Business Growth Hub

JOURNEY TO NET ZERO

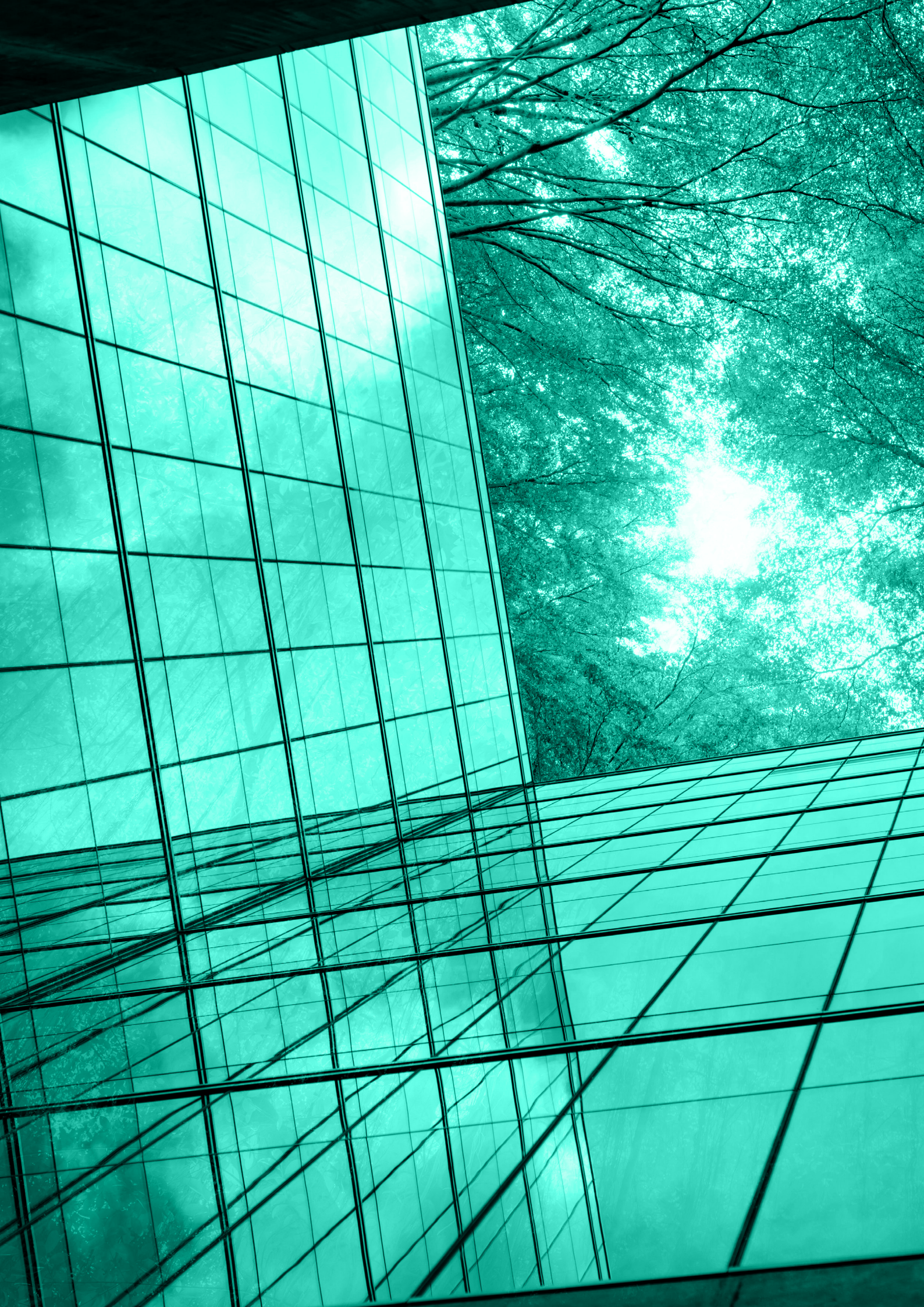
Micro SME Sustainability Guide for MANUFACTURING AND REPAIR BUSINESSES

European Union
European Regional Development Fund

GMCA GREATER MANCHESTER COMBINED AUTHORITY

In partnership with NORTHERN POWERHOUSE

Greater Manchester Local Enterprise Partnership



Contents

1.0 Introduction

Welcome to GC Business Growth Hub's Micro SME Sustainability Guide, a handy manual showing small businesses with less than 10 employees how they can reduce their impact on the environment. Inside you will find loads of tips to help you change the way you work, save money, and be more sustainable.

1.1 How to Use this Guide

The guide is structured as follows:

- Section 2 provides general tips to reduce the impact of the major utilities you're likely to use as a micro SME, split into five sections: Materials, Transport, Water, Energy, and Waste. These tips are relevant to most businesses.
- Section 3 provides tips specific to Manufacturing and Repair Businesses.
- Section 4 includes three factsheets full of tips and tricks for measuring and tracking your Energy, Water, and Waste. These are designed to help you understand how to make sense of your bills and meters and then use what you find to help focus on the fundamental changes you need to make.
- Finally, Section 5 is a glossary of key terms you might want to refer to as you navigate the Guide. Some of these are probably familiar to you; others might be completely new. If you come across a term you're unsure of, look in the glossary for a definition and further information.

Utility Icons

This is the icon for waste. You'll see it at the start of the waste section and next to any tips related to waste.

This is the icon for transport. You'll see it at the start of the transport section and next to any tips related to transport.

This is the icon for energy. You'll see it at the start of the energy section and next to any tips related to energy use.

This is the icon for materials. You'll see it at the start of the materials section and next to any tips related to material use.

This is the icon for water. You'll see it at the start of the water section and next to any tips related to water use.

This icon categorises a tip that's not specific to any one utility but rather a more holistic approach to reducing your impact.

Cost and Effort Scores

£££££

This icon represents the approximate cost of implementing each tip on a scale of 0-5 pound signs, where 0 is unlikely to cost you anything (except your time!), and 5 is a high cost or investment. These scorings only indicate rough costs and will likely change depending on your business. They're best used comparatively – make sure you do your own research to understand likely costs in detail.

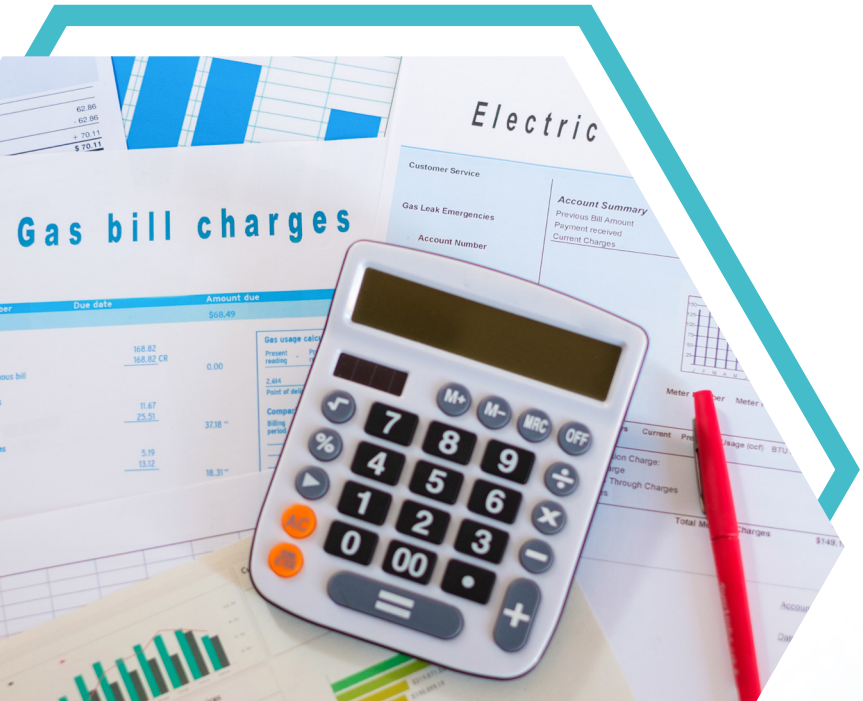
This icon represents the approximate effort needed to implement each tip on a scale of 1-5 clock faces, where 1 is quick to implement and 5 probably requires serious planning. These scores are approximate and based on our best judgement – make sure you do your research to understand the likely time needed to implement a specific tip in your business.

