier 1 suppliers to go electric can accelerate transformation throughout the supply chain.

4 Energy monitoring and reporting

Digitalisation can help companies maintain a detailed and up-to-date understanding of company-wide energy use and associated emissions. As well as eliminating time-consuming manual processes, it can also help in identifying problems and opportunities. This will result in more accurate reporting to a wide range of stakeholders, creating both trust and accountability.

Smart energy management

Companies are looking at their energy profiles to identify opportunities for cost reduction, decarbonisation, and resilience. A smart energy management system will help do this by connecting to electricity-consuming devices and enabling monitoring, control, measurement, and optimisation.

- **Digital transformation:** Thanks to digital development, many of a company's assets can be connected in order to be monitored, managed, optimised, and maintained through data analytics and automated remote control.
- **Monitoring and analysis:** Analysis of energy data can reveal operating issues that affect costs, performance, and quality. For example, 'energy signature' data may show that a piece of equipment, such as an air conditioning system or an injection-moulding machine, is running outside its optimal operating range. This can create energy savings that would otherwise be near impossible to identify and resolve.
- **Sensitivity analysis:** Developing a detailed understanding of enterprise-wide energy use is not only essential for understanding and optimising current systems – it can also help businesses predict and prepare for changes. For example, a company can assess how volatility in energy prices and availability would affect its overall operations, profits, and cash flow.
- **Grid interaction:** Smart energy management systems can provide the opportunity for industrial assets, such as AC units, fridges, or production-line machines, to interact with the grid. This could involve automatically changing how and when energy is used to provide services to grid operators. In return, businesses can receive both financial and environmental benefits (see Section 3, page 17 – Flexibility).
- **Expertise:** To unlock many of the benefits of smart energy management systems there needs to be the appropriate capability and expertise to analyse the data, act on insights and make the most of opportunities.

Transparency, traceability and reporting

A business' stakeholders will not be satisfied with vague, under-evidenced and unsupported sustainability claims. Governments, investors, customers, employees and even suppliers are demanding transparency, traceability, and appropriate reporting. This requires data and smart systems.

- **Dashboards:** Smart energy systems create a new opportunity to communicate information to various stakeholders. Dashboards with visually compelling graphics can display energy and sustainability information in real time and in a more engaging way. For example, this could include solar production, emissions avoided, community and social impacts, as well as progress towards carbon goals.
- **Energy supply data:** Impactful energy procurement requires assessing data on the additionality, proximity and emissionality (see Section 2, page 9) of energy sources. This transparency is required to fully assess a company's energy-related carbon footprint and impact. Digital platforms (such as FlexiDAO – see panel below) can help unlock access to these streams of data, as well as providing analytics and reporting services.

Case Study

Consolidating green energy data with FlexiDAO

FlexiDAO can help companies collect and aggregate energy certificates, meter data and related emissions and check where your electricity is really coming from, every hour of the day. The information can be visualised in the FlexiDAO dashboard or fed straight into your own energy or sustainability software. Furthermore, it allows for the creation of automated reports to communicate key information with stakeholders.

By measuring its plant's total energy use for the first time in 2015, Cisco found ways to cut its energy use by

30%

Case Study

Cisco

Networking giant Cisco installed 1,500 energy sensors in one of its Asian manufacturing facilities in 2015, measuring the plant's total energy use for the first time—and soon found ways to cut it by 30%.

Blommer Chocolate finds sweet energy savings

Large cocoa-bean processor Blommer Chocolate uses statistical analysis to predict the energy required for every pound of product roasted. When actual consumption varies from the prediction, managers know something is going wrong.

"When you save energy, you can't help but save on other manufacturing costs, such as maintenance and productivity."
Eric Bliss, Senior Engineering Manager, Blommer Chocolate

Key recommendations

- **Seek help from experts:** It's important the company has either internal or external expertise to advise on energy monitoring, data collection and analysis.
- **Monitor and automate:** You can't manage what you can't measure. Use appropriate systems to get a clear picture of the current state of energy consumption and use. Use smart platforms and technologies to automate the energy data system and eliminate repetitive manual processes.
- **Optimise and improve:** Use energy data to identify areas that could be improved or optimised. This requires the capability to analyse the data and act on insights and opportunities.
- **Report and communicate:** Ensure the company develops a system to report and communicate meaningfully to stakeholders on your energy use. This should involve not only assembling the raw data but also providing tangible insights into company performance. The system could potentially create automated reports and have a live dashboard to view real-time information. Your system could be customised with information relevant to different stakeholder groups, and with benchmark information showing progress towards goals or comparing performance.

Key resources and links

- **Carbon Tracker Initiative:** Energy Transition Research: Discover emerging implications for fossil-fuel-exposed companies and projects
- **Carbon Trust:** A range of tools, guides and reports to help organisations achieve sustainability goals
- **Community Energy England: Corporate Membership:** "Showing your support for Community Energy England will give you credibility within the sector when approaching potential clients and other stakeholders, by demonstrating that not only are you active and experienced with community energy you have also chosen to support the broader success of the sector and help it to thrive."
- **Deloitte Insights:** Power, utilities, and renewables articles and media
- **Delta-EE:** Strategy and tactics for the energy transition
- **Energy Startups:** Top start-ups developing technologies for energy-efficient enterprise
- **Energy Saving Trust:** Supporting communities, local authorities, supply chains and businesses of all sizes, to build a sustainable and energy-efficient future
- **Greenhouse PR:** Sustainability communications on energy and clean tech
- **Harvard Business Review:** Energy Strategy for the C-Suite
- **Project Breakthrough:** Business models, disruptive technologies, and innovation for a new carbon economy
- **Project Drawdown:** Electricity sector solutions summary
- **Solar Energy UK:** Reports, briefings, and consultations
- **SmartEn:** The European business association integrating consumer-driven solutions of the clean energy transition and aiming to create opportunities for every company, building and car to support an increasingly renewable energy system
- **Technology Catalogue:** Find and select technologies and solutions for your energy transition
- **The Green Age:** Guides to green technologies and saving energy
- **Veolia:** Energy solutions for your business
- **Volans: Tomorrow's Capitalism Inquiry** and **The New Carbon Economy**
- **Which?:** How Green is Your Energy Tariff? – comparing the green credentials of the leading UK suppliers and their tariffs

About the authors

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With 35 years' experience in the sustainability sector, Julia Hailes has become a leading opinion former, consultant and speaker on sustainability issues. She has written or co-written nine environmental books, including *The Green Consumer Guide*, which sold over 1m copies worldwide. And, in 1987 she co-founded environmental think tank SustainAbility (with John Elkington), which is now ERM's SustainAbility Institute. Currently, she is a director of Rubbish Ideas and on the Advisory Board of The Rubbish Project – both organisations are leading the way in developing circular economy solutions. She's also creating exemplar projects in smart energy homes and wilding. In 1992, Julia was elected to the UN Global 500 Roll of Honour for outstanding environmental achievement, and in 1999 was awarded an MBE.
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