Waste Minimisation

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A guide to waste minimisation and resource efficiency by business

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Introduction

With businesses coming under ever-growing legal, financial and public pressure to act in a sustainable manner, an increasing number of organisations are taking steps to minimise the impact of their activities, products and services on the environment.

In fact, there is a growing realisation among businesses that the efficient use of resources – such as raw materials, water, waste and energy – can help to protect the environment, lead to financial savings and enhance the organisation's reputation among customers, business partners and other interested parties.

This guide provides some general tips on how businesses can support the move to the circular economy, including by using resources and materials more efficiently, minimising the amount of waste they produce and reducing energy and water use.

Thomas Tevlin
Editor

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In recent years, more and more businesses have begun to consider the effect of their activities on the environment. As a result, resource efficiency – such as using raw materials, energy and water more efficiently and preventing the production of waste – is now a key priority for many organisations.

In fact, the inefficient use of raw materials, resources and energy – and the production of unnecessary waste – by industry and commerce is hugely damaging for the environment, society and businesses alike. For instance, the use of non-renewable energy in business buildings, production processes and transport activities – and the disposal of biodegradable waste from businesses in landfill sites – produces harmful greenhouse gases, such as carbon dioxide and methane, which are causing climate change.

Also, the extraction, production and use of natural and other materials for use in products and processes depletes scarce and valuable resources and itself creates carbon emissions – for example, through the use of hydrocarbons to power the transport of the materials that are extracted.

Therefore, if organisations implement effective resource efficiency measures – such as using raw materials more efficiently, reducing energy and water use, and minimising and re-using or recycling waste – they can make a big contribution to protecting the environment and fighting climate change.

They can also reap a number of business benefits. These include compliance with ever-stricter environmental laws; financial savings from using fewer resources and lower waste management costs; and enhancing their reputation and appeal to customers, business partners and others due to improving their company's sustainability performance. In fact, a suitable resource efficiency programme can lead to cost savings from using fewer raw materials in products and processes and from lower waste management costs. Also, adopting energy efficiency measures can result in lower power bills for a building, site or process.

❝ Effective resource efficiency measures can help to protect the environment.

Some facts and numbers

222.2

million tonnes of waste generated in the UK in 2018, from all sources, including households, businesses, and construction, demolition, excavation and dredging activities[1]

43.9

million tonnes of commercial and industrial waste generated in the UK in 2018[1]

10–15%

possible reduction in the amount of water available in some areas of the UK by 2050 as a result of climate change[2]

1°C

human-induced global warming (approximately – likely between 0.8°C and 1.2°C), above pre-industrial levels in 2017[3]

Sources: 1) DEFRA 2) NetRegs 3) Intergovernmental Panel on Climate Change (IPCC)

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Recycling materials reduces the need to use new raw materials in products, which reduces carbon emissions.

For example, NetRegs, the government-backed environmental advice service for businesses in Scotland and Northern Ireland, says experience in the UK suggests that businesses across a range of industries can save four per cent of their turnover by employing appropriate waste minimisation techniques. NetRegs adds that the savings from adopting and implementing better waste minimisation and management techniques can often be achieved with little or no capital investment.

Also, NetRegs says adopting ecodesign techniques for products, processes, systems and business models can save a business money and reduce its impact on the environment. It says businesses should therefore consider the environmental impact at every stage of the lifecycle of their products and services and seek to design products and services so they produce less carbon emissions. This might involve, for example, cutting the number and amount of materials used to make a product, and designing a product so it lasts longer and can be economically repaired, reused and eventually recycled at the end of its life.

See the NetRegs website for more information on designing sustainable and low carbon products, services, business models and processes.

Businesses can also make financial savings and help to tackle climate change by reducing the levels of greenhouse gases they create from other activities. This includes reducing their energy

consumption and using transport methods with the lowest environmental impact, such as using vehicles, like electric cars that produce less of the greenhouse gas, carbon dioxide (CO_2).

The Carbon Trust, an advisory service which helps organisations globally to decarbonise and set and achieve net zero targets, says most businesses can achieve meaningful cost savings through reducing their consumption of energy – such as electricity and gas – in their buildings and processes. In its *Better business guide to energy saving*, the Trust says experience shows that even low and no-cost energy-saving actions at a business premises can usually reduce energy costs by 10 per cent – and produce quick financial returns.

This British Safety Council guide provides an overview of some of the existing and proposed legal duties requiring UK businesses to use resources more efficiently and to reduce their energy use. It also provides some basic advice on ways of achieving resource efficiency, preventing and managing waste, and saving energy.

It is based on free online guidance from organisations such as the Carbon Trust, the Gov.uk website and NetRegs. More detailed advice can be obtained from these organisations and others.