Based on their combined Cost and Effort scores, each tip is sorted into one of three overall ratings to help you choose what to do first:

QUICK WINS These tips can be implemented with little effort and cost. They are coloured green.

MEDIUM-TERM WINS These tips either take a bit longer or cost a bit more. They are coloured blue.

LONG-TERM WINS These tips will require reasonable implementation time and come with a higher cost to your business. They are coloured purple.



2.0 Utilities

2.1 Materials

Every business uses various products and materials in day-to-day operations. Each of these inputs has an impact, so making smart choices about what you buy and where you buy from can help reduce your environmental footprint.

The Procurement Hierarchy

The first and most important step is to reduce the materials you use. This might mean checking your stock before buying more, sharing with other users, reusing what you already have, or repairing items instead of throwing them away.

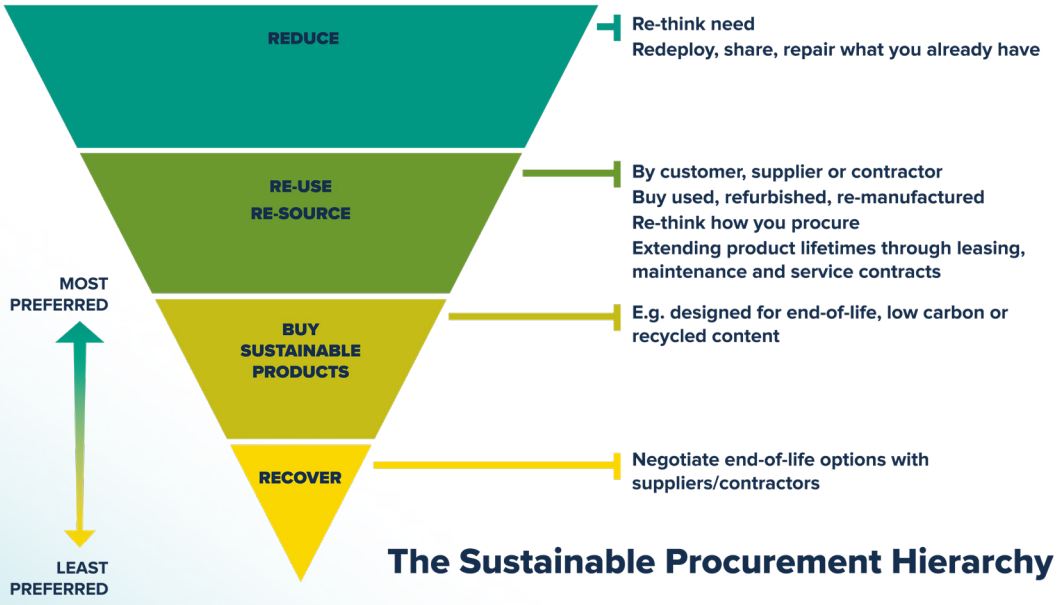
If you need to buy something, purchasing something second-hand or that has been refurbished or remanufactured is a great way to reduce your impact - for example, buying a refurbished phone rather than buying new. If that's not an option, look for products with verifiable sustainability credentials. Perhaps they contain recycled or bio-based material or are designed for easy recycling.

DID YOU KNOW...

In April 2022, a new tax of £200 per tonne was applied to all plastic packaging that does not contain at least 30% recycled plastic. (Source: GOV.UK)

Finally, if none of that's possible, try negotiating end-of-life options with your suppliers to give your products the best chance of being processed correctly when they're no longer needed.

This order of purchasing preference is commonly described as the Procurement Hierarchy:



The Sustainable Procurement Hierarchy

The Circular Economy

The Procurement Hierarchy promotes material consumption in line with so-called 'circular economy' principles. Lots of material consumption in today's economy can be considered 'linear' – we take, we make, we dispose – but more and more businesses are adopting circular economy principles to keep resources 'in the loop'.

In this section, we've listed some tips to help you align with the circular economy.

EXTRA INFO

Common certification schemes to look out for:

FSC & **PEFC** for wood and paper products

Better Cotton Initiative (BCI) for cotton items

Organic certification (e.g. for food and textiles)

TCO and **EPEAT** for IT and other electronic items

Cradle to Cradle for a wide range of items

Fair Trade and **Rainforest Alliance** Certified - considering both social and environmental factors.

Recyclass for recycled content certification and chain of custody for plastic

QUICK WINS

Keep an inventory of all your products so that you only buy when you need them rather than on a schedule (e.g. replace a monthly copier paper delivery with a purchase triggered only when you get down to a pre-determined quantity).

Have a stationery ‘amnesty’ event to get all those unused pens and staplers out of people’s drawers!

Go paperless with digital alternatives to receipts and internal documents.

If you need to use paper, use recycled paper from sustainable sources. Look for the **FSC label**.

Eliminate single-use items by investing in reusable on-premises alternatives (e.g. reusable cups and crockery, water fountains and reusable bottles in workplaces).

Look for certification labels for materials and products from trusted and verified suppliers that control their environmental impact (some of the most common certification labels are listed earlier in this section).

If you have unwanted or unneeded equipment, donate or sell it to someone who could use it. See Section 2.5 on Waste for more ideas on how to sustainably manage what you no longer need.

Reach out to **The Sustainable Materials Innovation Hub,** which helps Greater Manchester SMEs find ways to replace some of the materials they use with sustainable alternatives.

CASE STUDY

With free advice from SMI Hub in Greater Manchester, start-up OceanBound has developed premium brand flip flops and sliders from recycled materials, using a circular business model where non-wearable old products are returned, and recycled into new footwear.
(Source: **SMI Hub**)

MEDIUM-TERM WINS

If you need occasional access to equipment you don't currently own, hire it instead of buying it – or look to share with another local business. There are various tool and equipment sharing and peer-to-peer rental apps, or **consider setting one up yourself**.

Instead of replacing items when they're broken or worn, get them repaired or refurbished.

Buy refurbished or fully remanufactured items such as furniture, IT equipment, or tools. These are often cheaper than new but should still come with a warranty (remanufactured, by definition, should be 'as new', with a full warranty).

