UNIVERSITY OF LEICESTER

LEICESTER INNOVATION HUB

Advancing Sustainable Businesses

Interactive E-Book

European Union
European Regional Development Fund

MIDLANDS ENGINE
HM Government

Cover photo by **Nataliya Vaitkevich** from **Pexels**

1. Introduction

Sustainability is increasingly important for organisations of all sizes. Running and managing a business is no easy task never mind considering the sustainability of your business. This aim of this e-book is to provide you with the educational information on all aspects of sustainability in the context of running a business. There is a lot of information out there on what sustainability for business is and why it is important however, it takes time and energy to scour the internet to find the information relevant to you. The idea behind this resource is to help save you time and effort and make the information you need accessible at the click of a button.

The objectives of this e-book:

- Introduction to sustainable development and the UN Sustainable Development Goals
- Why sustainable development matters to business
- Key issues that businesses face
- Information on key elements of sustainability
- Useful information & supporting resources

This e-book has been compiled with information from the University's Leicester and DeMontfort University and other well-known sources. This information is purely educational and is interactive with links to videos and other resources.

If you need business support to help implement and embed sustainability into your business, then contact Leicester Innovation Hub at LeicInnovation@le.ac.uk

What are the main areas that you would like more information on with regards to sustainability and SMEs?

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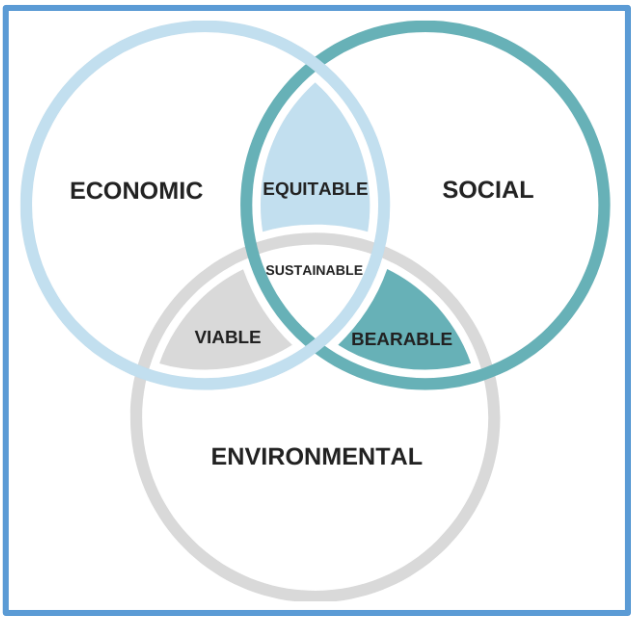
2. What is sustainable development?

2.1 Background & definition

"Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs." [1]

The report of the World Commission on Environment and Development in 1987 was a breakthrough in international discussions of sustainability. By bringing together sustainability and development it literally broke through the obstacles of the north-south divide wherein the south regarded environmental concerns as the rich world attempting to preserve its privileges at the expense of their industrial development.



Venn diagram showing the variety of subsections that overlap the topic of 'sustainability'. The three main sections include: economic, social and environmental. These categories are further broken down into equitable, viable and bearable, with the central theme being sustainability.

Sustainable Development focuses on a wide range of issues that fall under the three pillars of sustainability: **environment**, **society** and the **economy**.

2.2. Complexity

In this section, we will help you to understand what it means to say that sustainability is a complex problem.

Sustainability and sustainable development are emergent phenomena. In this case, emergent phenomena refers to the system of which 'sustainability' of individual agents are a part but the system may behave differently from the simple sum of the individual behaviours.

Almost anything to do with sustainability is an emergent property because it refers to the system as a whole. So, anything from climate change and other types of pollution, through exhaustion of physical resources and extinction of species to antibiotic resistance represents emergent behaviour.

This video introduces a breakdown of complexity: https://youtu.be/8dWGOKUHmFo

Components of complexity

Key term	Definition
Space complexity	What we do in one place affects and constrains what happens elsewhere (We might summarise this as 'geography matters')

[1] Brundtland, Gro Harlem. "Our common future." *Environmental Conservation* 14, no. 4 (1987)

Time complexity	What we do at one time affects and constrains what happens later ('history matters')
Social complexity	The role of institutions ('culture matters')
Material complexity	The role of technology ('resources matter')
Conceptual complexity	What do we mean by X?

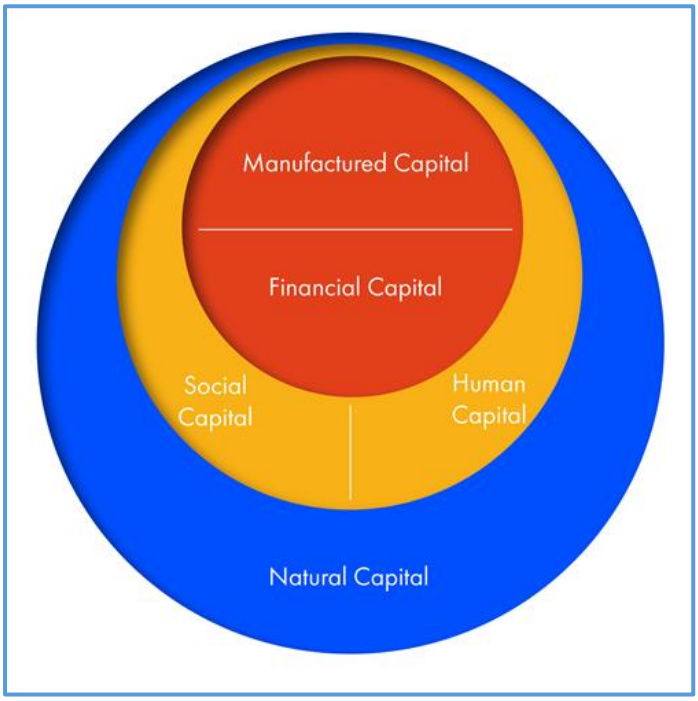
2.3 Dimensions of sustainable development

The "Five Capitals" Model[2]

This model 'provides a basis for understanding sustainability in terms of the economic concept of wealth creation or 'capital''.

As a business you 'will use five types of capital to deliver its products or services. A sustainable organisation will maintain and where possible enhance these stocks of capital assets, rather than deplete or degrade them.'

For each type of capital there are certain features which are needed to create a sustainable society.



Venn diagram showing overlap of various capital. Natural capital encapsulates all other types of capital. Second largest capital category includes social and human capital. Financial capital and manufactured capital are the third category of capital which overlaps all the other types of capital.

Natural Capital

Definition: Is any stock or flow of energy and material that produces goods and services.

It includes:

- Resources (renewable/non-renewable materials)

-Sinks (absorb/neutralise or recycle waste)

-Processes (e.g. climate regulation)

[2] https://www.forumforthefuture.org/the-five-capitals

Features:

- In their extraction and use, substances taken from the earth do not exceed the environment's capacity to disperse, absorb, recycle or otherwise neutralise their harmful effects (to humans and/or the environment)
- In their manufacture and use, artificial substances do not exceed the environment's capacity to disperse, absorb, recycle or otherwise neutralise their harmful effects (to humans and/or the environment)
- The capacity of the environment to provide ecological system integrity, biological diversity and productivity is protected or enhanced

Human capital

Definition: consists of people's health, knowledge, skills and motivation. These things are all needed for productive work. Enhancing human capital through education and training is central to a flourishing economy.

Features:

- At all ages, individuals enjoy a high standard of health
- Individuals are adept at relationships and social participation, and throughout life set and achieve high personal standards of their development and learning
- There is access to varied and satisfying opportunities for work, personal creativity, and recreation

Social capital

Definition: concerns the institutions that help us maintain and develop human capital in partnership with others

Features:

- There are trusted and accessible systems of governance and justice
- Communities and society at large share key positive values and a sense of purpose
- The structures and institutions of society promote stewardship of natural resources and development of people
- Homes, communities and society at large provide safe, supportive living and working environments

Manufactured capital

Definition: comprises of material goods or fixed assets that contribute to the production process rather than being the output itself (e.g. tools, machines & buildings)

Features:

- All infrastructure, technologies and processes make minimum use of natural resources and maximum use of human innovation and skills

Financial capital

Definition: plays an important role in our economy, enabling the other types of capital to be owned and traded. Unlike the other types of capital, it has no real value itself but is representative of natural, human, social or manufactured capital e.g. shares, bonds or banknotes.

Features: Financial capital accurately represents the value of natural, human, social and manufactured capital

2.4 UN SDGs

In 2015, world leaders adopted the 2030 Agenda for Sustainable Development and the 17 UN Sustainable Development Goals (UN Global Goals). The UN Global Goals are a blueprint for a better world by setting targets for all aspects of sustainability – from quality education and protecting the planet to ensuring prosperity. The 17 goals are considered to be a to-do list to ensure the needs of the present do not compromise future generations from meeting their own needs. These goals aim to empower local governments and people to be the drivers behind sustainable development wherever they are.

Visual representation of the 17 UN Global Goals that should be embedded into business plans for a sustainable business. The 17 UN Global Goals include:

- No poverty
- No hunger
- Good health
- Quality education
- Gender equality
- Clean water and sanitisation
- Renewable energy
- Good jobs and economic growth
- Reduced inequalities
- Sustainable cities and communities
- Responsible consumption
- Climate action
- Life below water
- Life on land
- Peace and justice
- Partnerships for the goals

These UN Global Goals build on the successes of the Millennium Development Goals, whilst including new areas such as climate change, economic inequality, innovation, sustainable consumption, peace and justice, among other priorities. The goals are interconnected – often the key to success on one will involve tackling

issues more commonly associated with another. There are defined targets for each UN Global Goal with a total of 169 set targets for all 17. The UN Global Goals aims are to achieve these targets by 2030.

Overall, the UN Global Goals provide a universal framework for global collaboration to solve the world's most pressing issues. Businesses have a large role to play in propelling forward the UN Global Goals and businesses also have much to gain.

What UN SDGs do you think apply to your business? What issues are present within your business that you can address in line with the UN SDGs?

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3. Why do the SDGs matter to businesses?

3.1 Overview

Whilst the business community has a large role to play in propelling forward the UN Global Goals, it is vital to note that SMEs in particular are instrumental as they make up over 99% of the businesses in the United Kingdom. SMEs can utilise the UN Global Goals as a framework to navigate their strategies and drive forward their business goals, but concomitantly positively impact upon the UN Global Goals because 'businesses cannot succeed in societies that fail'[3].

Although, there is a perception that incorporating the UN Global Goals is a task for large corporations due to the financial and labour constraints some SMEs face, it may be easier to implement new processes and principles and measure impact easier in smaller companies. As outlined by the UK Stakeholders for Sustainable Development[4], engaging with the UN Global Goals provides a long-term vision and strategy for businesses which in turn means that they do not need to invest in the resource to develop this. Furthermore, SMEs may see results and have large impact quicker which will provide SMEs with an avenue to be at the forefront of their sector.