The circular economy

The UK government is taking a variety of measures to ensure the UK achieves its legally-binding target to end its contribution to global warming by 2050. This requires the UK to bring all greenhouse gas emissions from across the UK economy to 'net zero' by 2050.

Net zero means not adding to the amount of greenhouse gases in the atmosphere, by reducing greenhouse gas emissions to as close to zero as possible and balancing out any remaining emissions by removing an equivalent amount from the atmosphere – for example, by natural carbon sinks like forests absorbing remaining emissions. Scotland's climate change legislation meanwhile, sets a target date of 2045 for net zero emissions of all greenhouse gases in Scotland.

The Climate Change Committee, an independent body that advises the UK government on the progress being made in reducing greenhouse gas emissions, says that, for the UK to reach the target of net zero greenhouse gas emissions, extensive changes will be required across the economy. These include:

- An increase in resource and energy efficiency – to reduce the demand for energy across the economy
- Extensive electrification, particularly of transport and heating
- A major expansion of renewable and other low-carbon power generation
- Societal choices that lead to a lower demand for carbon-intensive activities.

To help the UK end its domestic contribution to man-made climate change by 2050 (and reduce the impact of human activity on the environment), the UK government is taking steps to move the UK economy away from the 'take, make, use and throw' linear model

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of using resources and creating waste, to a more resource-efficient, or 'circular economy' model.

The UK government says the traditional linear economic model of 'take, make, use and throw' is using up scarce resources, causing harm to the environment and contributing to climate change.

For example, it says extracting and producing natural materials for use in products and processes is depleting valuable resources and creating carbon emissions. Also, landfilling materials that society no longer wants means those materials are lost and may create greenhouse gases themselves. For example, food waste that is disposed of in landfill sites produces methane, a potent greenhouse gas.

A circular economy means using resources – such as raw materials used in products and services – more efficiently and reducing the amount of waste we create as a society.

In a circular economy, the amount of resources and materials required to produce goods and services is minimised; products and materials are kept in high-value use for as long as possible to extract the maximum value from them; and products are recovered and regenerated at the end of their life when possible to give them a new lease of life.

The idea is to cut waste and its harmful impact on the environment; reduce carbon emissions from the use of resources and waste disposal; and boost the economy – for example, by making business more resilient to the rising costs of raw materials and waste treatment.

To move to a circular economy, the UK government has implemented and proposed a variety of measures aimed at encouraging more efficient use of resources, minimising waste and encouraging more re-use and recycling. Many of these initiatives have, or will have, an impact on UK businesses.

The overall aim is to eliminate avoidable waste of all kinds (known as achieving 'zero avoidable waste') in the UK by 2050; eliminate avoidable plastic waste by the end of 2042 (i.e. over the lifetime of the UK's 25 Year Environment Plan, published in 2018); and double resource productivity (i.e. maximise the value and benefits the UK gets from its resources) by 2050.

In addition, the UK's Environment Act 2021, which iis intended to protect and enhance the UK's environment through approaches such as steps aimed at improving air and water quality, reducing waste and making better use of resources, includes a legally-binding target to halve the waste per person that is sent to residual treatment by 2042.

For example, in March 2021 the government launched a consultation on a new waste prevention programme for England. This set out a variety of proposals aimed at minimising waste; ensuring resources are used more efficiently; ensuring products are designed and manufactured for optimum life; and ensuring more items can be repaired and reused.

For instance, the proposed new waste prevention programme for England set out some of the government's suggested

Free guidance:
Organisations such as the Carbon Trust, NetRegs and WRAP provide free guidance on environmental management and sustainability.

The Carbon Trust's guidance is at: carbontrust.com

ideas for reducing food waste in England, including from businesses and the food supply chain.

The UK government says that food waste has a substantial adverse environmental impact, and a fifth of territorial UK greenhouse gas emissions are associated with food and drink, mostly created during production (agriculture and manufacturing). The government says these are needless emissions if the food and drink are subsequently wasted. Indeed, the environmental impact of UK food waste is estimated at more than 25 million tonnes of CO2 equivalent emissions every year, according to WRAP (Waste Resources and Action Programme). The government adds that unnecessary food waste is inefficient, pushing up the price of food for consumers and businesses, while undermining the UK's national self-sufficiency. It says reducing food waste can help food businesses cut costs, which can be passed onto customers.

As a result, among other measures, the government says it wants to see more businesses in the food supply chain – including farming, retail, hospitality and food services – targeting, measuring and acting on food waste.