Buy items that contain recycled material or bio-based material content. Recycled material should ideally come from post-consumer sources, and bio-based materials should be from crop waste or sources that avoid deforestation.

LONG-TERM WINS

Switch your suppliers to ones with similar ambitions around climate change and sustainability (e.g. have a 'Net Zero' strategy).

If you need new equipment (cars, tools, furniture) for regular use, lease it instead of buying it. This can help to smooth cash flow and improve reliability – suppliers should service the equipment and take it back at the end of its life.

If you have to replace machinery or tools, look for models that are easy to repair. Some products are designed to be modular, so if one part breaks beyond repair, it can be removed and replaced without scrapping the whole thing.

2.2 Transport

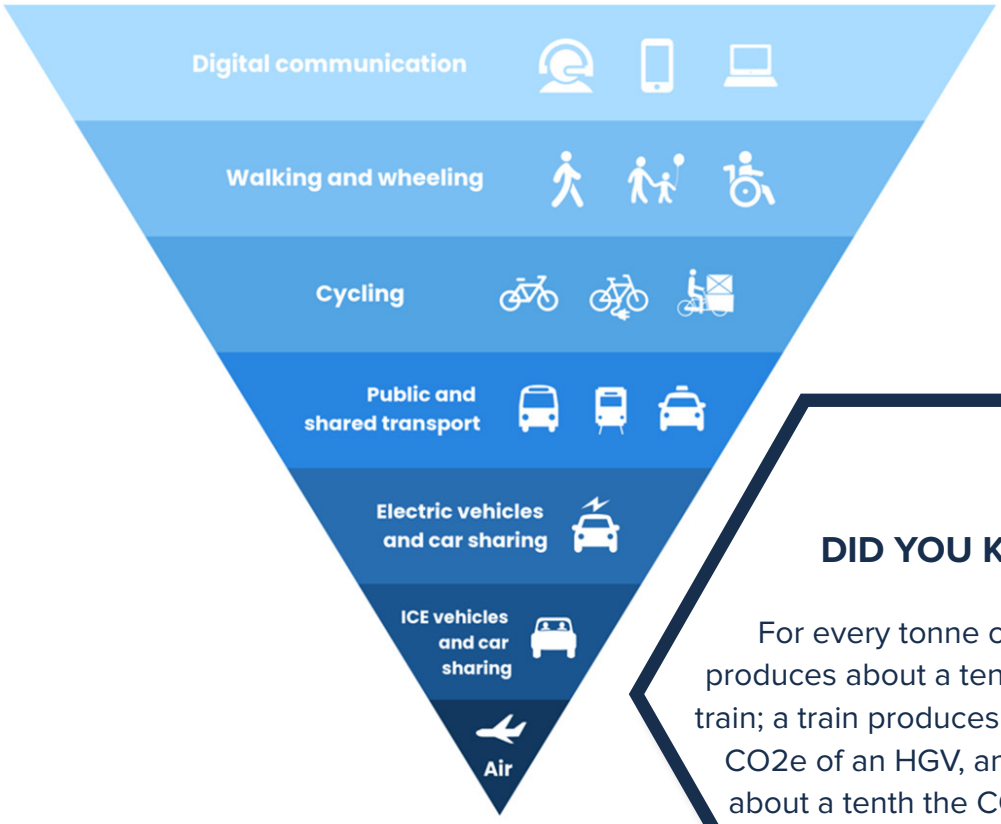
Transport is the largest source of carbon emissions in the UK. This means that changing the way you move around can be a great way to reduce your impact.

For businesses, transport might include how you and your employees get to and from work; how you visit your clients or suppliers; and how clients, suppliers, and servicing personnel visit you.

The Sustainable Travel Hierarchy

The best way to reduce your transport impact is to travel less. This might mean holding meetings with suppliers online instead of in person or allowing employees to work from home.

When travel is necessary, you should promote active travel (like walking or cycling) wherever possible and public or shared transport where it's not (like trains, buses, or trams). Using electric vehicles as an alternative to traditional petrol or diesel ones is another way to reduce the environmental impact of travel. We call this order of decision-making the Sustainable Travel Hierarchy:



DID YOU KNOW...

For every tonne carried, a ship produces about a tenth the CO2e of a train; a train produces about a tenth the CO2e of an HGV, and an HGV uses about a tenth the CO2e of a plane. (Source: (BEIS GHG Protocol))

In this section, you'll find a range of ways to reduce your business travel's environmental impact and save money simultaneously.

EXTRA INFO

If you want to take transport seriously, develop a workplace travel plan for your business. Have a look at Transport for Greater Manchester's Travel Plan Toolkit for information on how to do this. (Source: **Transport for Greater Manchester**)

DID YOU KNOW...

Switching from driving to cycling can save over £3,000 a year on a five-mile commute.
(Source: **Cycle Scheme**)

QUICK WINS

Reduce travel where possible by arranging for staff to work remotely and using video calls for internal meetings or client meetings (this can even work for site visits).

Undertake a workplace travel plan survey to identify opportunities for staff to travel to work by more sustainable modes (they might find they are more productive and relaxed when they don't have to drive!).

Support staff to make sustainable choices by reimbursing their active travel mileage (walking or cycling) for client trips or other site visits.

Help employees get a tax-free bike or accessories by signing up for a **Cycle to Work** scheme. Although not everyone will want to cycle, this is an excellent incentive for those keen.

Set up a lift sharing scheme for staff for commuting and work trips to improve the efficiency of essential journeys (software is available to help facilitate this).

Establish a company travel policy to prevent very high-impact forms of transport when they're not needed (e.g. ban flights for journeys that can easily be done by rail; cars for trips that can be done by rail, tram, or bus).

If you have a website, provide information on using public transport and cycling to reach your premises.

If active travel and public transport are impractical for staff, they might be able to purchase an electric vehicle using a **salary sacrifice scheme**. They are easy to set up and cost nothing for the employer to maintain.

Contact your local MP and council to let them know you support provision for active travel and public transport in your area. Change won't come quickly, but showing your support is free!

MEDIUM-TERM WINS

If you deliver goods, consolidate your deliveries as far as possible and optimise routes to minimise total miles travelled. You could also talk to clients about onward distribution or back-hauling their goods using your empty vehicle. Routing software packages can be costly, but they can help you to make multi-stop routes more efficient.

Smaller, local deliveries can be carried out by zero-emissions logistics providers who use bikes to transport goods. A growing number of companies offer this service and are often cheaper because they have lower operating costs.

Depending on the distance and frequency, a cargo bike might be a good alternative to a van if you regularly carry out deliveries or move things around yourself. Electric-assisted cargo bikes are now available.

Provide a few company bikes that can be used by employees to get to meetings or site visits. Ideally, these would be folding bikes that can be taken on trains or trams for visits that are further away.

Become a cycle-friendly business by **installing bike parking** outside your premises. Including secure bike storage will also encourage employees to commute by bike.

Have **speed limiters** installed in company vehicles such as vans, which could save up to 25% on fuel and pay for themselves in four months.

If you haven't got the capital to move to zero-emission transport options yet, you can sign staff up for subsidised fuel-efficient driver training, which reduces fuel use by 15% on average. You could even run competitions to see who has the most improved miles-per-gallon!

LONG-TERM WINS

Add shower and changing facilities at your workplace to encourage people to walk, run, or cycle to work.