3.2 Sustainable Development for Business

1. Companies are having to adopt to a changing world and need to face issues such as competition for resources, looming regulations on carbon emissions, energy costs, access to raw materials, the availability of natural resources and environmental problems[5].

[3] Compass, S. D. G, *The guide for business action on the SDGs,* GRI, UN Global Compact, and WBCSD (2015), p.9.
[4] Carolina Karlstrom, UK Stakeholders for Sustainable Development, 2017 Accessed from: https://www.ukssd.co.uk/blog/making-the-global-goals-work-for-smes
[5] See Price Waterhouse Coopers. "*Make it your business: Engaging with the sustainable development goals*." (2015), p6-7.

2. Aligning your business practices with the UN Global Goals builds resilience against regulatory changes. Such as the EU's new green deal, the UK's green recovery post Covid-19 Pandemic and future tightening of carbon emissions regulations.

3. Consumers are increasingly considering whether companies are responsible businesses when purchasing goods and social media has provided a powerful platform for consumers to demand transparency from businesses. Younger generations in particular value inclusive business practices[6] which means that engaging with the UN Global Goals protects your company from reputational risks as well as attracting and retaining the best employees.

4. The SDGs is a framework for innovating business processes and in turn provide an avenue for cost-savings and long-term sustainability. Furthermore, the UN Global Goals open up new markets and opportunities for businesses by, for example, exploring new technologies.

5. For SMEs, access to grant funding can be crucial to the growth of your business. Grant funders are increasingly requesting applicants to consider the environmental impacts of their project.

By utilising the UN Global Goals as a framework for your business, winning tenders and securing funding will become easier as you would have already considered the negative and positive impacts of your projects.

3.3 Importance of embedding sustainability into your business

Many companies claim to embed sustainability within the heart of their business however, in reality very few have a fully integrated approach to sustainability. Now more than ever, there is a sense of urgency to embed and integrate sustainability at the core of businesses. This is required from businesses in order to address global issues such as the climate crisis, resource scarcity and social injustices.

An integrated approach means that environmental and social considerations should be equal to economic considerations when making business decisions. Embedding sustainability from this level will ensure that businesses 'secure a sustainable future but it also benefits companies, enabling them to prepare for future risks, act on opportunities and create more value for the business and its stakeholders'[7].

[6] Compass, S. D. G, The guide for business action on the SDGs, GRI, UN Global Compact, and WBCSD (2015), p.9.
[7] Mosher, M., & Smith, L. (2015). Sustainability Incorporated, Integrating Sustainability into Business. SustainAbility Ltd.

4. Key issues for businesses

4.1 Greenhouse gas emissions

Certain amounts of greenhouse gases (GHGs) are needed in the Earth's atmosphere to help retain some of the sun's heat and keeps our planet liveable. If this process didn't occur the world would be mostly frozen. UK has committed in law to cutting greenhouse gas emissions by 78% by 2035 compared to 1990 levels.

Each gas has a different capacity to cause global warming. The concentration of GHGs in the air is dependent on the capacity of emissions that occurs. Carbon dioxide is expected to be responsible for about two thirds of the anticipated future warming. The main forms of carbon dioxide emissions are due to transportation, electricity and industry. Transportation causes the combustion of fossil fuels such as diesel and gasoline. Fossil fuels are used to produce electricity which is required in every industry and is a main area of concern with regards to sustainability in SMEs. Finally, industry can produce carbon dioxide through the use of fossil fuels as well as through the production of mineral products and metals.

The six main GHGs are covered by the Kyoto Protocol:

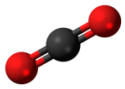
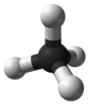
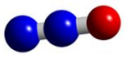
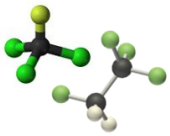
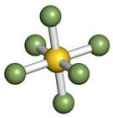
- Carbon dioxide (CO2)
- Methane (CH4)
- Hydrofluorocarbons (HFCs)
- Nitrous oxide (N2O)
- Perfluorocarbons (PFCs)
- Sulphur hexafluoride (SF6)

Different activities emit different gases, for example, burning fossil fuels releases carbon dioxide, methane and nitrous oxide into the atmosphere, while producing aluminium releases carbon dioxide and perfluorocarbons. Within the UK it is estimated that business activities account for about half of all emissions.

You may also choose to measure or calculate emission from other gases in addition to the six covered by the Kyoto Protocol if these are material to your total greenhouse gas emissions. Currently the biggest contributor of greenhouses gases emissions is carbon dioxide, followed by methane. Your organisational carbon footprint will account for the GHG emissions of all your organisations activities, your buildings, processes, and any vehicles.

This diagram shows the lifetime of greenhouse gases in the atmosphere. It is their continued presence which has created the problem of global warming.

Greenhouse gases (GHGs)

Carbon dioxide CO_2	Methane CH_4	Nitrous oxide N_2O	CFCs and HCFs	Sulphur hexafluoride SF_6
				

Lifetime in the atmosphere:

100s of years	**12 years**	**114 years**	**1.4 – 1,700 years**	**3,200 years**

Global warming potential or **'potency'** over 20 years, in tCO_2e:

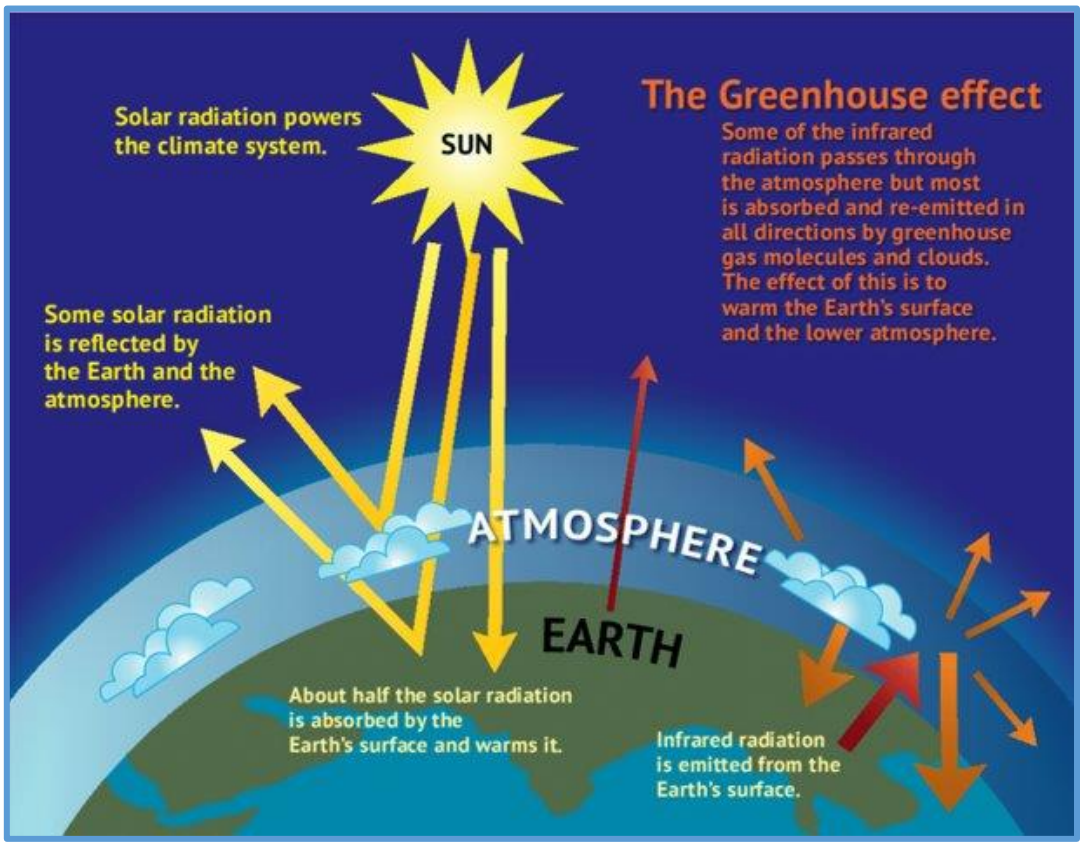
1	**72**	**289**	**10s – 10,000s**	**16,300**

What is global warming?

Global warming is the increase in global average temperatures of the Earth's atmosphere through the greenhouse effect. This is caused by increases in levels of greenhouse gas pollutants such as CO_2 and methane.

Although the greenhouse effect is a natural process, manmade actions such as the release of greenhouses gases from industry or agriculture is causing more heat to be trapped within the Earth's atmosphere which has led to an increase in global temperatures. SMEs play an important role in reducing global warming due to their use of fossil fuels with regards to electricity and transportation. Although these are the two key areas of contribution to global warming, there are smaller issues that can be targeted such as the reduction in waste. Three quarters of SME senior management teams believe that they can tackle global warming and climate change in the UK.

The diagram below shows the greenhouse effect:



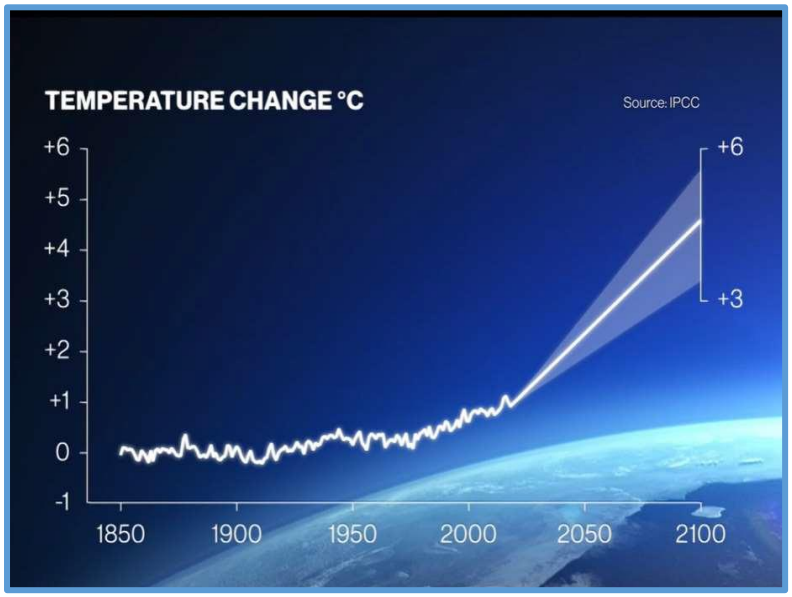
Schematic diagram representing how greenhouse gases contribute to global warming. Solar radiation from the sun is emitted to towards the Earth's atmosphere which can be reflected from the surface of the Earth. A proportion of the solar radiation is absorbed into the Earth's surface which is required to maintain the climate and temperature on Earth. The infrared radiation emitted from the Earth leaves the atmosphere and can get trapped, leading to the greenhouse effect. This increases the temperature on Earth which leads to several environmental issues.