Therefore, in September 2002, the government consulted on the possible introduction of mandatory annual reporting of food waste (or steps to enhance the take-up of voluntary measurement and reporting of food waste), by certain food businesses of an appropriate size in England. It says evidence shows that measuring

and reporting of food waste by food businesses often results in greater action to prevent and reduce food waste.

Taken with various other measures designed to cut down on food waste from homes and businesses in England, the government hopes that increased measuring and reporting of food waste by businesses (either through mandatory reporting or expanded voluntary reporting), will help the UK achieve its commitment to halving the UK's per capita food waste by 2030.

At the time of this guide's publication in June 2023, the government was analysing responses to the consultation on food waste reporting by businesses in England and promised to publish its response on the GOV.uk website in due course.

Other UK government measures and proposals aimed at minimising waste and its impact on the environment that affect (or will affect) business include:

- A new tax on finished plastic packaging components manufactured in, or imported into, the UK that contain less than 30 per cent recycled plastic (subject to certain tonnage thresholds being exceeded, and the plastic packaging components being either suitable for moving goods from the manufacturer to the end user or consumer or used only once by the consumer – i.e. meaning single use). The aim is to provide a clear economic incentive for businesses to use recycled material in the production of plastic packaging.
- A new Extended Producer Responsibility for Packaging (pEPR)

scheme, which will make certain obligated companies that supply household packaging responsible for the meeting the costs of collecting and managing packaging waste – moving costs away councils and council taxpayers. Producers will be required to pay for the collection and disposal costs of household packaging they supply when it becomes waste. The government says this will encourage producers to reduce the amount of packaging they place on the market, and to improve the recyclability of their packaging – in turn ensuring less waste ends up in the natural environment.

- A ban on a range of polluting single-use plastics in England from October 2023, including single-use plastic plates, trays, bowls, cutlery, balloon sticks, and certain types of polystyrene cups and food containers.
- A Deposit Return Scheme (DRS) for drinks containers covering England, Wales and Northern Ireland. Under the proposed scheme, consumers are likely be incentivised to recycle single-use plastic and aluminium drinks bottles and cans (reducing litter and plastic pollution), by taking their empty drinks containers to special 'reverse vending machines' (most likely hosted by retailers who sell the drinks), where they will be able to redeem a small cash deposit included in the cost of purchasing the drink and its container. The government says the scheme is set to be introduced in 2025, following extensive work with industry to

prepare for the necessary changes – including setting up infrastructure and amending labelling. The Scottish government plans to introduce a DRS covering the sale and return of certain drinks containers in Scotland from 1 March 2024, though the Scottish scheme will also include certain glass drink containers.

- New regulations designed to extend the life of certain categories of electrical products (namely household washing machines/washer driers, dishwashers, refrigerators, and electronic displays), by making manufacturers, authorised representatives and importers legally obliged to make available to professional repairers and/or end-users, spare parts for their products. The spare parts must be made available for minimum periods ranging from seven to 10 years after the last unit of the model has been placed on the market, and repairs must be possible using commonly available tools. Manufacturers must also make maintenance and repair information available to professional repairers. The rules apply to the relevant electrical products bought from 1 July 2021, though manufacturers have a grace period of up to two years to make the spare parts available. The government hopes the new 'right to repair' will prolong the lifespan of certain electrical appliances, therefore reducing electrical waste and helping to protect the environment.

- A commitment in April 2023 to consult on a ban on the use of plastic in wet wipes in England, as part of a new Water Plan for England designed to clean up waterways and ensure a plentiful supply of water for the future.

The UK government hopes that its various proposals to ensure more efficient use of resources, minimise the amount of waste produced and increase the reuse, repair and remanufacture of items and products, will lead to a number of environmental and financial benefits for the UK and the world. For instance, it says waste prevention will avoid unnecessary production and processing of materials, resources and goods, and therefore reduce the greenhouse gas emissions associated with those activities.

The UK government adds that waste prevention and keeping products and materials in use for longer will also increase the UK's economic resilience.

For example, some materials, like lithium, cobalt and rare earth elements, are increasingly in demand, due to the growing development of clean technology like electric vehicles and wind turbines. The UK government says that boosting the reuse of various types of products and materials will therefore help to safeguard key sectors of the economy from the scarcity of important materials and the associated price shocks.

Reducing carbon emissions

Since the majority of the UK's greenhouse gas emissions arise from our production and consumption of energy – for example, when manufacturing goods or

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heating premises – in recent years the UK government has introduced various laws, taxes, initiatives and campaigns to help the country become more energy efficient and reduce carbon emissions arising from energy use.

The measures consist of a mix of financial penalties, incentives and energy usage reporting requirements designed to encourage businesses to reduce their energy use; switch to renewable sources of energy (such as electricity generated by wind and solar power); and implement energy-efficient technologies and practices.