If you have company vehicles, consider replacing them with an **electric alternative**, but make sure that your journeys are compatible, (journeys need to be less than about 200 miles a day, and vans shouldn't be much larger than a medium-wheel base).

Install **charging stations** so your staff and people visiting your site can recharge their electric vehicles. Standard charging will probably do if it's just employees using these charging points, but if you'd like customers and suppliers to use them, you might need to consider fast-charging stations instead.

DID YOU KNOW...

Just 30 minutes of walking a day can increase your heart and lung fitness, while reducing risk of chronic and cardiovascular disease by 35%.
(Source: **Energy Saving Trust**)

2.3 Water

Most small businesses significantly underestimate the amount of water that they use. Water is not yet a scarce resource in the UK. However, it's still a significant cost to some businesses (about £3 per m3 if you're on a domestic style tariff), and the pumping and treating of it uses energy which contributes to global warming.

Water Meters

If you don't already have one (i.e. you're just charged on rateable value), a excellent first step is to get a water meter fitted. This will help you understand how much water your business uses and how this use varies.

Once you understand how much you use, reducing the environmental impact of your water usage essentially means using less! Turning off taps and using water-efficient appliances are ways you can drastically cut your water consumption, along with all the other tips we've included in this section.

QUICK WINS

Help everyone in the business save water by discussing where it's being used and how it could be used less.

If your taps aren't automated, add signs to remind employees and customers to turn them off once they've finished using them).

If you're on a water meter, take regular readings and send them to your supplier to ensure that bills match what you've used. This will also help you to notice if usage changes or becomes excessive.

Once a month, check your meter reading before leaving the building and first thing when you return the following day, or after a weekend, to see if water is being used when the building is not in use. You might find a leak, tap or process that isn't being turned off.

If you have an old-style large toilet cistern (often 9 litres or more), place a 1-litre bottle filled with water or a cistern water saver in the toilet cistern to reduce the amount of water used per flush.

Fit tap aerators to old-style taps. This can reduce usage by 50%, and the devices are cheap and easy to install.

Consult your local water supplier (e.g. **United Utilities**) for more advice on saving water.

DID YOU KNOW...

Running your dishwasher on the eco-setting can save almost a third of the water that a standard cycle uses. (**Source: Water UK**)

MEDIUM-TERM WINS

If you have outside space, install a water butt to collect rainwater. You can use this to water plants or wash cars at zero cost.

Ensure your plumbing is properly maintained (e.g. fit **new washers** to taps and cistern ball valves to stop them leaking/overflowing).

If you have high water pressure (i.e. powerful flow from taps), fit flow restrictors or turn the valve on the supply pipe isolator (normally visible beneath a sink) a little to reduce the flow rate at the tap.

Purchase appliances that use less water by checking the A to G **Energy Label** for equipment like dishwashers and washing machines. Although they can cost a little more upfront, they pay back through ongoing savings.

Fit automated (occupancy sensor) flush controls for urinals. Repeat ‘fill and flush’ systems are a serious waste of water if urinals aren’t heavily used!

Prepare your business by insulating tanks, cisterns and external pipework. This prevents potential damage and leakage caused by freezing temperatures. A plumber can help you with this.

LONG-TERM WINS

Install sensor taps (no more remembering to turn them off!) and upgrade toilet cisterns to more efficient dual flush models if you still have the old single-flush systems.

Install waterless urinals. These are straight swaps for conventional urinals but use almost no water (a small amount is needed to flush the drain once every few months).

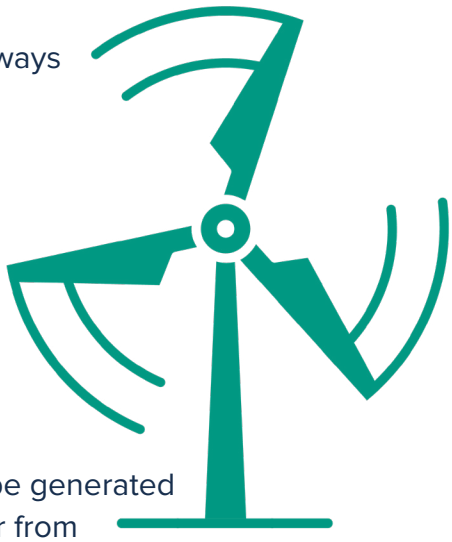
If your premises are being refurbished, or you're moving into a new build, consider installing rainwater harvesting tanks or tanks that divert grey water (water from sinks, washing machines and dishwashers) to provide non-potable services like flushing toilets or washing vehicles.

DID YOU KNOW...

A dripping tap can waste at least 5,500 litres of year. Running a hose can waste 1,000 litres an hour! (Source: **Water UK**)

2.4 Energy

Every business uses energy. The amount you need will vary depending on what sort of business you run, but there are always things you can do to reduce your daily consumption.

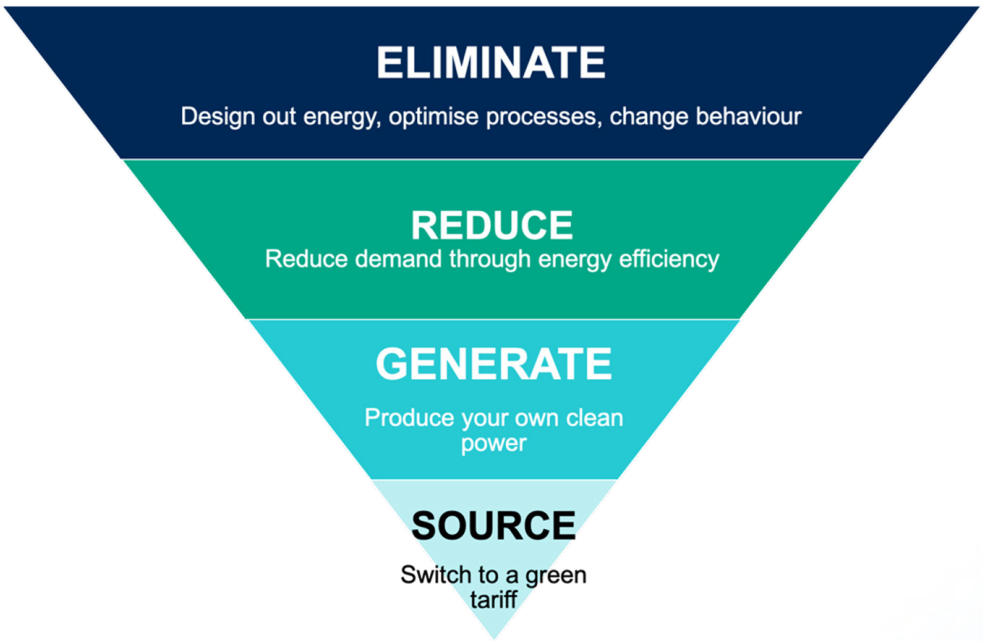


The Energy Hierarchy

Using less energy can be as simple as reminding people to switch off electronics when they're not needed. Savings can also be made by swapping old, inefficient appliances for new energy-efficient alternatives.

Think about where you get your energy from as energy can be generated from fossil fuels like petrol or gas (known as brown energy) or from renewable sources like solar or wind (known as green energy). Energy from fossil fuels tends to have a substantial carbon footprint compared to renewables.