Climate change

Climate change is the greatest environmental challenge facing the world today. Rising global temperatures are bringing changes in weather patterns, rising sea levels and increased frequency and intensity of extreme weather. The effects are being felt in the UK; internationally there are severe problems for people in regions that are particularly vulnerable. Climate change is caused by the release of greenhouse gases into the atmosphere.

Global temperatures have risen by 1^0C and are continuing to rise. According to the IPCC Special Report (2018):

- We must limit warming to 1.5^0C to avoid a climate crisis
- We will reach 1.5^0C between 2030 and 2050 depending on our emissions
- We must halve CO2 emissions by 2030 and reach net zero by 2050 to keep to 1.5oC



Graph showing the trend in temperature change over time. There has been a significant increase in temperature since the 1950s, which can be put down to the industrial revolution. This is correlated to the increase in consumption of fossil fuels in industry and transportation which causes the release of greenhouse gases, contributing to global warming.

An increase in temperatures over 1.5oC will have dangerous consequences on our planet.

2°C = Dangerous

1.6 – 3.2°C rise by 2100 with current pledges

3°C = Extremely Dangerous

3.1 – 3.7°C with current policies

4°C = Catastrophic

4.1 – 4.8°C with no policies or no implementation

Which areas of your business do think contributes to pollution the most? E.g. transporting your product to customers, sourcing and distributing your product, manufacturing process, employees

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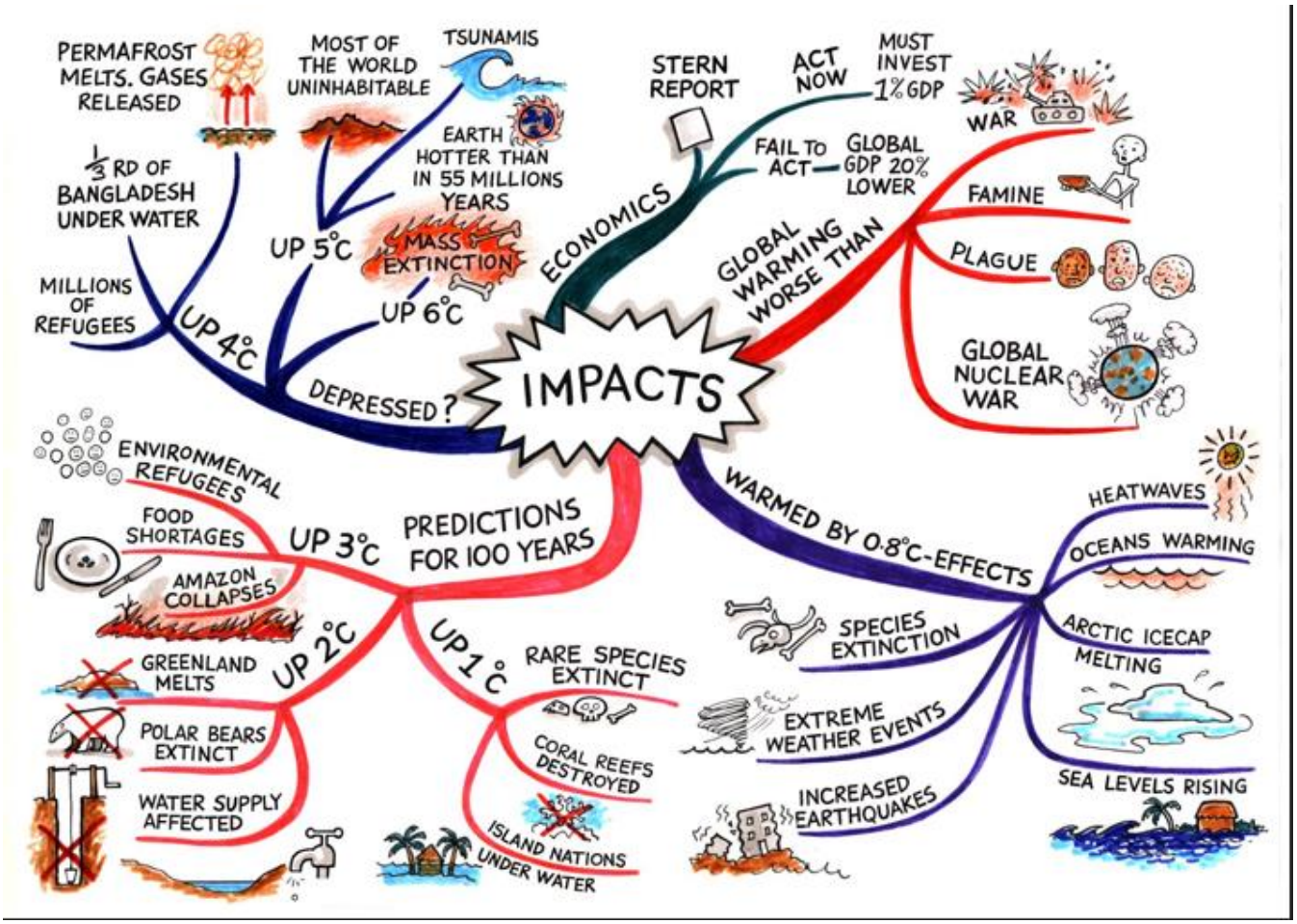
Impact of Climate Change and Global Warming



Spider diagram showing the impact of climate change including effects on the environment, on industry and also on humanity.

Video explaining how climate change is relevant to business: https://www.youtube.com/watch?v=7vOwjNTDwBE

Why should you reduce your greenhouse gas emissions?

There are direct benefits to reducing your organisations greenhouse gas emissions, in particular your carbon emissions.

For example:

1. Higher and more volatile energy costs are increasing the value of energy savings
2. To meet the mandatory reporting requirements of climate change legislation such as the Carbon Reduction Commitment (CRC) or EU Emissions Trading Scheme (EU ETS)
3. Managing your carbon emissions responsibly can enhance your brand value and make yourselves more attractive to potential customers and investors
4. A better understanding of your exposure to the risks of climate change
5. Strengthen your green credentials in an increasingly environmentally conscious marketplace
6. Demand for information from suppliers about emissions

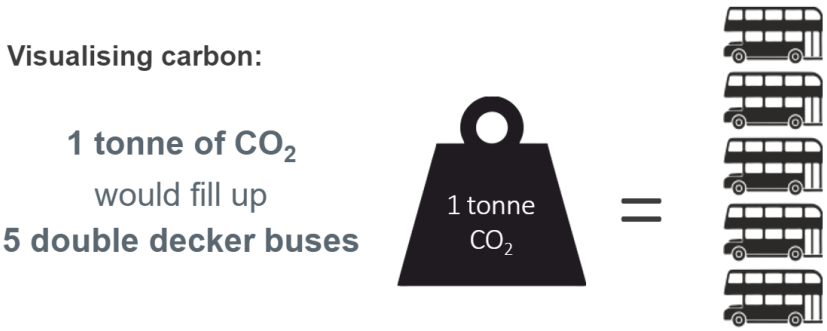
Why should you measure your business's greenhouse gas emissions?

- Save money
- Generate new business
- Meet the information demands of your customers
- Do your bit

Carbon Footprints

What is a carbon footprint?

"A measure of the amount of greenhouse gases released to the atmosphere as a result of our activities"



You need to identify which activities in your organisation / organisations are responsible for GHG emissions being released into the atmosphere.

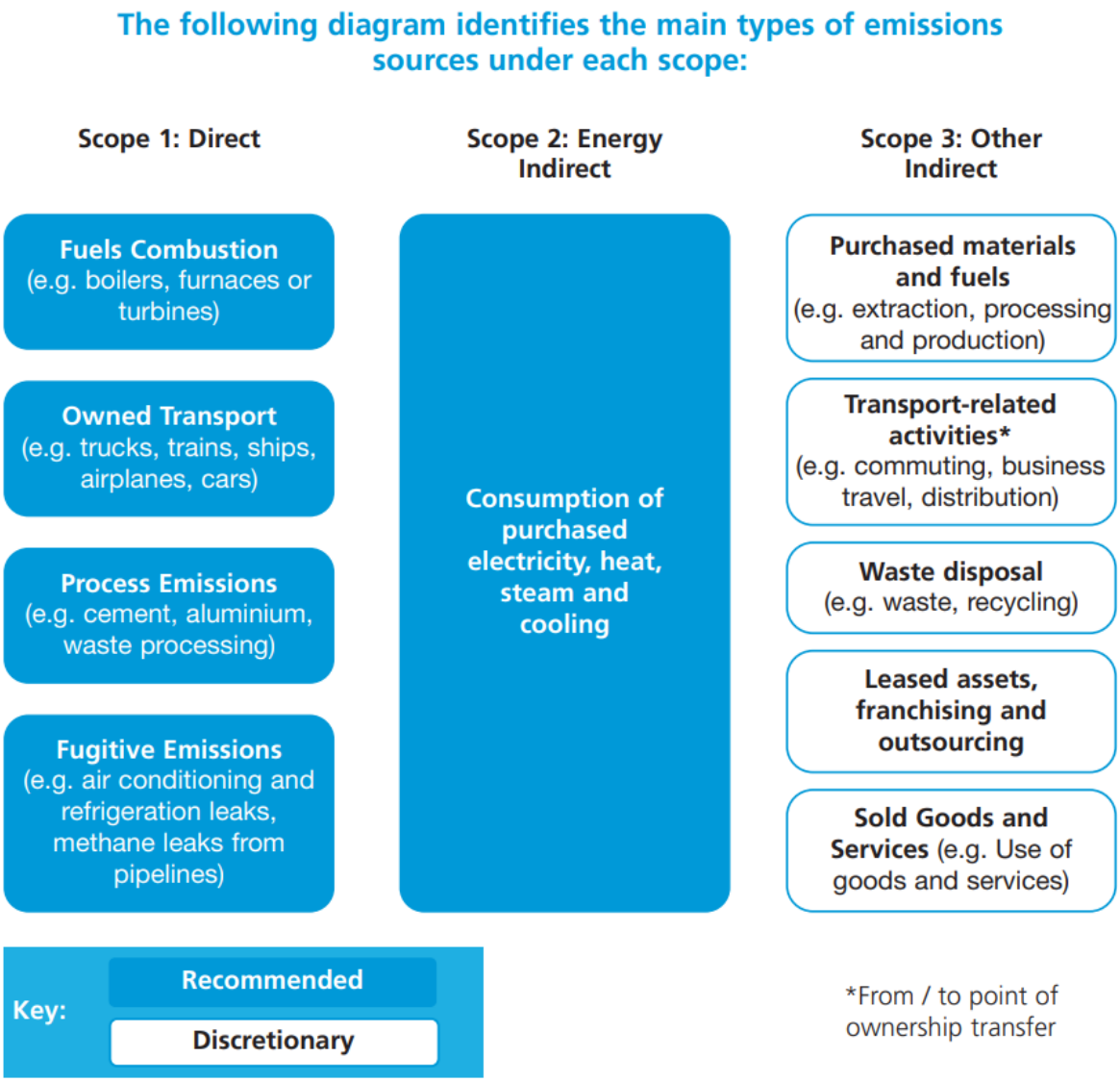
A baseline carbon footprint is a requirement for setting a Science Based Target, GHG emission reduction target in line with global and local targets to limit global warming to 2°C.