For example, the climate change levy is a tax that is added to the cost of electricity from most power plants, gas and solid fuel that are used by many businesses in the UK. The levy is designed to encourage UK businesses to become more energy-efficient, since they can cut the amount of the levy they pay by reducing their energy usage.

Also, some businesses in certain energy intensive sectors – such as aluminium, chemicals and food – can receive major discounts on the levy if they agree to meet binding energy-efficiency targets agreed between their relevant industry and the UK government.

Also, the Energy Savings Opportunity Scheme (ESOS) requires certain large businesses in the UK to carry out an assessment (i.e. audit) of the energy used by their buildings, industrial processes and transport every four years to identify cost-effective energy saving measures.

In essence, ESOS applies to large UK businesses which meet the scheme's definition of a 'large undertaking'. A UK company or organisation must comply with the requirements of ESOS if, on 31 December 2022:

- The organisation has over 250 members of staff, or
- The organisation has less than 250 members of staff, but has an annual turnover in excess of £44 million, and an annual balance sheet total in excess of £38 million.

Also, if an 'undertaking' (i.e. a company) is part of a corporate group that includes another UK undertaking or establishment that meets the criteria for complying with ESOS, then that business must also comply with the ESOS requirements.

UK registered establishments of an overseas company also need to take part in ESOS (regardless of their size), if any other part of their global corporate group activities in the UK meet the ESOS qualifying criteria.

In short, businesses that fall within the scope of ESOS must:

- Calculate the total energy consumption, including energy used in buildings, industrial processes and transport, by the organisation or the corporate group
- Conduct energy audits to identify significant areas of energy consumption and cost-effective energy saving opportunities
- Appoint a 'lead assessor' to carry out and oversee or review their energy audits or ESOS assessment
- Notify the relevant national scheme administrator that they have undertaken an ESOS assessment and

have complied with their obligations under the scheme
- Keep records of how the organisation has complied with ESOS regulations.

Further guidance on ESOS is available from Gov.uk, NetRegs and SEPA.

The UK government hopes that measures such as ESOS will encourage businesses to implement energy efficiency measures and other steps to reduce their greenhouse gas emissions, such as reducing emissions from their transport operations. It hopes this will help the UK make the transition to a low carbon economy.

The UK government has also introduced – or is proposing to introduce – a variety of additional measures, changes and rules to ensure the UK will meet its net zero target by 2050, many of which will impact on the operations of UK businesses. These include:

- An ambition to phase out the installation of all new and replacement natural gas boilers in homes and workplaces by 2035 at the latest (the ambition that, by 2035, once costs have come down, all new heating appliances installed in homes and workplaces will be low-carbon technologies, like electric heat pumps or hydrogen boilers)
- Introducing improved standards for non-domestic buildings so that new buildings have high levels of energy efficiency and low carbon heating
- Ending the sale of new pure petrol and diesel cars and vans by 2030 and consulting on a date for phasing out the sale of diesel heavy goods vehicles

(although the sale of hybrid cars and vans that can drive a significant distance with no carbon coming out of the tailpipe will be permitted until 2035).

For more information on the UK's plans to achieve net zero see the Gov.uk website.

Environmental management

The best way to comply with environmental laws and reduce an organisation's impact on the environment is to implement an effective environmental management system (EMS). This involves systematically identifying ways of increasing resource efficiency, reducing carbon emissions and preventing pollution, and taking steps reduce the risks that the organisation's activities pose to the environment.

The scale of the EMS will depend on the organisation's size, scale, risks, operations and environmental impacts, but as a general rule an EMS should:

- Ensure compliance with environmental legislation and permits
- Ensure employees are competent to manage environmental risks
- Include an effective environmental policy which sets a clear direction for the organisation to follow
- Include realistic targets and objectives for improving environmental performance and sustainability.

When establishing an EMS, organisations should review their activities, processes, products and services to identify the environmental duties that apply and areas for improvement. The review

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should examine the entire organisation, including the work processes; raw materials and energy used; the waste produced; the sustainability of the products and services; potential pollution threats; emissions from vehicle fleets; and the environmental credentials of the company's supply chain.

Typical areas to consider include:

- Which environmental legislation applies to the organisation?
- Is there a clear written environmental policy with the correct management structures to implement it?
- How much energy and resources, such as electricity and water, are used?
- What amounts and kinds of raw materials are used in the products and processes, can the amounts be reduced, and how much of these materials are reused or recycled?
- Are the organisation's products designed for durability, longer life, easier upgrading, reuse and recycling at the end of their life?
- What wastes are produced by the business, how are they managed and at what cost?
- What opportunities are there to prevent waste, or reuse, recycle or recover it?
- What are the sources of greenhouse gas emissions and how can they be reduced?
- How efficient is the transport of goods and employee travel?
- Are staff provided with environmental awareness training?