Understanding where your energy comes from, and switching it if it makes sense, can be a good way to keep the impact of your energy low. But remember: the cleanest (and cheapest) energy is the energy you don't use in the first place, so follow the Energy Hierarchy when making decisions:



Explore the rest of this section for ways to reduce the carbon footprint of the energy you use.

EXTRA INFO

If you're buying new machinery, look for items in the Energy Technology List, created and monitored by the UK Government. (Source: **BEIS**)

QUICK WINS

Remove the guesswork from calculating your energy costs by installing a smart meter. You'll have to ask your supplier to install it, but they'll do it for free.

Add signs to machines and lights to remind people they should be turned off when not in use.

Get the most out of natural light! Keep windows and skylights clean and blinds open so you can leave lights off during the day.

Keep windows and doors closed when the heating or air conditioning is on.

If you have lots of draughty windows and doors, think about using draught excluders to stop unwanted cold air coming in. You can also fit draught curtains to doors that can't be closed.

Check radiators and thermostats regularly to know if they're on and at what temperature. If you rely on timers, you may end up heating your space unnecessarily, especially between seasons.

Make sure there's nothing blocking radiators. They need air flow to work well, and placing objects in front of them can prevent this.

Add heat reflectors on the wall behind radiators to get the most from your heating.

Ensure equipment like fans, pumps and compressors are off when your business is closed (consider putting someone in charge of this, so it's not forgotten!). You could also consider installing an overall master switch so everything can be turned off from one place.

Switch your energy provider to one that offers 100% renewable energy. Be careful, though. Many companies that are presenting as 'green' are not actually as green as they look!

MEDIUM-TERM WINS

Ask an experienced builder to inspect your business and recommend energy efficiency measures. When looking for new premises, check the **Energy Performance Certificate (EPC)** and look out for **BREEAM (Outstanding, Excellent or Very Good) and SKA (Gold or Silver)** ratings.

If you're replacing old appliances, look at the **Energy Label** and choose A-rated products wherever possible. They might cost a bit more to start with, but you'll make back your money in savings over time.

Ask an electrician to help install timers and occupancy sensors for lights, heating, and air conditioning.

Have your boiler and other heating devices maintained annually to keep them working efficiently.

Add shutters or blinds onto south-facing windows. This helps prevent rooms from getting too hot and requiring cooling in the summer and keeps heat in during the winter.

Check the seals on fridges. If they are broken, damaged or weak, you might need to upgrade the equipment. Maintained or new kit will use less energy, last longer, and quickly repay the investment.

Get an electrician to replace your light fittings with LEDs. These use less electricity and last much longer.

CASE STUDY

At one retail outlet, an adjustment of display case temperatures not only reduced refrigeration electricity consumption by approximately 50% but also resulted in an improvement in product quality.
(Source: **The Green Consultancy**)

LONG-TERM WINS

Refurbish your space with double glazing on windows and insulation in walls.

Replace your gas boiler or other gas heating when it becomes problematic/ inefficient. Ask a local specialist to identify affordable and sustainable upgrades such as **heat pumps**.

Buy **directional infra-red heaters** for space heating in open and high spaces like workshops—these heat people rather than the air.

For more open spaces, destratification fans can also make a big difference by keeping heat circulating rather than gathering in the roof space.

Install solar panels to generate your own green energy on-site. If you generate more than you need, you might be able to sell the excess back to the national grid.

If you generate solar energy on-site, installing a battery could allow you to store any excess so that it can be used later when it's no longer sunny.

EXTRA INFO

Renewable energy tariffs are often called green tariffs. Look out for the best tariffs that source their energy directly from renewable sources, but be careful – some tariffs can be misleading! (Source: **GC Business Growth Hub**)

DID YOU KNOW...

Turning down your thermostat by 1oC can reduce your energy bills by 8-10%. (Source: **UK Gov**)

2.5 Waste

Reducing the environmental impact of your business's waste means making less of it and sorting what you make so that it can be disposed of correctly.

The first step is understanding what's in the waste you're creating. You might find conducting a waste audit helpful as it will show you, first-hand, what's ending up in your bin. You can then look to address the source of the waste, which will ultimately save you money and reduce your impact.

DID YOU KNOW...

In the UK, 2.5 billion single use cups are thrown away each year! The vast majority (over 90%) are sent to landfills or burnt. You can be part of the solution by **promoting reusable coffee cups**.
(Source: **House of Commons**)

The Waste Hierarchy

The Waste Hierarchy will help you prioritise your options for things you no longer want or need. Your first port of call should be prevention, which means not creating waste in the first place. This might mean buying less (see Section 2.1 on Materials for more information on this).

For waste you cannot avoid, the next priority is finding ways to reuse it. This could mean repurposing old items yourself or selling or donating them to someone else. If you can't reuse something, you should look to recycle it properly. Energy recovery (i.e. incineration) or landfill should only be a last resort when no other options are available.

DID YOU KNOW...

About 70% of commercial waste can be recycled. If your facility isn't recycling, then you're likely spending more money than you should on waste disposal.
(Source: ROADRUNNER)

QUICK WINS

Survey the waste that you create. Depending on your business, this might mean weighing food waste, tracking the weight of residual (general) waste, or just looking in your bins to see what's there. Do this once every few months to track progress.

Check how full your bins are on average when they're emptied. If they are less than two-thirds full, you should ask your waste contractor to provide smaller bins or empty them less regularly. That will save you money and reduce the distance travelled by waste collection vehicles, helping the environment.

Go paperless by switching to digital processes. This will also save you money on paper, ink and other office supplies.

Help to reduce the amount of waste you make by buying less. Is there a reusable version of that single-use product you would buy? Can you hire or lease instead of buying?

Provide clearly signed recycling points that are more numerous and convenient than general waste bins to make recycling the automatic choice for customers and employees.

Ask your suppliers if they can deliver goods to you in returnable packagings, such as refillable containers. If your current suppliers can't, there may be others who can.

Sell or donate items that you don't want anymore. Local community websites such as **Freecycle** can be a great place to find people and businesses in need.

Check to see if your council offers food collection services for local businesses. If not, consider working with a private food waste collection company to safely dispose of your food waste to prevent it from going to landfill.

MEDIUM-TERM WINS

See if you can refurbish or repair any broken or faulty equipment before you consider throwing it out. Take care with anything electrical and only use a qualified electrician.

If you use the council for your commercial waste disposal, ask if they can recycle all the types of waste you produce. You might want to switch to a specialised commercial waste provider if the council cannot maximise recycling rates or manage more difficult wastes.

Choose suppliers that take back products at end-of-life for reuse or recycling. Note that e-waste, such as phones or old computers, should, by default, be taken back and recycled free of charge by the supplier (unless you've signed away that right – check supply contracts before signing!).

Think about using equipment sharing, reuse and waste exchange platforms such as **Olioex** and **Warp-IT** for IT and furniture.

Consider providing a **Terracycle** recycling point at your site for customers and staff to return harder-to-recycle packagings such as crisp packets, cosmetics containers and tablet packs. A Terracycle collection point could also be helpful to restaurants that use a lot of cork.