The most widely accepted approach is to identify and categorise emissions-releasing activities into three groups (known as scopes).

The three scopes are:

- **Scope 1 (Direct emissions):** Activities owned or controlled by your organisation that release emissions straight into the atmosphere. They are direct emissions.
    - Examples of scope 1 emissions include emissions from combustion in owned or controlled boilers, furnaces, vehicles; emissions from chemical production in owned or controlled process equipment.
- **Scope 2 (Energy indirect):** Emissions being released into the atmosphere associated with your consumption of purchased electricity, heat, steam and cooling. These are indirect emissions that are a consequence of your organisation's activities, but which occur at sources you do not own or control.
- **Scope 3 (Other indirect):** Emissions that are a consequence of your actions, which occur at sources which you do not own or control and which are not classed as scope 2 emissions.
    - Examples of scope 3 emissions are business travel by means not owned or controlled by your organisation, waste disposal, or purchased materials or fuels.

You may find that Scope 3 emissions may be the largest proportion of total emissions. By calculating your scope 3 emissions, you will get a more complete understanding of your organisation's total impact on climate change. Identifying your organisation's scope 3 emissions will also help increase your awareness of where your organisation sits within the supply chain.[8]



Why should I set a target?

Once you have measured and calculated your total GHG emissions, setting an emission reduction target is the logical next step. There are a number of good business reasons to do this:

- To improve cost efficiency – cost savings can be made by identifying opportunities to increase resource and energy efficiency. This may help to improve your competitive advantage.
- To demonstrate leadership – by setting ambitious targets, measuring, managing, reporting and reducing GHG emissions.
- To improve brand recognition in an increasingly environmentally conscious marketplace – consumers and employees have a greater awareness of corporate social responsibility and expect business to a take a leadership role in the management of GHG emissions.

[8] Department for Environment, Food and Rural Affairs. (2009). *Guidance on how to measure and report your greenhouse gas emissions* [Ebook] (p. 11). London.

What is net zero[9]?

Net zero refers to achieving a balance between the amount of greenhouse gas emissions produced and the amount removed from the atmosphere. There are two different routes to achieving net zero, which work in tandem: reducing existing emissions and actively removing greenhouse gases.

Video explaining net zero: https://www.youtube.com/watch?v=QPmUAfuqM08

A gross-zero target would mean reducing all emissions to zero. This is not realistic, so instead the net-zero target recognises that there will be some emissions but that these need to be fully offset, predominantly through natural carbon sinks such as oceans and forests.

Video explaining how businesses can achieve net zero, giving examples:
https://www.youtube.com/watch?v=DrHugcX4o0I

4.2 Low Carbon Technology

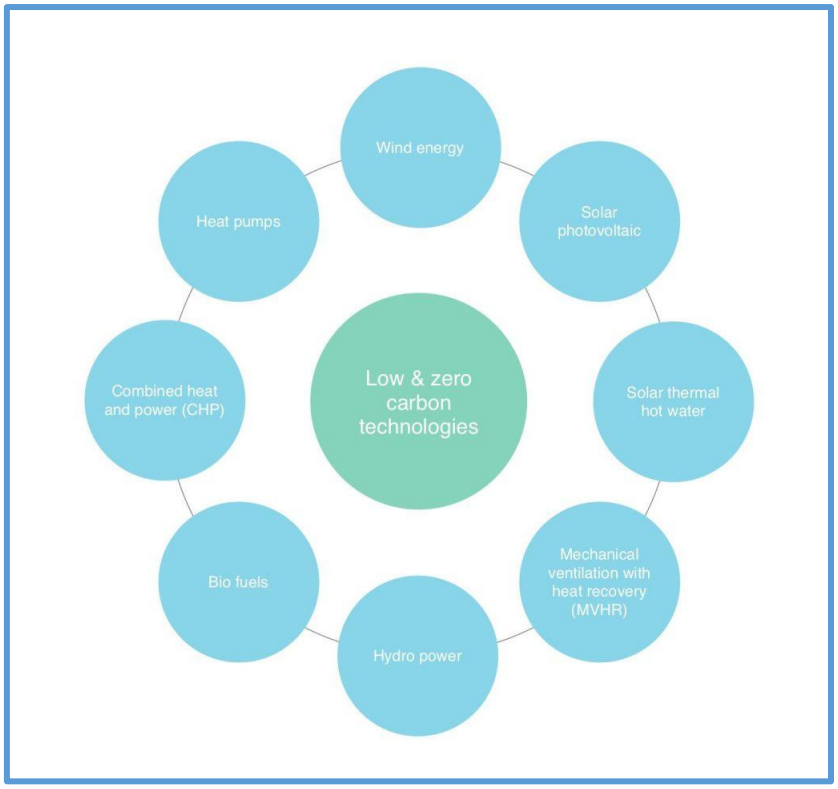
What is low carbon technology?

Low carbon technology (LCT) refers to technologies that emit minimal levels of CO2 emissions or they emit no net CO2 emissions. Clean energy is required in order to achieve a sustainable development within the workplace and therefore energy usage is one of the key areas that can be targeted. Renewable energy sources which are sources that produce little to no CO2 are wind energy, photovoltaics, solar thermal energy and hydropower. Renewable technologies are powered by free sources of energy that are abundant.

What are the benefits of using low carbon technology?
LCT allows for a significant reduction in greenhouse gas emissions, which promotes productive energy usage. An additional advantage of switching to LCT is that it creates new entrepreneurial opportunities in rural areas, where infrastructure for energy and electricity may not be sufficiently developed. By generating energy from renewable sources, there is a reduction on the dependence on fossil fuels which takes millions of years to replenish. LCT are not completely renewable as they are able to emit carbon emissions, albeit small amounts.

An example of a low carbon technology that aren't regarded as renewable energy sources are heat pumps. They allow for the geothermal energy and heat from the ground to be used, which are free and renewable. However, it still requires an electric pump to operate the system which runs on electricity. The most beneficial incorporation of LCT would be in buildings that have highly energy efficient fabric, once heat demand and loss are reduced to a minimum and taken into account.

[9] UK net zero target. (2020). Retrieved 4 November 2020, from https://www.instituteforgovernment.org.uk/explainers/net-zero-target



Spider diagram providing examples of the variety of low and zero carbon technologies available to incorporate into your business. Examples include: wind energy, heat pumps, solar photovoltaic, hydropower and biofuels.

4.3 Behaviour Change and Climate Change

What is behaviour change?

1. A way of thinking about how to get people to behave in a particular way
2. A way of thinking through unintended consequences of a policy or strategy

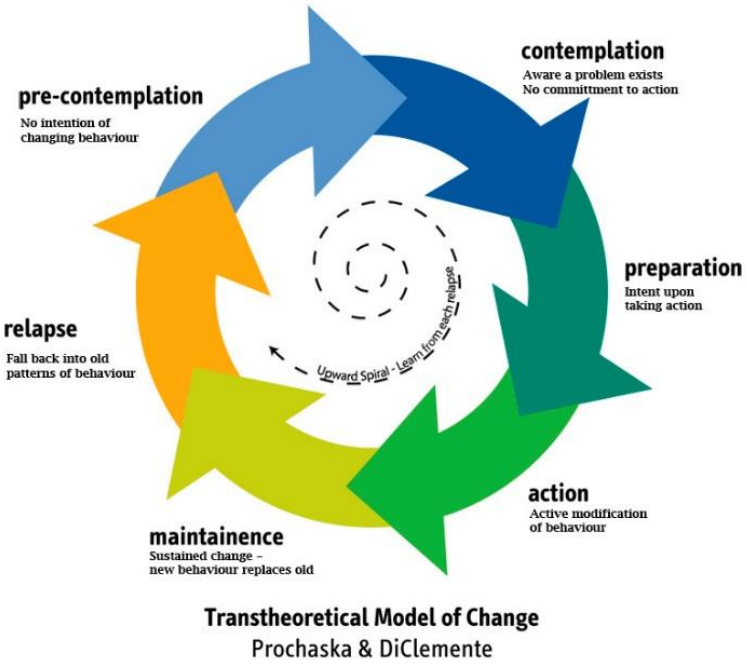
How does this link to climate change?

Climate change and impacts of this crisis have been exacerbated by human behaviours and actions. It is therefore important to recognise that both top-down approaches and individual actions are needed to slow down and reverse current levels of climate change.

Behaviour change in the personal and work lives of people will help to combat the effects of climate change. Understanding what behaviour change is and how you can use it within your organisation to create change in your business practices and workforce is crucial.

Creating change

We must acknowledge that change takes time. To the right is a diagram outlining a model of change and the stage of which take place before a change is undertaken.



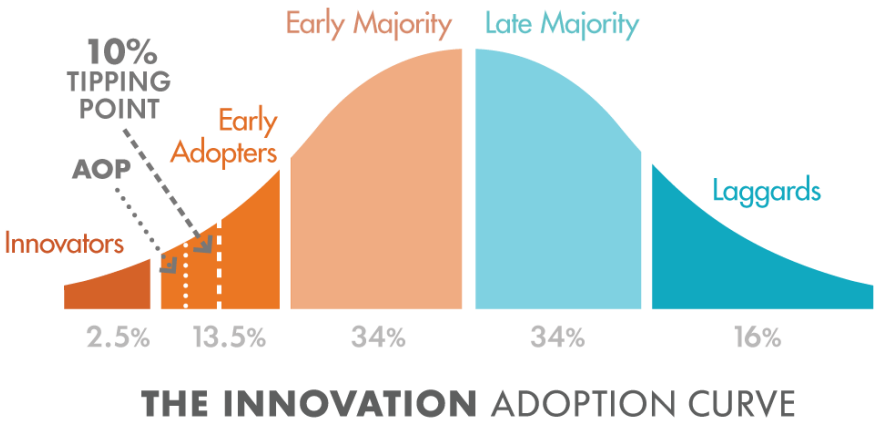
Take up of a successful behaviour often follows a common pattern. Most behaviours that go mainstream start with early adopters in a niche.

This is referred to as 'The Innovation Adoption Curve.'