Measures should then be taken to ensure legal compliance and to improve environmental performance. Also, staff should be given suitable information and instruction on issues such as waste minimisation, energy saving and pollution prevention; and there should be management leadership and commitment to ensuring high standards of environmental performance.

Moving to the circular economy

In essence, resource efficiency means that businesses:

- Try to use as little resources as possible (such as energy, water, raw materials and packaging) when producing and providing goods and services
- Extract the maximum value from resources and products while they are in use
- Generate as little waste as possible
- Seek to re-use, recover, regenerate and recycle products, materials and wastes at the end of their service life.

NetRegs has published a guide for businesses on how to support the move to the circular economy. For example, general tips from NetRegs on how to design products, processes, systems and business models so materials are used efficiently and are kept circulating in the economy include:

- Carry out a lifecycle analysis of the product or service – this means considering the environmental impact at every stage of the product or service's lifecycle, such as making the manufacturing process for a product more efficient, therefore reducing

waste and energy consumption
- Make waste prevention a key design criterion
- Design out non-renewable materials – for example, use bio-based products as an alternative to fossil-fuel products
- Design in recyclable materials
- Try to make the product more simply – for example, by cutting the number and amount of materials used
- Design products for a longer lifetime and which are supported by a guarantee and trusted repair services
- Design products ready to be disassembled, economically repaired and eventually recycled
- Minimise the amount of packaging used while still ensuring an adequate level of protection for the product, and ensure the packaging can be re-used or recycled
- Consider taking back products at end of their life, so they can be refurbished for a new marketplace, valuable materials can be recovered from them or they can be recycled.

Another important way a business can support the move to a circular economy is to purchase sustainable goods and services that are designed to reduce the impact they impose on the environment, human health and social conditions.

A product or service has environmental impacts throughout its lifecycle, from the raw materials and energy used to manufacture or supply it, to the way it is recycled or managed at the end of its life.

NetRegs says that by purchasing sustainable goods and services, a business can reduce its carbon emissions and its impact on the environment. For example, choosing products and services that use recycled materials or waste as a raw material or resource will help to save natural resources. Also, selecting products that can be re-used and recycled will reduce the amount of waste that is sent to landfill.

Resource efficiency

When seeking to minimise and manage their use of resources and waste, businesses have a legal duty to follow the waste hierarchy.

Under the hierarchy, businesses must take all reasonable measures to prevent the creation of waste whenever possible. However, if this is not possible, they should prepare their waste for re-use or, if that is not practicable, recycle it. Businesses should also consider other ways to recover value from their waste, such as sending food waste for anaerobic digestion, which can produce biogas that can be burned to produce electricity. Finally, after attempting the above measures, they should arrange for disposal as a last resort, such as sending waste for landfill.

Clearly, the most environmentally-friendly method of dealing with waste and supporting the move to a circular economy is to prevent or reduce the amount of waste that is produced by a business in the first place.

Ideas for preventing or reducing waste, as suggested by NetRegs, include:
- Improve stock and storage control to only buy what is required and therefore

help to reduce waste
- Buy equipment in bulk where appropriate to reduce the amount of packaging it is supplied in
- Buy longer lasting products – for example, durable products that last longer and can be repaired
- Buy products that have separate parts and can be repaired more easily
- Avoid purchasing or using disposable products – for example, by using china plates and cups instead of paper or plastic, or using rechargeable batteries
- Keep the amount of materials the company uses to manufacture its products to a minimum
- Use as little packaging as possible for the company's own products, while ensuring the packaging adequately protects the product from damage
- Look for easy wins – such as printing and photocopying double-sided and refilling printer cartridges.

Next, businesses should seek to re-use materials and equipment, either in their own business or by offering them to other organisations.

Re-use retains the inherent value of the materials and requires no reprocessing of the product. This makes it a better option for the environment than recycling, which involves breaking the product down and remaking the same thing or producing something else, and therefore requires the use of energy and resources, which results in carbon emissions.

Re-using materials and goods also reduces the use of virgin materials and energy; and the air and water pollution associated with the extraction of, processing and manufacture of those raw materials. An organisation may also be able to generate income by selling waste materials and second-hand equipment to others who have a use for them, or can donate them – for example, to charities.

Common items that can be re-used by a business itself include:
- **Paper** – waste paper can be used as note paper, envelopes can sometimes be re-used and used paper can be shredded for use as packaging in-fill
- **Packaging waste** – boxes, cartons, bubble wrap, packing chips, pallets and crates can often be re-used.