LONG-TERM WINS

Explore partnering with neighbouring businesses to create joint collection schemes for waste and recyclable materials. This might consist of a shared set of recycling bins or a shared **Terracycle** point. This will reduce costs, disruption and pollution in the area as fewer collection vehicles will be needed.

3.0 Sector

3.1 Manufacturing and Repair Businesses

Manufacturers and associated repair businesses can often generate huge resource savings across all the areas laid out in this guide. Whether it's the energy consumption and water used during the manufacturing process or the waste and transport associated with the end products, there are lots of ways to reduce costs and have a positive impact on the environment.

Whilst the general tips in Section 2 cover a broad overview of the issues facing most manufacturing and repair businesses, in this section you'll find specific tips that are relevant for premises like garages and workshops, as well as electricians, plumbers and gardeners who travel to their customers.

DID YOU KNOW...

A single 3mm hole in a compressed air system can cost over £1000 per year in wasted energy, as well as creating an excessively noisy working environment. (Source: **Carbon Trust**)

DID YOU KNOW...

The true cost of your waste is much higher than the cost of waste disposal. Not only are you paying for the disposal costs, but also for the energy, materials and labour involved in generating that waste. (Source: **GC Business Growth Hub**)

QUICK WINS

Keep a close eye on waste quantities relative to the number of products you're producing. If your levels of waste begin to increase, question whether something in your process has changed.

Have your processes and systems checked on a regular basis to ensure they're operating efficiently (e.g. a gas boiler with poor control over oxygen levels can use more gas than necessary). Similarly, make sure temperature and pressure set-points on equipment are as they need to be to minimise energy usage.

Try to order materials in bulk where possible to reduce packaging (but be mindful of product use-by dates), and employ a 'first-in-first out' policy with materials.

Instead of using blue paper roll and carboard to clean up and manage spills, use reusable/washable cloths and oil mats (where safe to do so). You may be able to use waste textiles as rags.

Plan your projects to minimise waste (e.g. with sheet materials, think about combining two or more jobs on a larger sheet. With metal bar and timber lengths, ensure they are ordered in the right sizes to maximise utilisation). Sometimes delaying a non-urgent job can help to make better use of materials and avoid waste.

When using mixtures of materials for a process (e.g. a paint mix), use standardised measuring guides and apply marks on containers with set measures to ensure you only make the right amount for each job.

Try to reuse waste products such as off-cuts or residues (e.g. keep larger off-cuts for later jobs, or combine leftover inks or paints of any colour with black to avoid waste).

When beginning a new job, use waste material as far as possible for the set-up process (e.g. use waste substrate when setting up on a printing press, or scrap bar when setting up on a lathe).

Consider switching parts of products that aren't structurally critical and cannot be seen with cheaper and more sustainable alternatives (e.g. replace new timber with used crate or pallet wood for internal parts of furniture items).

Limit your use of compressed air for clean down tasks, as this can quickly become very expensive. A bit of 'elbow grease' is cheaper and often more effective!

When storing liquids, ensure they are properly contained (e.g. tightly lidded) and kept away from heat sources and sunlight to reduce evaporative losses.

Make sure to empty material containers fully to reduce wastage (e.g. shake bags out, turn containers upside down or puncture them to empty all residue. IBCs often needs tilting on a slightly angled frame to get all the material out).

Minimise changeover times between jobs and experiment with how you can group processes together to reduce energy losses from start-up/close-down.

Clearly label product containers so they can be refilled with the same product when they are empty. This prevents the need to deep clean containers between jobs whilst still avoiding product contamination.

Your waste products may be useful for other local businesses or the local community. Advertise your valuable spare materials through online apps such as **Freecycle** or **Globechain**.

Remove dirt build up as soon as possible and follow a 'clean as you go' policy. A build-up of dirt deposits can become increasingly difficult to clean as time goes on and will require more effort and cleaning material.

Separate hazardous wastes (e.g. solvent waste) from other wastes. If you don't, all your waste may be charged at the higher 'hazardous' rate. Speak to your waste contractor to ensure priority is given to recovery and not disposal.

Use triggered dispensers for spraying cleaning solutions rather than an open container and cloth. This will reduce the overall amount of cleaning solution you use.

Where possible, dedicate vessels, pipelines, and other equipment to specific mixes/colours to avoid cleaning between batches. In the long-term, it may be cheaper to purchase additional process tanks or pipelines than spend large sums of money on cleaning and lost material.

Add insulation to hot water pipes, tanks, and boilers to reduce heat loss. You should also insulate water pipes that may freeze in winter when the site is not heated.

Make sure that ventilation and air-handling equipment is correctly ‘sized’ (power rated) for your building. Buying larger units than necessary (e.g. second-hand) can be a false-economy as the operating costs will be higher.

If you’re travelling to customer sites, schedule jobs into clusters to reduce total miles travelled.

MEDIUM-TERM WINS

If your processes involve spraying, consider replacing conventional spray guns with High Volume Low Pressure (HVLP) models. These provide better control, better coverage, and typically offer 65-85% transfer efficiency.

Have related equipment and machinery ‘interlocked’ (electrically linked) with each other to eliminating the risk of equipment being left on unnecessarily (e.g. extractor fans can automatically switch off as other machinery is switched off).

If you have high ceilings, use infrared radiant heaters instead of fan or convection heaters. These are directional and heat people rather than warming the whole space.

Consider leasing machinery and equipment rather than purchasing. This will spread the cost and ensure equipment is properly maintained and upgraded to the most efficient model on a regular basis.

LONG-TERM WINS

Think about creating and testing products through Computer Aided Design (CAD) software. This will reduce the amount of material you go through when creating moulds.

If your processes require different operating temperatures, consider using separate smaller boilers instead of a large central one. This can reduce the total energy required, especially if only a few processes that require high temperatures.

If your processes require different operating pressures, consider using separate compressors instead of a large central one.

If your process requires chilling, see if you can maximise natural ventilation or install a ‘free cooling’ system.

Install heat exchangers to make use of your excess heat (e.g. take ‘low grade’ heat from a compressor and use it to part warm a boiler or other process).

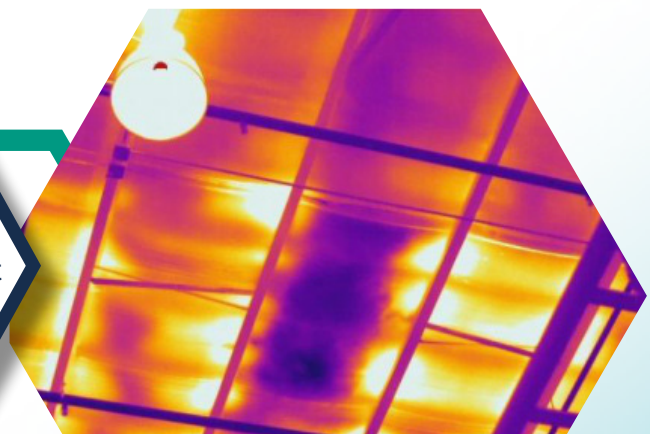
If you have draughty spaces adjacent to external doors, or parts of the building that require different temperatures, separate them with plastic strip curtains, warm air curtains, draught lobbies and rapid roller shutter doors to save heat energy.