The innovation adoption curve classifies when users on their willingness to accept a new technology or idea, in this context a new behaviour. The curve can be divided into 5 categories:

- Innovators
- Early adopters
- Early majority
- Late majority
- Laggards

The innovators are the first to adopt a new behaviour. The next category is the early adopters and the one characteristic which differentiates this group is that they have a high degree of leadership. Those of the early majority category are more likely to adopt a new behaviour more quickly but remain in this category for a longer amount of time. Those in the penultimate category, late majority, take a lot of time to adopt a new behaviour. These individuals will do research because they are sceptical of the new behaviour and often adopt new behaviours due to peer pressure. Finally, laggards are individuals who are most reluctant to change but will adopt a new behaviour eventually. By the time laggards adopt the new behaviour it might have already become obsolete. They are fixated on past behaviours or habits for their daily usage.



Using certain techniques can be useful to encourage a change in behaviour within your workplace.

Here is some behaviour change techniques that can encourage behaviour change.

1. Nudges
    a. i**N**centives
    b. **U**nderstandable options
    c. **D**efaults
    d. **G**ive feedback
    e. **E**xpect error
    f. **S**tructure complex choices into simpler ones
2. EAST
    a. **E**asy
    b. **A**ttractive
    c. **S**ocial

d. **T**imely (i.e. starting something)

What behaviour changes would you like to see more of within your company and within your employees?
E.g. Less wastage, more aware of their carbon footprint with regards to travel

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4.4 Equality, diversity and inclusion

What does equality, diversity and inclusion (EDI&I) have to do with sustainability and SMEs?

Sustainability is defined as 'meeting the needs of the present without compromising the ability of future generations to meet their own needs', which includes dealing with human rights. Diversity is important in the workplace as it allows for a variety of opinions and ideas to be present, which can benefit the development of your company in the long run. By taking into account a diverse work team, your company will be able to be more inclusive.

What are the benefits of ED&I towards sustainability in SMEs?

- Knowledge sharing
- Collaboration
- Longevity

Knowledge sharing

A globalised workforce is required in order to create a broad database of knowledge, which is where diversity and inclusion comes into play. A truly sustainable company will need to understand the various perspectives and views that exist in the world on a variety of topics. Through the use of external sources or in-company knowledge sharing, companies that continue to expand their diversity have the ability to remain competitive. A way in which your company can improve its diversity is by incorporating sharing industry knowledge in their sustainable business practice policy, by means of training their employees and providing oppurtunities for marginalised individuals in society to be involved in the company. Not only would this improve the education level of the employees within your company but it would also improve the quality of life of those in the local community, by providing more opportunities.

Collaboration

Collaborative effort is required between a company's staff and also the customers of that company. This is very important when implementing sustainabiity in your business and enforcing business strategies and policies. By understanding your work force, you are able to utilise their strengths and use that for your company's benefit. For example, statistically, LGBT employees are more likely to support environmental and sustainability initiatives which can be attributed to those individuals advocating social change. Therefore, by understanding and utilising your work force accrodingly, this will be extremely beneficial for your company.

Longevity

Equality and diversity are required to have a successful future in any company. When taking into account the current generation, millenials are our current and future leaders who are very aware of the importance of sustainability and innovation. Therefore, by having teams that are diverse will help companies outperform their competitors.

5. Sustainable business practices

5.1 Energy

In 2016, UK greenhouse gas emissions were approximately 466MtCO2. Transport emissions made up the largest share (24%), followed by industry (23%), power (21%) and buildings (18%). The majority of energy demand in the UK is currently met by fossil fuels. Until now, natural resources such as fossil fuels like coal and gas used for energy have been abundant and cheap. However, these resources are becoming increasingly scarce due to the over consumption. The impact of using fossil fuels is damaging our environment significantly making it clear we must change the way we go about our lives and the way we consume products and services.

Global demand for fossil fuels is depleting our indigenous supplies of oil and gas, creating the need to import more of our fuel. This is leading to concerns over security of supply. In addition, the UK is subject to increasing fuel-price volatility as we become more exposed to world market fluctuations. This means that UK businesses are facing the prospect of interruptions in the supply of energy and continued uncertainty over its costs. These risks present potential barriers to future business growth. For these reasons, renewable energy has become more attractive from both an economic and strategic viewpoint.

Renewable energy

What is renewable energy[10]?

Renewable energy is generated from natural resources such as the sun, wind, and water, using technology which ensures that the energy stores are naturally replenished.

Instead of buying all of your energy from suppliers, you can install renewables technology (also called micro generation and low-carbon technology) to generate your own.

Using renewable energy sources significantly reduces the release of GHG's and helps to mitigate the effects of climate change. As well as reducing carbon emissions, using alternative energy sources can make financial sense for businesses.

What are the benefits of installing renewables?

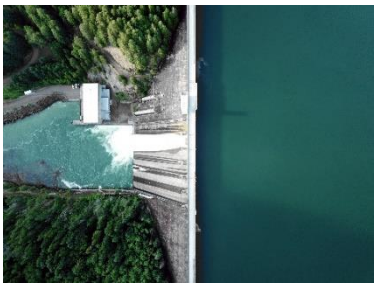
There are lots of good reasons to use renewables. You will be:

- making use of secure and local resources
- reducing your dependence on non-renewable energy
- helping to reduce the production of carbon dioxide and other greenhouse gases
- creating new jobs in renewable energy industries

[10] https://energysavingtrust.org.uk/renewable-energy

- Reducing your energy bills. In some cases you can generate income by selling your surplus energy back to your energy provider.

Click on each type of renewable energy sources to find out more information:



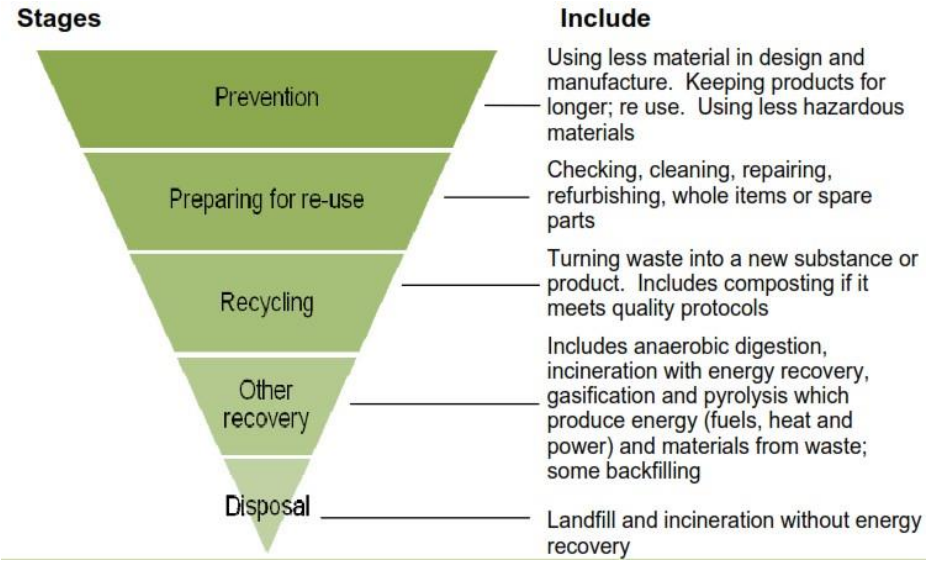
5.2 Waste

Material resources are at the heart of our society, allowing us to meet our human needs, as well as generate economic growth and social value. Until recently, we have largely depended on a linear 'take-make-use-dispose' system in which natural resources are extracted, turned into products and then discarded at the end of their 'useful' life. Our attitudes towards resources and waste are changing profoundly as we recognise that, quite simply, we use too much and are too ready to throw things away, often after a single use. This brings many negative consequences, including the depletion of natural resources, environmental pollution and the emission of greenhouse gasses[11].

Waste Hierarchy – Reduce, Reuse, Recycle

The "waste hierarchy" ranks waste management options according to what is best for the environment. It gives top priority to preventing waste in the first place. When waste is created, it gives priority to preparing it for re-use, then recycling, then recovery, and last of all disposal (e.g. landfill).

Recycling is often seen as the solution to our waste problem however we operate an open-loop recycling service in the UK which actually allows materials to move from one product life-cycle to another, potentially causing more significant environmental problems beyond the original product life-cycle. Moving to a closed-loop system or circular economy would be the best option as it allows a product to be remade many times without the need for new materials.



[11] https://www.bitc.org.uk/wp-content/uploads/2020/03/BITC-Report-Environment-LiftingtheLidonWasteGuideV4-March2020.pdf

Brainstorm some ideas on how your company can reduce your waste production. Use concepts such as reduce, reuse, recycle when implementing reduction in waste.

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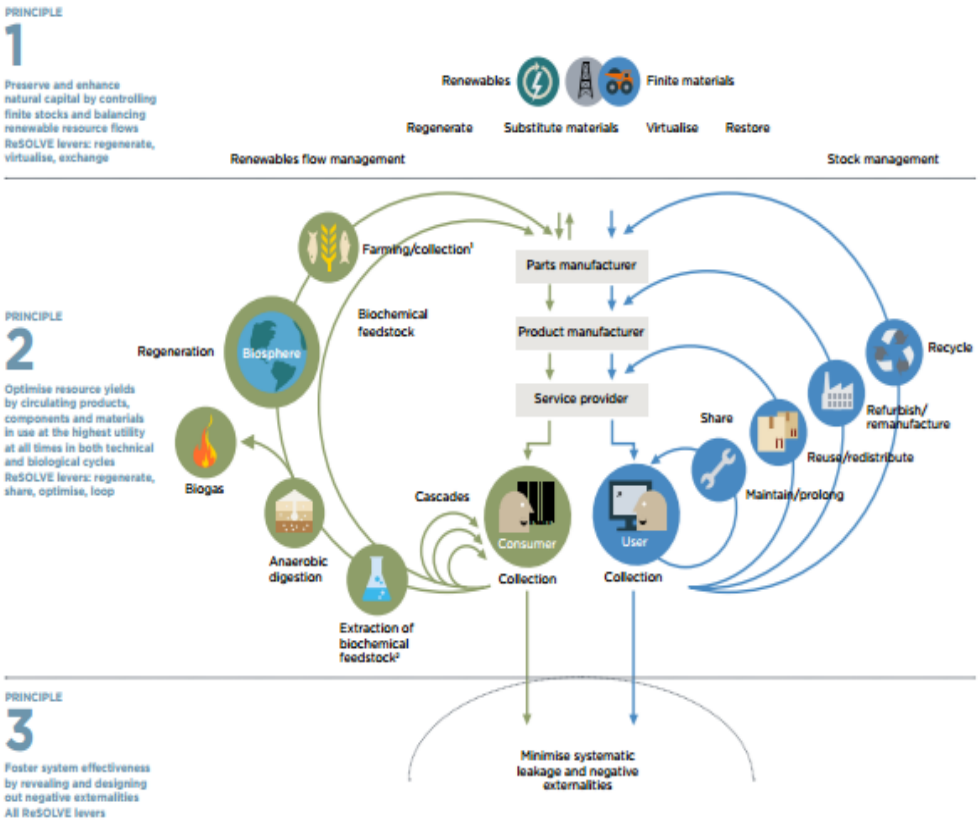
The natural world is in no danger of running out of material because everything is recycled. The natural world has the advantage of time over man-made industry, in that recycling can take millions of years. Nevertheless, the closer we can get to a low throughput economy (an economy that minimises waste), the more sustainable it will be.