NetRegs adds that businesses should consider repairing items and equipment before buying new ones.

Recycling waste

Having tried to eliminate, reduce or re-use waste, and to repair items or purchase remanufactured ones, a business should then give attention to recycling waste.

Recycling is the next best waste management option after reducing and re-using waste. It is less beneficial to the environment than re-use because energy and resources are needed to process the waste before the materials are used again. Also, recycling often retains less of the value of the material and product. For example, when plastic is recycled it is turned into a lower grade plastic.

Many materials produced and used by a business can be recycled, including:
- **Packaging** – such as cardboard boxes
- **Metal and glass** – from process waste and food and drink containers

- **Paper** – after it has been re-used as scrap
- **Textiles** – from process waste and refurbishment
- **Wood** – from process waste and damaged pallets
- **Food waste** – such as from canteens
- **Electrical and electronic equipment** – such as computers, fridges, freezers
- **Metal foil, paint, batteries and mobile phones**
- **Construction waste**.

To make it easier to reuse, recover or recycle wastes, businesses should sort and store them separately whenever possible – for example, by using clearly labelled containers or areas for different waste types. Separating waste that can be recycled from other waste and avoiding contamination of the recyclables is also important as a high quality of recyclate is required to enable more materials to be returned to the same use.

Finally, since the disposal of waste in landfill sites is the least sustainable waste management option, it is the last option to consider under the waste hierarchy.

Energy efficiency

An important aspect of reducing an organisation's environmental impact is improving energy efficiency.

Since the majority of human-caused greenhouse gas emissions arise from our production and consumption of energy – for example, when manufacturing goods or heating premises – the world can cut its carbon emissions by becoming more energy efficient and switching to low carbon fuels, such as renewable electricity generated by wind/solar power.

Therefore, by reducing the amount of energy they use in their buildings and processes, such as using less non-renewable electricity and less gas, businesses can help to fight climate change caused by burning fossil fuels in power stations to create the energy.

In its guidance leaflet, _Better business guide to energy saving_, the Carbon Trust says that most businesses can achieve meaningful cost savings by reducing their energy consumption in their buildings and their production processes. It says experience shows that even low and no-cost actions can reduce a company's energy costs by at least 10 per cent.

The approach an organisation should take to saving energy will differ according to its size and industry. However, in its _Better business guide to energy saving_, the Carbon Trust sets out a simple approach to energy saving, particularly in smaller businesses. In essence, the guide suggests looking at areas such as lighting, heating, and office, factory and warehouse equipment to identify where and how energy is used, if energy is being wasted, staff behaviours that result in unnecessary energy use, and opportunities for savings. The Carbon Trust's _Better business guide to energy saving_ guide includes an energy walkaround checklist and general advice.

The guide also suggests reviewing energy invoices and regularly taking meter readings to build a picture of energy performance and to help identify when and where energy is being wasted.

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Both the Carbon Trust and NetRegs also stress the benefits of encouraging all staff to get involved in spotting energy wastage and suggesting and implementing energy-saving measures.

The Carbon Trust says involving staff in making decisions about energy-saving will help to ensure that employees are on-board and incentivised to help reduce energy consumption at work.

Some practical ideas for saving energy in various industries, based on guidance from the Carbon Trust's Better business guide to energy saving and from NetRegs, include:

- Prevent as much heat loss as possible by improving insulation and draught control – for example, by fitting draught excluders and sealing up windows and doors that are no longer used
- Consider heating the building in zones to allow for heating to be adjusted for each area. Areas such as storerooms and corridors, or areas where there is a high level of physical activity, will generally require less heat
- Thermostats should generally be set at 19-20°C for heating a premises, but in some environments, such as in a warehouse where people are active, the air temperature may not have to be heated as high
- Ensure boilers are serviced at least annually and adjusted for optimum efficiency – heating costs can increase by 30 per cent or more if the boiler is poorly operated or maintained, according to the Carbon Trust
- Ensure heating control thermostats are accurate by placing them away from