Fit high-efficiency motors where possible and use variable speed drives (sometimes called inverters) to match motor speed to particular circumstances as they change (e.g. on air compressors or a conveyor system). This will drastically reduce motor energy consumption.

If you regularly travel to customers, consider leasing an electric van. This can be an excellent way to drive financial savings and offer a low carbon service to customers.

DID YOU KNOW...

Installing polycarbonate secondary glazing under skylights can reduce heat losses by up to 50% and eliminate down draughts. (Source: Carbon Trust)



4.0 Measuring and Tracking

Energy

Water

Waste

4.1 Energy

Why measure energy use?

If you don't measure it, you can't manage it!

To reduce your energy consumption and bills, you need to UNDERSTAND IT, DIVE DEEPER and TRACK IT. This will allow you to experiment with reduction measures and see if they have an impact. Although you can take readings from a standard meter, smart (digital) meters provide more accurate real-time data and can be checked anytime online or via an app. Naturally, energy use will vary depending on how busy your business is, so take account of this by considering your energy intensity for a given period:

energy intensity = energy use (e.g. kWh) ÷ turnover (£'000)

How do I measure energy use?

UNDERSTAND

Find your **METER/S** and take your own 'actual' readings. Estimated bills from the supplier will be inaccurate (although they will indicate cost).

Take the new figure from the previous reading to get your **CONSUMPTION** (kWh for electricity, m3 for gas, litres for oil) for a given period (e.g. every four weeks).

Divide your consumption by your turnover in the same period to calculate your **ENERGY INTENSITY**.

DIVE DEEPER

IDENTIFY where you think energy is being used and where you think it might be being wasted. Is there always a light on in the meeting room, for example?

SHOW the data to your colleagues and ask for their opinion. Does it sound right? Is it what they'd expect? What do they think can be done to reduce energy use?

If you don't have one already, consider installing a **SMART METER** to help you keep track of energy use in real-time. You can use your smart meter to see how different equipment uses different amounts of energy as they are switched.

TRACK

Set up a RECORDING METHOD using software like Microsoft Excel. Give someone RESPONSIBILITY for regularly tracking energy use (ideally someone keen on sustainability). Make sure they note down any CHANGES that may temporarily affect your energy use (e.g. a heatwave or working at weekends). Occasionally, they should track energy use overnight or at weekends to identify what is being left on unnecessarily.

Look at the **TREND** in energy intensity – is it going up or down? If it's not going down. Think about what can be done to improve matters.

How does this help?

- Tracking your energy intensity each month will allow you to draw comparisons and identify changes over time. Remember that energy use related to space heating will vary according to the outside temperature, so make sure you compare periods with similar weather conditions from the previous year.
- If you see a significant change in the wrong direction (e.g. more than a 10% increase in energy intensity), you need to investigate the possible causes. Think about where you use energy and how – have you got a new or faulty piece of equipment or a new staff member who may be leaving things switched on overnight?
- Try turning things on and off to see how much difference it makes to your energy consumption, and take a look at Section 2.4 for ideas to cut your energy use and bills. Keeping copies of your energy bills will show if you're cutting costs over time and help you predict cash flow.

4.2 Water

Why measure water use?

If you don't measure it, you can't manage it!

As with energy, to reduce your water use, you need to UNDERSTAND IT, DIVE DEEPER, and TRACK IT. This will allow you to experiment with reduction measures and see if they have an impact. You can take readings from a standard meter, but smart water meters provide more accurate data, allowing you to take measurements anytime. They also contain leak detectors which alert you when you have a leak and can switch off the supply automatically. This can help prevent major and often costly damage.

Your water use will change depending on how busy your business is, so take account of this by considering your 'water intensity' for a given period:

water intensity = water use (litres or cubic metres) ÷ turnover (£'000)

Note that this is only possible if your business is metered (rather than just charged by rateable value).

How do I measure water use?

UNDERSTAND

If you have a meter, find it and use it to take your own 'actual' readings. Estimated bills from your supplier will be inaccurate (although they will indicate cost).

Take the new figure from the previous reading to get your **CONSUMPTION** (usually in cubic metres or litres) for a given period (e.g. every four weeks).

Divide your consumption by your turnover in the same period to calculate your **WATER INTENSITY**.

DIVE DEEPER

IDENTIFY where water is being used and where you think it might be wasted. Is there a leaky tap in the bathroom, for example?

SHOW the data to your colleagues and ask for their opinion. Does it sound right? Is it what they'd expect? What do they think can be done to reduce water use?

If you don't have one already, consider installing a **SMART METER** to help you keep track of water use in real-time. You might be able to use the information to see how much water each piece of equipment uses.

TRACK

Set up a **RECORDING METHOD** using software like Microsoft Excel. Give someone **RESPONSIBILITY** for regularly tracking water use (ideally someone keen on sustainability).

Make sure they note any **CHANGES** that temporarily affect your water use. Occasionally, they should track water use overnight or at weekends to identify if anything is being left on or if you have any leaks.

How does this help?

- As you track your water intensity, you will begin to spot trends and draw comparisons with previous periods, which will help you identify significant changes and possible causes. This might include changes in the business, leaks, external factors (e.g. a heatwave), or the effect of your improvements.
- Getting to know your water use (e.g. knowing if equipment uses a fixed amount of water or has variable use patterns) can also inform the reduction measures you put in place and identify priorities quickly. Look at Section 2.3 for ideas on the kinds of measures worth considering.
- Keep copies of your water bills and meter readings to see whether you're reducing your costs over time. You can also anticipate how much your water use will cost each month, helping you to predict cash flow.

4.3 Waste

Why measure waste?

If you don't measure it, you can't manage it!

Reducing your waste volumes will help you avoid rising UK waste costs and save valuable resources. But first, you need to UNDERSTAND IT, DIVE DEEPER and TRACK IT. Unlike energy and water, there is no meter for waste, so instead, you need to measure the amount you produce over a given period, generally in terms of the number of bags or bins you put out per day or week. You can then establish your 'waste intensity':

waste intensity = waste generation (kg/tonnes or cubic metres) ÷ turnover (£'000)

Ideally, you should calculate your waste intensity for both general waste and recycling – it's important to reduce all forms of waste, even if it gets recycled!

How do I measure waste?

UNDERSTAND

There is no meter for waste, so you'll have to keep a record of how much you put out for collection each day or week. This **QUANTITY** is best measured as a full bag or bin equivalents (e.g. if you only put out half a bag per day, that would be 3.5 bag equivalents per week).

Collect this data for general waste as a minimum, although it's good practice to also track your recycling volumes to measure overall progress.

Divide your waste quantity by your turnover in the same period to calculate your **WASTE INTENSITY**.

DIVE DEEPER

Have a **LOOK** in your waste bins to see what's in there. What are the key types of waste that occur regularly as a significant proportion?

SHOW the data to your colleagues and ask for their opinion. Does it sound right? Is it what they'd expect?

ASK your colleagues where and why they think the waste occurs and what can be done to reduce it.

TRACK

Set up a **RECORDING METHOD** using software like Microsoft Excel. Give someone **RESPONSIBILITY** for regularly tracking waste generation (ideally someone keen on sustainability). Make sure they note down any **CHANGES** that may temporarily affect your waste (e.g. having a 'clear out').

Look at the **TREND** in waste intensity – is it going up or down? If it's not going down, think about what can be done to improve your progress.