In this video Dr Sandra Lee, Social Impact Lead at the University of Leicester, explains more about a 'circular economy' in which material throughout is minimised: https://youtu.be/WA1KfYOJ-jg



1 Hunting and fishing

2 Can take both post-harvest and post-consumer waste as an input

Source: Ellen MacArthur Foundation, SUN, and McKinsey Center for Business and Environment; Drawing from Braungart & McDonough, Cradle to Cradle (C2C).

5.3 Water

Water a precious resource

Water is a finite resource and saving water should hold the same priority as saving energy. Although in the UK, we have access to clean and safe water at the touch of a tap, we don't have an unlimited supply. 71% of the Earth's surface is covered in water however only 2.5% of the world's water is fresh, 1% of which is easily accessible.

Regardless of the size of your business, water is crucial to everyday operations. It is required for the manufacturing of products, to making tea and flushing toilets. Water is used to make lots of things you consume within your business too. For example, paper used for printing undergoes a water-intensive process needing around 10 litres per A4 sheet and to produce 1 litre of petrol requires 13 to 27 litres of water.

Water consumption and disposal is an overhead that every business has therefore saving water can make a real difference to your bottom line. Moreover, water efficiency will also help you to achieve your sustainability goals by reducing your carbon footprint.

Pollution & Polluting

What is Pollution[12]?

Pollution is when any substance that harms or could harm people or the environment gets into the air, water or ground.

Any substance that's not found naturally in an environment could cause pollution, for example detergents, concrete slurry or paper sludge. Common pollutants are oil (petrol, diesel, mineral oil, heating oil or vegetable), agricultural waste such as silage and slurry, pesticides and other chemicals and solvents.

The impact of polluting substances can vary. For example, some substances are immediately toxic to creatures whereas others can cause harm by reducing the amount of oxygen in rivers and streams. Some have longer-term impacts by interfering with the ability of creatures to reproduce.

SMEs contribute to pollution in a variety of way. Combustion of fossil fuels for electricity and energy leads to air pollution, which is not directly undertaken by the corporations. However, being conscious of one's suppliers and their carbon footprint allows for sustainability to be imprinted into business models. Without proper management of waste, this can also contribute to pollution because the majority of waste ends up at landfills. In order to deal with this, recycling and reusing methods should be implemented into company policies and incentives can be provided for customers to recycle packaging.

[12] https://www.gov.uk/guidance/pollution-prevention-for-businesses

5.4 Travel & Transport

The UK business community are key players in the green recovery and regardless of sector businesses can make a meaningful difference in improving air quality. By pursuing the clean air agenda, it will help to save lives, avert the climate crisis, and improve the daily lives of our employees.

Explaining air pollution

Air pollution is the umbrella term for the variety of pollutants in the air which are mostly invisible to the naked eye. Various pollutants are created and can impact the body is different ways if inhaled or absorbed. Pollution is produced by various sources within or outside buildings and concentrations of these pollutants can rise significantly depending on the source[13].

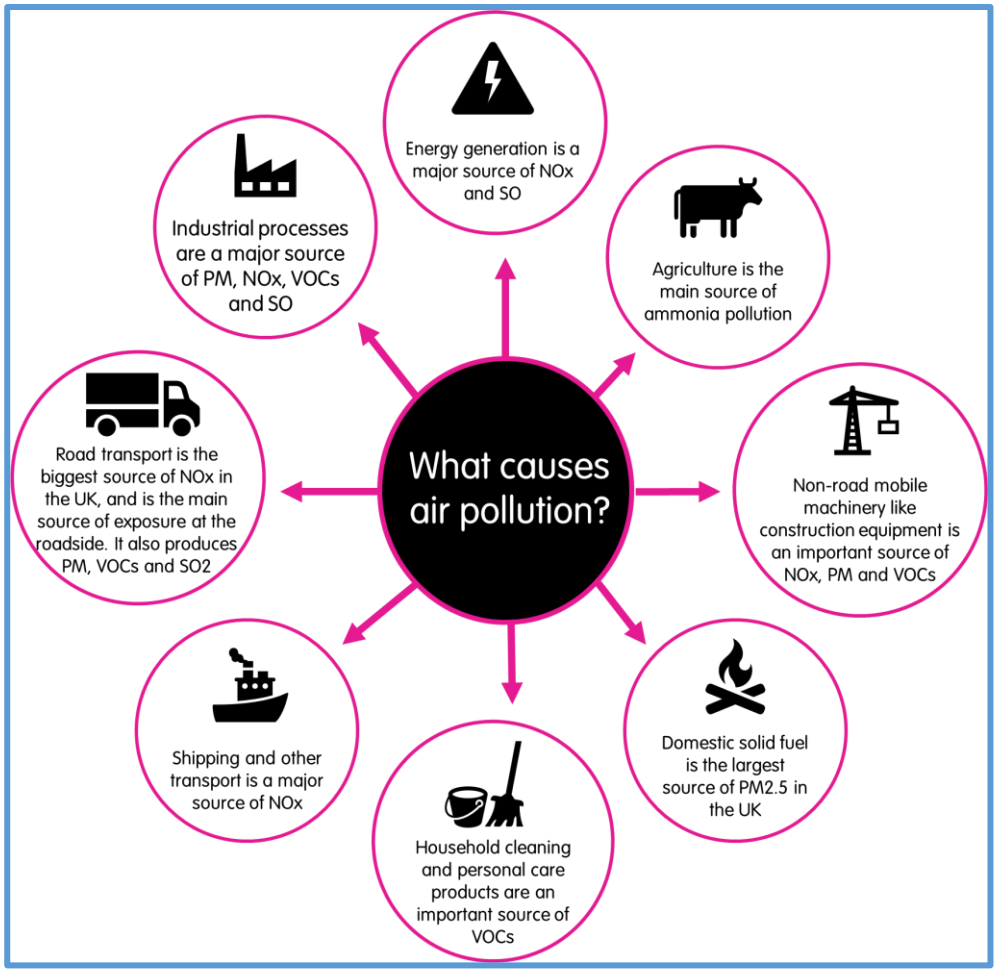
At the University of Leicester, Paul Monks, Professor of Atmospheric Chemistry and Earth Observation Science and Head of the College of Science and Engineering, is driving a change in our understanding of our air quality and pollution. His expertise in air quality and climate, air pollution and measurement, science policy and Earth Observation science during the COVID-19 outbreak is revealing the effect of the social changes on air pollution.

Click on this link to hear from Paul Monks: https://youtu.be/zTW7L_fbu1I

The Department for Environment, Food & Rural Affairs (Defra) lists the pollutants of concern as:

- Sulphur dioxide
- Nitrogen oxides
- Particular matter (PM10, PM2.5 and PM1)
- Ozone and volatile organic compounds
- Toxic Organic Micro-Pollutants (TOMPS)
- Benzene
- 1,3-Butadiene
- Carbon monoxide
- Lead and heavy metals

[13] https://www.globalactionplan.org.uk/business-clean-air-taskforce/what-causes-air-pollution-and-business-role



Spider diagram showing the main sources of air pollution. Sources include:

- Energy generation
- Agriculture
- Non-road mobile machinery
- Domestic sold fuel
- Household cleaning
- Shipping
- Road transport
- Industrial processes

Impact on human health and the environment

Location is important when concerned with air pollution as a build-up of pollutants can negatively impact human health and the environment.

In the UK these pollutants are mainly the bi-products of combustion of fossil fuels from heating, power generation and from motor vehicles.

Impacts of high levels of air pollution include reduced life expectancy, inflamed airways causing lung conditions and exacerbate the symptoms of heart conditions.

Nitrogen dioxide, sulphur dioxide and ozone contribute to the irritation of the airways of the lungs, increasing the symptoms of those suffering with lung diseases. Particles, especially fine particles can be carried deep into the lungs where they can cause inflammation and a worsening of both heart and lung diseases. Carbon monoxide gas prevents the uptake of oxygen by the blood[14]. This can lead to a significant reduction in the supply of oxygen to the heart, particularly in people suffering from heart disease.

The ongoing impacts of the exacerbation of these chronic health conditions can have detrimental effects on local communities and the resources and services available to said communities.

Improving air quality across your business:

Every company is different and therefore has a unique opportunity to combat air pollution through the products, services, marketplace reach and influence it has.

[14] https://uk-air.defra.gov.uk/air-pollution/effects

Three areas of your business to focus on when improving air quality is your **business model**, your **operations** and your **employees**.

Business model

Tackling emissions at the core of your business whether and however you can. Business models should include clear steps to mitigate pollution which can be caused by your products or the services that you provide. It should incorporate the three main aspects of sustainability: environment, society and economy.

Environmental sustainability includes energy efficiency and reducing waste and excess water usage. SMEs need to know how much energy they consume first in order to then understand which areas they need to focus on. A method of targeting this issue would be to implement cost-effective meters to track real-time usage of energy which can be used to positively reduce energy usage. Circular economy should be implemented into the business model in the long run, which can start from the involvement of employees and discussing potential resource efficiencies with the employees. The benefits from reducing energy usage would be that you would lower your exposure to carbon tax rises that may possibly take place in the future and will reduce costs and improve profits.

Social sustainability relates to employee engagement and behavioural changes. Employees should be able to engage with common goals with regards to ethical and local procurement. Better staff retention will lead to more people working within the company to reach a common goal. The measurement aspect of business sustainability allows for the achievements and communication of employees to be moderated.

Note down some examples of sustainability procedures that you can embed in your business model to help your employees to aid the journey of making your business more sustainable.

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Talent attraction and retention

With employees increasingly expecting employers to take action on climate change, businesses that promote environmentalism are experiencing positive impacts on recruitment and staff retention. What is more, 3 in 4 workers will be millennials by 2025. This demographic is widely believed to be more environmentally focused with habits to match. In order to engage and motivate this section of the workforce, businesses can walk the talk and encourage agile working:

Attracting talent - 70% of UK employees feel that flexible working makes a job more attractive to them and 30% would prefer flexible working to a pay rise. Data shows that 92% of millennials identify flexibility as a top priority when job hunting, and this group will comprise 75% of the workforce by 2025.

Staff retention – Providing flexible working could prove a key mechanism to retain staff. When employees are asked what they would like to see businesses focus on to reduce air pollution, the top answer (34%) is that people would like to be able to work from home. Having agile working policies is fast becoming a differentiator for prospective employees who not only see the environmental benefits of cutting their commute, but improved work-life balance and productivity.