draughts and direct sunlight and at a suitable distance from any heating sources
- Use seven-day timers to allow the heating to be turned off or down during regular unoccupied periods
- Insulate all hot water tanks, boilers, valves and pipework unless they provide useful heat to occupied spaces
- Keep windows and skylights clean to maximise the amount of natural light and minimise the amount of artificial lighting that is required
- Label light switches where necessary so staff only turn on the lights required
- Consider installing movement-triggered and daylight sensors to turn lights on and off automatically
- Replace traditional lighting units, such as older fluorescent lighting installations, with energy-efficient LED units, which have a longer life, lower maintenance costs and can be up to 80 per cent more efficient
- Switch off office equipment out-of-hours – for example, by fitting seven-day timers to ensure that equipment such as printers and water chillers are turned off overnight and at weekends
- Turn off computer monitors when not in use – for example, during lunch breaks – and ensure the energy-saving (standby) modes are activated
- Place photocopiers in areas that are naturally ventilated where possible, to help avoid the need for any air conditioning plant to compensate for the associated heat gain
- Activate the energy-saving mode

where available on printers and copiers, as this will allow the machine to power down after a set time period
- Install automatic doors at the entrances to buildings, such as retail premises, to prevent heat escaping
- For refrigerated cabinets consider fitting PVC curtains to prevent warmer air entering the cold space
- Maintain the efficiency of freezers by defrosting them regularly to prevent the build-up of ice
- Ensure compressed air systems are well-maintained and run at minimum pressure – reducing the air pressure by 10 per cent can lead to five per cent savings in energy, says NetRegs
- Check for leaks in compressed air systems used in environments such as factories and repair them immediately.

Reducing transport emissions

Businesses should also seek to cut emissions from their transport activities and business travel. This includes how the business makes and receives deliveries; journeys employees make as part of their work (on the road, train and in the air); and how workers and visitors travel to and from the business site.

Emissions from vehicle exhausts, such as carbon dioxide, contribute to climate change and are also a significant source of air pollution, which poses a major risk to public health.

There are a variety of measures a business can take to reduce carbon emissions and air pollution from their transport operations and business travel. General tips from NetRegs include:
- Educate employees about how

transport and travel contribute to climate change and air pollution, and encouraging them to use transport methods for commuting and business travel that have less environmental impact – like walking, cycling and using public transport
- Take advantage of the government's cycle to work scheme and encouraging staff to cycle to work
- Replace face-to-face meetings with video or telephone conference calls
- When buying, leasing or hiring vehicles, choose low emission vehicles that are powered by alternative fuels (such as LPG, electric hybrids or full electric vehicles), as these generally produce less CO_2 and air pollutants than those that run on petrol or diesel
- For petrol and diesel-fuelled vehicles, select models with the highest fuel efficiency and the highest emission standards, both for air pollution and CO_2 emissions
- Maintain vehicles to ensure they are running as efficiently as possible
- Encourage staff to use air-conditioning and other electrical devices sparingly as this increases fuel consumption
- Train staff in fuel-efficient driving techniques – for instance, it can cost up to 15 per cent more in fuel to drive at 70mph compared with 50mph, says NetRegs
- Pre-plan delivery routes to maximise the efficient use of vehicles
- Reduce the impact of necessary journeys by using less-congested routes, avoiding peak travel times and encouraging car sharing.

Waste Minimisation

Reducing water use

Another aspect of resource efficiency that businesses should consider is using water more efficiently.

The water supply to most commercial premises is metered – meaning the more a business uses the higher the cost. There are also other financial costs from water usage, such as the cost of energy used to heat and cool water used in a building or process.

There are also sound environmental reasons for businesses to reduce the amount of water they use. For example, climate change – with a predicated trend towards hotter and drier summers – is expected to lead to a higher drought risk and water shortages. Therefore, action by everyone to reduce water use will make the supply of water more resilient.

Detailed advice on how to use water more efficiently in various industries is available from organisations such as NetRegs, Waterwise and WRAP. The appropriate measures will clearly differ from site-to-site and sector-to-sector. However, some general tips from NetRegs and Waterwise include:

- Protect pipes from cold weather-related bursts by insulating them
- Fix drips and leaks as quickly as possible
- Investigate alternative water sources – such as using a water butt to harvest rainwater from roofs for tasks like vehicle washing, and re-using wastewater from wash basins and taps, for instance to flush toilets
- Fit water-minimising controls – such as push-controlled or sensor-triggered taps, flow regulators or restrictors, low-flush toilets, urinal flush controls and aerated or low flow showerheads
- Retrofit water displacement devices into the cisterns of toilets to reduce the amount of water required for each flush
- Educate employees on the importance of following water-efficiency measures – for example, the importance of reporting water leaks straight away.

Having implemented an environmental management system, it is vital all staff receive information and training on their environmental responsibilities and the reasons why they should act in an environmentally-friendly manner.

Senior management should lead the way and set an example, and employees should be encouraged to suggest ways of further improving the organisation's environmental performance and given feedback on progress made – such as reductions in energy bills.

Finally...

Adopting the type of steps outlined in this guide can help businesses reduce the amount of raw materials they use, the level of waste they produce and their use of energy and water. This will benefit the environment.