How does this help?

- Once you start measuring your waste, you can begin to understand your recycling rate. This is the total amount of material going to recycling, divided by total waste produced (general waste plus recycling).
- Use your waste intensity measurements to track progress and brainstorm with your colleagues to see if you can reduce your overall waste or recycle more. Take a look at Section 2.5 for ideas to get you started.
- If you're based at more than one site, tracking the distribution of waste across your business may be helpful. By identifying which locations create the most waste, you can give them priority in terms of making changes.

5.0 Glossary

Key Term	Definition
Ball valves	A mechanism which controls the flow of water into a cistern or tank.
Beeswax wraps	Food wraps made from cotton sheets infused with beeswax. They replace the need for plastic cling film and can be washed and reused multiple times.
Bio-based materials	Materials produced from living matter (biomass). This includes wood, paper and leather.
Biodegradable packaging	Packaging which is broken down naturally over time by microorganisms, bacteria, or fungi. Usually, the material degrades without leaving anything behind.
BREEAM	An international sustainability assessment used for infrastructure and building projects. Ratings are based on a mix of environmental, social, and economic factors.
Brown energy	Energy that comes from fossil fuels such as oil, coal, and gas. These sources are non-renewable and release harmful emissions into the atmosphere.
Carbon footprint	The amount of carbon dioxide released into the atmosphere from the activities of an individual, organisation, or community.
Cargo bike	A bike with extra load capacity. Models are designed to transport food, goods, and passengers.
Carpool/car share scheme	An arrangement between people to share journeys together in a single vehicle. This can be informal, through friends or colleagues, or formalised through a company-wide scheme. Passengers usually share the cost of fuel.

Circular economy	A form of economy where all energy and materials within a product's lifecycle are repeatedly reused, resold, repaired, and refurbished.
Cistern	Tanks in a toilet which store water for flushing.
Cistern water saver	A container put in the toilet cistern to reduce the amount of water used when flushing.
CO2e emissions	'Carbon dioxide equivalent' includes CO2 and other greenhouse gases such as methane, ozone, and nitrous oxide. This provides a fuller picture of the environmental impact of an activity.
Commercial waste	Waste produced from business activity rather than household, agricultural, or constriction work. Examples include paper, cardboard, cans, and food wrappers.
Cycle to Work scheme	A government scheme which allows employees to buy bikes through their employer. The cost is tax-free and spread over 12 months.
Deforestation	The cutting down of forests and woodland for human activities such as agriculture or construction.
Electric vehicle	Vehicles that are either partially or fully powered by electric. They use rechargeable batteries rather than fuel.
End-of-life	A product at the end of its useful life becoming waste.
Energy consumption	Total energy used to perform an action. Can include electricity, gas, and water.
Energy Performance Certificate (EPC)	A certificate required when a property is built, sold, or rented. Contains information about a property's energy use and costs, which includes an energy efficiency rating from A (best) to G (worst). Also suggests ways to reduce energy use.
Environment Agency	A public body which aims to protect and improve the environment and support sustainable growth.

Environmentally conscious consumer	Consumers who have an awareness and concern for the environmental impact of their purchase. Usually, considerations are based upon product sourcing, manufacture, and disposal.
E-waste	Electronic products that are unwanted, not working, or at their end-of-life. Includes computers, TVs, stereos, and phones.
External insulation	An insulation layer fixed to the existing wall of a building. By minimising heat loss, it increases energy efficiency.
Fast-charging stations	A place to rapidly recharge electric vehicles. Reaching full charge can take 3-4 hours for a small vehicle. Stations are typically found on street-sides, shopping centres, and parking areas.
First-in first-out system	A method where goods purchased first are used first.
Flexible plastics	Soft, flexible, and lightweight plastic materials. Often used in the food industry as they keep products fresh.
Food miles	The total distance food travels between where it is grown to where it is eaten.
Free cooling system	A unit which uses low outside temperatures as a free cooling source in air conditioning.
Fuel-efficient driving	Driving techniques which lower a vehicle's fuel consumption. They include gentle acceleration and maintaining a steady speed.
Global Warming	The gradually rising average temperature of the Earth since pre-industrial times as a result of increasing concentrations of greenhouse gases in the atmosphere.
Greenhouse gas	Gases like CO2 that trap heat in the atmosphere through a process known as the 'greenhouse effect'.

Green tariffs	When a supplier promises to match all or some of the electricity you use with renewable energy supply taken from the National Grid. The more green tariffs there are, the greater the need for green energy supply into the grid.
Heat pumps	A sort of reverse refrigerator which takes energy from the outside air or ground and by compressing a fluid can create low-temperature heat, most often used for underfloor heating.
Landfill	A site for the disposal of waste. Also known as a dump or tip.
LED	A form of lighting which lasts far longer than conventional (incandescent) lights and often uses only 10-20% of the energy.
Net Zero	Reducing greenhouse gas emissions to as close to zero as possible, to the point where they can be balanced out by removing greenhouses gases from the atmosphere through activities such as a tree planting.
Occupancy sensors	Detect the presence of a person through motion sensors. Often used to automatically turn lights on when you walk into a room.
Plant-based food	Food which excludes all animal products. Includes fruits, vegetables, grains, legumes, nuts and seeds, herbs, and spices.
Post-consumer waste	Waste material that is generated by the ‘end user’ of the product
Recycling	The process of converting waste into reusable material.
Refillable bags/ containers	Durable storage products which can be reused multiple times to transport goods without using plastic. Can include bags, jars, and pouches.
Remanufactured item	An item which is made from old, used, or worn-out materials to create a new one.

Renewable energy	Energy that comes from natural sources which can never run out. Includes solar, wind, tidal, wave, geothermal, and biomass.
Seasonal menu	Menu based on foods which are in season. Requires rotating different fruits and vegetables on a menu throughout the year.
Secondary glazing	Installing a secondary windowpane on the room-side of an existing window. A low cost form of double glazing.
Single-use product	An item which is designed to be used only once before it's thrown away or recycled.
SKA	An environmental rating which assesses the interior of buildings. This includes electrics, decorations, and furnishings.
Smart meter	A replacement to traditional gas, electricity, and water meters. They measure how much you are using and what it's costing you. This information is displayed on a digital screen in real-time.
Solar panels	A panel designed to absorb the sun's rays and convert it into electricity. They are often located on roofs of buildings to capture maximum sunlight.
Speed limiters	A safety device placed in cars which restrict the flow of fuel to the engine when a pre-determined speed is reached.
Sustainable supplier	A supplier which integrates social, ethical, and environmental considerations into their operations.
Tap aerators	A small attachment added to the end of a tap which reduces the amount of water that passes through.
Terracycle recycling point	Points where you can drop off and recycle almost any form of waste.
Thermostat	A device which detects temperature changes and signals to a heating system to keep the room temperature constant.

Water butt	A large barrel used for catching and storing rainwater.
Water efficiency	Minimising water waste through conservation methods.
Water meter	A device which measures the volume of water that passes through a pipe.
Waterless urinals	Urinals which divert urine into a ‘trap’ that contains an enzyme to remove any odour. No water is used in the process.
Zero-emissions	When all greenhouse gas emissions from an activity are prevented or removed from the atmosphere through reduction measures.

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