Financial savings

As well as the social benefits generated by reducing air pollution, promoting active, flexible and low impact environmental behaviours can result in cost savings from reduced need for office space, travel expenses and employee ill health.

Savings on Clean Air Zones - CAZ and LEZs are planned for a number of UK cities mean running polluting vehicles will become increasingly expensive. Companies that run commercial vehicles that do not meet Euro VI emissions standards will have to pay charges. Transitioning to newer and less polluting, and ideally electric vehicles, will save companies money on these charges.

Savings through active travel - The Cycle to Work scheme generates at least £72 million in economic benefits for the UK economy and employers through improved physical fitness and associated health benefits. Given that eight bicycles can fit into just one car parking space, it is much less expensive to provide parking for staff who cycle than for those who drive. Some years ago, GlaxoSmithKline estimated that just one car parking space cost them over £2,000 to maintain at their West London offices.

Savings in office space - Studies show companies could save over £5,700 per desk if they can reduce office space. Flexi working means that employees can work from home or other locations where appropriate, freeing up the need for every employee to have a permanent desk.

Savings by transitioning to electric – Electric vehicles can be around 10p per mile cheaper to run than equivalent petrol or diesel vehicles. Early adopters can benefit from government grants, such as the Workplace Charging Scheme. Now with Salary Sacrifice for EVs, employees can acquire an EV cheaper than a diesel or electric vehicle due to favourable tax rates.

Savings with suppliers – Data from Transport for London shows that businesses that have used cycles for local deliveries can save between 39%-64% on delivery costs. With CAZs and LEZs coming to cities and towns across the UK, cleaner last mile deliveries will make economic sense for many companies delivering to businesses and homes.

Getting ahead of sustainability risk and regulation

Tackling air pollution can help companies tackle increasing regulation on environment and health, plus respond to shifting public sentiment and investor standards on sustainability.

Meeting regulations – Acting now on air pollution can help companies steal the march on competitors before regulation sets in. The government is introducing targets on air pollution in the forthcoming Environment Bill. Regulation is also likely to come from a health perspective in response to increasing concern from the WHO and other medical bodies about the impact of air pollution on human health.

Meeting customer expectations on sustainability – 88% of consumers reportedly want brands to help make it easy for them to make a difference on environmental issues. If your brand isn't helping people to improve their environmental and social footprint, then your business risks losing recognition as a purpose-driven brand.

Managing investor sentiment and financial risk - Companies are increasingly preparing for shocks caused by climate change to their business model, driven in part the integration of "ESG" by investors into

investment decisions. As awareness grows amongst the global community of the interplay between air pollution and climate change, air quality will likely become another lens for companies and their shareholders to assess corporate risk and profitability. The real estate investment community is already aware of the growing expectation for indoor air quality standards; if companies are not meeting air quality standards they could fall out of favour with investors and clients.

Employees

Employee wellness and productivity

Air pollution is responsible for an estimated 6 million sick days each year in the UK, with scientists estimating that air pollution cuts British people's lives by an average of six months. Wellbeing conscious companies will find that alleviating air pollution serves not only to protect people from toxic fumes, but generates upside benefits associated with more active lifestyles.

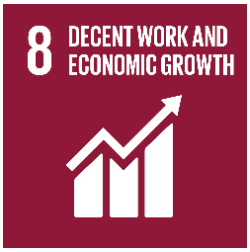
Reduced sick days – Employees who are physically active take 27% fewer sick days. By walking, running or cycling to work employees can cut air pollution and improve their physical and mental health. Conversely, car commuters are at least 13% more likely to feel constantly under strain or unable to concentrate than those who cycle or walk.

Employee satisfaction – Data conducted by Global Action Plan's work with 02 Telefonica found that 100% of employees reported a better work/life balance when flexible working. Reasons included; less time spent travelling and benefits for working parents with childcare responsibilities.

Increased productivity – Productivity can be generated through a wide range of 'clean air activities'. Firstly, Transport for London reports 73% of employees who cycle feel it makes them more productive at work. Second, research by the World Green Building Council suggests that better indoor air quality (lower concentrations of CO2 and pollutants due to high ventilation rates) can lead to productivity improvements of 8-11%. And third, 91% of people who work from home feel that they're more productive than when they are in the office. Working from home would allow the average employee to save 90 minutes of commuting time each day and studies show 52% of this time is actually spent on work related activities.

5.5 Procurement

Sustainable supply chains



The definition of procurement is the act of obtaining goods or services, which plays a main role in how SMEs source their products sustainably.

The United Nations Global Compact defines "supply chain sustainability" as the management of environ-mental, social and economic impacts, and the encouragement of good governance practices throughout the lifecycles of goods and services.

In order to achieve the SDGs, traceability in supply chains play a significant role including SDG 8, 9 & 12.

What is traceability[15]?

"The ability to identify and trace the history, distribution, location and application of products, parts and materials, to ensure the reliability of sustainability claims, in the areas of human rights, labour (including health and safety), the environment and anti-corruption."

[15] UN Global Compact. (2016). *A Guide to Traceability for SMEs* [Ebook].

Why is this important?

There has been an increasing demand from consumers for responsibly sourced and produced goods and services coupled with regulatory pressure to improve transparency within supply chains. Traceability can act as a tool to help advance sustainable business practices. This applies to all sizes of business across all sectors but it is especially important for SMEs to adopt traceability due to their volume and integration within the global economy. SMEs play a key role in the local economy and development but also within the regional and national picture.

Not only do consumers want to know more about goods bought but demand has also come from NGO's, governments, suppliers and buyers who desire more information about the origins of their products and the materials as well as the conditions under which they were produced and transported.

Although, there is a contractual requirements for transparency within the supply chain going beyond this traceability initiatives can be a means to improve efficiencies in productivity, resource planning and protection against adverse impacts of risks outside of their own supply chain.

In light of the opportunities and challenges discussed above and keeping in mind the increase in demand for traceability in supply chains, it is important for SMEs to identify steps they can take for implementation.

These include:

- SMEs can map processes within their own supply chain footprint to assess the sustainability risks inherent from sourcing, procuring and the final transaction of their goods and services.
- Further, SMEs can use this mapping process to assess, identify and prioritize their most important sustainability metrics, and then use them as a stepping stone to increase the overall sustainability of their supply chain.
- SMEs can explore whether traceability processes can be implemented through better alignment of existing enterprise resource planning (ERP) systems, financial documentation (sales, wages), chain of custody documentation, health and safety documentation and/or labour records. This can help SMEs offset additional data collection and verification costs required for traceability efforts.
- SMEs can engage both internally with their employees and externally with their suppliers to develop good business practices, and better align processes to advance supply chain traceability.

Video explaining the importance of supply chain traceability: https://www.youtube.com/watch?v=kkBjz-QF8Dg

Once an SME selects a traceability scheme, it is important to stay engaged and actively assess whether the chosen traceability scheme meets the company's requirements in mitigating sustainability risks. A simple process, such as keeping track of sustainability improvements and communicating them to the market, may help SMEs consolidate their gains and improve their reputation and financial standing.

5.6 Biodiversity

Why is biodiversity relevant to businesses?

People, Planet and Pollinators

By having different types of vegetation and green spaces in our local area, businesses can contribute to both local and wider biodiversity gains. We should act as responsible landlords to our wildlife tenants and seek to connect diverse habitats to provide essential feeding, breeding and sheltered spaces. Research at the University of Leicester has shown how vegetation, in particular broad leaf species, helps to sequester carbon emissions by absorbing CO2 from the atmosphere and contributing to action on climate change. Green areas in outside and indoor environments have been shown to have an immensely positive impact on health and wellbeing. Over 4000 species of insect in the UK carry out pollination of our wild plants and food crops and has an estimated financial value of £691 million annually. Without pollinators we would struggle to grow many vegetables and fruits including apples, pears, strawberries, beans and peas.

So what is biodiversity?

Biodiversity is short for 'biological diversity' and means the variety of life on earth. This includes all species on our planet, their habitats and the interactions that occur between them.

Trees provide a valuable habitat for invertebrates, birds and offer potential roosting opportunities for bats as well. Mature trees in particular can be important elements of wildlife corridors, which they can enhance alongside other features e.g. hedgerows. Freestanding planters with bushes or other foliage are also useful to connect areas where planting is sparse, but the effects that can be achieved are limited to soil depth.

The University of Leicester has over 10,000 trees and the last 1,000 planted have been chosen because they are native to the UK. This is a trend that should generally continue due to their suitability to the UK wildlife. A variety of species would provide different sources of pollen, nectar and fruit allowing greater access to these resources for more of the year. Their importance should not be underestimated and mature / standing deadwood can hold valuable traits for wildlife. Trees also provide a number of ecosystem services including carbon capture and filtering pollutants. As Leicester has some of the highest levels of air pollution in the UK, increased tree numbers should be intrinsic to the local organisations business plans.

Grasslands and wildflowers

Long grass provides a habitat for a variety of insects and leaving areas left unmown or allowed to grow for longer can prove cost-saving and beneficial for biodiversity. Retaining areas over winter particularly where adjacent to hedges and, shrubs and trees and will make sure flower-rich grassland has enough opportunity to drop seeds for next year. Grasslands are particularly important for wildlife. Structure is crucial (e.g. for supporting a diversity of invertebrates) and a variety of lengths should be created throughout a site. Leave some areas uncut over winter and other areas cut every two to three years to further enhances structural diversity. Research indicates that tapestry lawns can produce up to 90% more flowers, contain over 25% more invertebrate life and support up to 10 times as many visits from twice as many pollinator species as wildlife turf. Mowing is reduced by up to two thirds, rainfall can be absorbed up to twice as

fast as a turf lawn and tapestry lawns need no additional fertilisers. All lawns planned should be species-rich for pollinators.

In the absence of space for grassland areas, features such as **Green Roofs and Living Walls** can be integrated into buildings. These can be particularly useful in built-up sites and adds attractive colour to otherwise grey and sparsely green areas. As well as providing undisturbed locations for wildlife, they can also have multiple benefits to buildings by protecting roof membranes and absorbing CO2.

These are planted roofs constructed from underlying waterproof layers and built-up substrate. Many different types are available – from roof gardens to blanket sedums and if designed well have a number of benefits to biodiversity. They can also have energy-saving and aesthetically pleasing characteristics, but are a more expensive option to be considered. They can be retro-fitted to existing buildings and built into new projects. Leicester has many flat roofs with tall building overlooking many of these, making this an interesting option to pursue.

Walls are a very visible feature and have a huge impact on the experiences of people within the environment. Different types are available – from modular systems to planted wire frames and can provide food sources to birds, bats and insects. These can be a more pricy option if a water-fed system is desired, but good effects can still be achieved cheaply with honeysuckle or other climbing plants grown from planters and trained to the wall. Some buildings are accused of feeling grey and unwelcoming during certain seasons; this provide one option to alleviate this but grade-listings of certain buildings should be considered.