And with waste disposal, energy and water costs all set to keep rising, implementing an effective resource and energy efficiency programme can also reap financial savings – which will increase the company's competitiveness and long-term prospects.

Recommended reading

The journey to Net Zero for SMEs

A guide to Net Zero for businesses

A guide: Carbon footprinting for businesses

Better business guide to energy saving

Energy procurement and green tariffs

Effective energy management for business

How to be a good supplier: Guide to managing energy issues and improving environmental credentials of your business

Commissioning an energy efficiency project

Energy saving guides for agriculture; green events; hospitality; manufacturing; office-based; retail; and warehousing and logistics

Energy efficiency guides on building fabric; electric and smart vehicles; energy storage; heat pumps; heating, ventilation and air conditioning; lighting; motors and drives; energy storage; office equipment; renewable energy sources; and refrigeration

An introductory guide to Scope 3 emissions

The Carbon Trust guide to ESOS

Carbon Footprint Calculator for SMEs

Energy Benchmark Tool for SMEs

Lighting Business Case Tool for SMEs

Business Fleet Upgrade Tool for SMEs

The above guides and tools are freely available from the Carbon Trust:
carbontrust.com

Comply with the Energy Savings Opportunity Scheme (ESOS): UK government guide
gov.uk/guidance/energy-savings-opportunity-scheme-esos

Food Waste Reduction Roadmap and toolkit

Introduction to the Food Waste Reduction Roadmap and how to get involved

Love Food Hate Waste Resource pack for the Hospitality and Food service sector

Food Waste Prevention – a worked example

Food Waste Prevention – a guide to help you & your business increase 'available' product life for consumers

Food Waste Prevention – a guide to help you & your business challenge existing product life & 'open' life

Measuring and reporting food waste in hospitality and food service

The Courtauld Commitment 2030: Helping to move your business to net zero

Design tips for better recyclability of paper and board packaging

Design tips for making rigid plastic packaging more recyclable

Recycling your customers' plastic bags and wrapping

Circularity for fashion and textiles businesses

Getting Ready for Extended Producer Responsibility: A guide for fashion and textiles brands

Retailer clothing take-back guide

Textiles 2030 Roadmap

The above guidance publications are freely available from WRAP:
wrap.org.uk

Further information

British Safety Council
Offers environmental training for workers and managers. Also offers environmental auditing services for businesses wishing to improve their sustainability performance.

britsafe.org

Carbon Trust
Organisation that provides advice, guidance and services to help businesses cut their carbon emissions and costs and help the world achieve Net Zero. This includes services, tools and guidance on improving energy efficiency and setting and achieving a Net Zero target for a business.

carbontrust.com

Department of Agriculture, Environment and Rural Affairs for Northern Ireland
Government department for Northern Ireland that provides online advice to businesses on how to comply with environmental legislation.

daera-ni.gov.uk

Gov.uk
UK government website that provides links to guidance for businesses on topics like complying with environmental legislation.

gov.uk

Natural Resources Wales
Welsh environmental regulator. Website provides guidance for businesses on how to comply with environmental legislation and achieve best practice around sustainability.

naturalresources.wales

NetRegs
Partnership between the Northern Ireland Environment Agency and Scottish Environment Protection Agency that provides free online guidance on all aspects of environmental management, sustainability and decarbonisation for businesses in Northern Ireland and Scotland.

netregs.org.uk

Scottish Environment Protection Agency
Scottish environmental regulator. Website provides a wide range of guidance for businesses on legal compliance and best practice.

sepa.org.uk

Waterwise
Independent, not-for-profit campaigning organisation focused on reducing water consumption in the UK. Website offers free tips on improving water efficiency in businesses. Also runs training courses on improving water efficiency in businesses, aimed particularly at people such as maintenance staff for housing blocks.

waterwise.org.uk

WRAP (Waste Resources and Action Programme)
Registered charity that works with governments, businesses and communities to create a world where resources are sourced and used sustainably. WRAP promotes and encourages sustainable resource use through product design, waste minimisation, and re-use, recycling and reprocessing of waste materials.

WRAP provides technical support to help businesses achieve sustainable sourcing and use of resources. It also publishes a variety of guidance for businesses on all aspects of resource efficiency.

WRAP's priority areas of work are food and drink, plastic packaging, clothing and textiles, and waste collections and reprocessing.

wrap.org.uk

Zero Waste Scotland
Not-for-profit environmental advice organisation that is funded by the Scottish Government and the European Regional Development Fund. It provides free and impartial support and access to funding to help Scottish businesses save energy, money and carbon.

zerowastescotland.org.uk

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