Also known as **living walls** and **vertical gardens**, green walls are where vegetation is growing on or against any vertical surfaces. These systems vary greatly in their design and can be applied **inside** as well as **outdoors.** The benefits are the same as those relating to the green roof. Although indoor installations do not have a direct ecological impact, they create a biophilic environment and can be used as a reminder of nature for good health and wellbeing

Woodland provides an important habitat for a variety of flora and fauna; even small areas can support a diverse range of species and are highly valued for engagement and education.

Ponds are a valuable wildlife habitat for a variety of plants, insects and amphibians. They also provide valuable feeding sites for birds and bats and the inclusion of these features are easy means of increasing biodiversity in the area. From a design perspective, they also create a more pleasing habitat for staff and students. There are a number of ponds on University land but their biodiversity value varies considerably.

Hedgerows are of wildlife interest in themselves, but their value to biodiversity is dependent on their species composition and management or their links with other wildlife habitats. Hedges and associated trees provide food for birds and bats as well as potential shelter, nesting and roosting places. Dependent on the species present and age, they can be an excellent habitat for invertebrates and Hedgehogs routinely use them for protection during travel. They are of most value to wildlife if they have good height and depth and are allowed to flower and fruit and suppressed when frequently cut or mowed around the base too closely.

These areas can provide important linking features for many different species. Height and width are important as birds and bats use them as commuting flightpaths, whilst ground-dwelling mammals and

amphibians use dense growth at the base for food, cover and places to hibernate. Habitat fragmentation is one of the biggest concerns for Hedgehogs and green infrastructure can combat this effect.

Badgers and their setts are protected by the Badgers Act 1992, under which it is an offence to damage, destroy or obstruct a badger sett, whether or not it is occupied by badgers. A sett is defined as "Any structure or place that displays signs indicating current use by a badger". Regular monitoring of badger activity, particularly the location of active setts, is essential to reduce likelihood of delays in planning development.

In the last 10 years, **hedgehog** numbers have dropped by over 30% and there are thought to be less than one million left in the UK. They benefit from partial protection for the Wildlife and Countryside Act 1981 and other legislation. Increased building activity, road building, loss of feeding areas and a significant increase in artificial lighting on the campus is likely to have a negative impact on hedgehog and badger activity. Protection of the woodlands, hedgerows, creation of new feeding habitat and appropriate lighting that respects the needs of wildlife as well as people can go a long way to alleviate that impact.

Although hedgehogs are known to hibernate for a period over winter, climate change is predicted to impact this behaviour by delaying sleep or prematurely waking the animals. This may affect their access to food sources and their fat reserves. Other threats include food competition from badgers which are known to be in certain areas.

All **bats** and bat roosts are fully protected by European law and licensed ecologists are required to undertake full surveys. Bats commonly roost in buildings and trees are so are under threat due to loss of these sites and reduction in suitable habitat for commuting and feeding. Changes in agricultural practices and increasing urbanisation and road building have also severely reduced connectivity of the habitat needed by bats.

Artificial lighting disrupts the natural patterns of light and dark, which can disturb invertebrates, birds and other mammals. International and domestic legislation protects all species of bat and their roost sites (whether bats are present at the time or not). Lighting has the potential impact the overall population as it may cause disruption to roosting, commuting, foraging, drinking and migrating. Some bat species have been shown to be impacted by significantly lower lighting levels than others; certain colour temperature environments also play a factor in the level of impact.

It is important to remember that there is **no legislation requiring an area or road to be lit.** However, local authorities have a duty to ensure impacts upon legally protected species are avoided. The latest guidance notes on *Bats and artificial lighting in the UK* was published August 2018 by the Bat Conservation Trust (BCT) and Institute of Lighting Professionals (ILP).

The UK has 6 native reptile species, 3 snake and 3 lizard. In broad terms, they require a variety of habitats from wetlands to dry banks. Amphibians makes use of both terrestrial and aquatic habitats and invertebrates will do the same. The latter form an important food source for the above, as well as birds and bats. Bees, moths, hoverflies and other pollinators perform a vital function in pollinating many plants.

In the UK, all wild **birds**, their nest and their eggs are protected by law in the Wildlife and Countryside Act 1981. The amount of protection afforded to wild bird varies depending on whether the species are listed on various Schedules or Licenses.

6. Useful information & supporting resources

Introduction

This section is designed to be a supporting resource. With details of some key support organisations and includes some information about key funding sources.

Sections 3-8 detail general information, corresponding to the following sections: Carbon Footprinting and Action Planning; Climate Change Learning and Behaviour Change; Buildings, Equipment and Machinery; Travel and Transport; Procurement; Green Space and Land Use. This information may be useful for your organisation to read for overviews of some of the actions you may want to include as commitments in your sustainability plans.

Section 9 summarises external supporting resources and websites which have further detailed and specific information.

1. Key support organisations

- The Carbon Trust https://www.carbontrust.com
- The Energy Saving Trust https://energysavingtrust.org.uk/

2. Key funding sources

- Look out for Green Gas Support Scheme (GGSS): increasing the proportion of green gas in the grid through support for bio methane injection
- Clean Heat Grant (now known as the Boiler Upgrade Scheme): support for heat pumps and in certain circumstances biomass, through an upfront capital grant to help address the barrier of upfront cost - households and small non-domestic buildings: https://www.gov.uk/government/consultations/future-support-for-low-carbon-heat
- Leicestershire grants for up to £3000 to help eligible community based organisations - grant will only be available for projects where the main beneficiaries are residents of Leicestershire, excluding Leicester City – but maybe be possible if lots of constituents are based in the county: https://www.leicestershirecommunities.org.uk/grants/environment-grant.html
- Look through the options here, some may be relevant to your organisation: https://communityenergyengland.org/pages/funding-opportunities-2
- Again, some more potential opportunities: https://www.cse.org.uk/local-energy/funding-your-project

3. Carbon Footprinting and Action Planning

Steps to calculating a CF:

Useful information: https://www.carbontrust.com/resources/carbon-footprinting-guide

Benchmarking

Benchmarking is a way of comparing a buildings energy use to an industry standard for a similar building type. It enables building owners and occupants to have a better understanding of their building's relative energy efficiency, as well as to identify areas where energy wastage can be reduced.

Carbon Trust's benchmarking tool: https://www.carbontrust.com/resources/energy-benchmark-tool

4. Climate Change Learning and Behaviour Change

Carbon Literacy Training

Carbon Literacy: "An awareness of the carbon dioxide costs and impacts of everyday activities, and the ability and motivation to reduce emissions, on an individual, community and organisational basis."

https://carbonliteracy.com - the Carbon Literacy Project provides training.

5. Buildings, Equipment and Machinery

Energy Audit

Energy audits assess your organisation's energy consumption and opportunities to improve the energy efficiency of your buildings, and reduce your carbon footprint.

Areas typically covered by an energy audit:

- Buildings and building fabric such as glazing and insulation
- Lighting
- Heating, controls and boilers – currently gas condensing boiler and some blown air system
- Heating ventilation and air conditioning (HVAC)
- Transport fleet
- Refrigeration/ air-con
- Renewable energy

If you have a professional audit carried out on your sites the report will typically include no cost, low cost and high cost categories, and a payback and quantified carbon saving for each suggested opportunity.

Energy Audits will include analysis of energy use data, as well as a survey of the site to identify any opportunities for energy saving there. Your energy performance can be benchmarked against industry standards for your organisation type.

i. Checklist

- Do a 'walk-through' survey of your building and make a note of any opportunities to improve energy efficiency.
- Locate air leaks/draughts – cause heat loss and therefore increase energy use - these can be sealed or 'draught-proofed'.
    - It is important to consider any change to ventilation levels if you get rid of air leaks – insufficient ventilation can cause indoor air pollution issues, and can cause health issues – if in doubt get a professional in this area to assess the building.
- Insulation
    - Building envelope
        - Could the building benefit from floor, roof, or wall insulation?
    - Windows
        - Are they double or triple glazed? If not, can they be replaced, or can secondary glazing be installed?
    - Pipes
        - Uninsulated pipes (including uninsulated valves and pipe flanges) can lead to heat loss, and energy loss – this increases energy bills and carbon footprint.
- Heating system
    - Inefficient (usually older) heating systems can lead to high energy consumption, and it may be beneficial to replace with a newer, more efficient system.

    - Check all heating controls and thermostats are set to the right settings, and haven't been overridden by building occupants. Consider restricting access to controls, as has been done in the squash courts.
- Lighting
    - Replacing traditional lighting with LEDs can reduce electricity consumption by up to 80%, and can reduce lighting energy costs by 70%.
    - Can you leave more blinds/curtains open to let more natural light in during the day?
    - https://www.carbontrust.com/resources/lighting-overview-guide
- Appliances
    - Unplug appliances when not in use to prevent phantom loads
    - Use 'eco' settings
    - Reduce use
    - Replace inefficient appliances with more efficient alternatives.
- Building use
    - Carry out a walk-through survey at the beginning, middle, and end of the day – look at how many lights/appliances/computers are on, and how many are actually being used.
    - Are there any areas where people forget to turn off these things? Would a switch off campaign, or additional signage be of benefit?

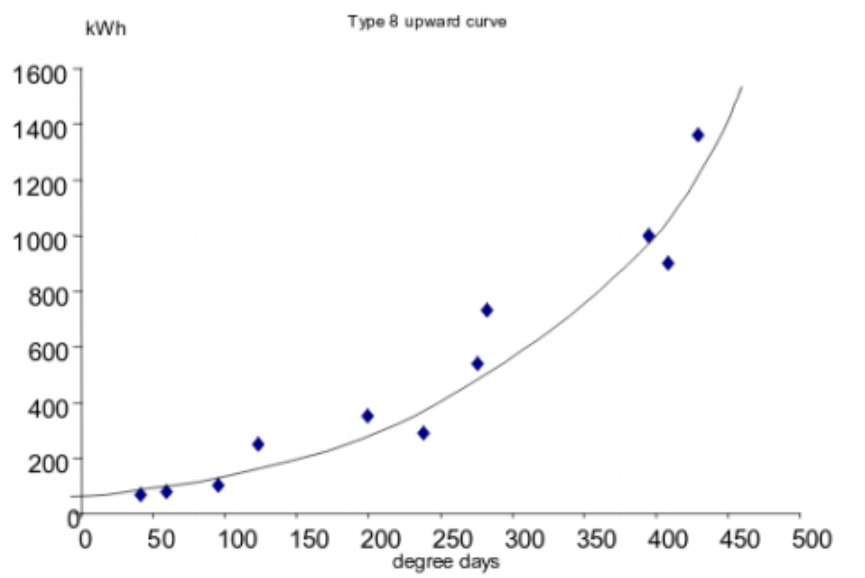
EON suggest 4 steps to carrying out your own energy audit for your organisation: https://www.eonenergy.com/business/news-and-insights/your-business/how-to-conduct-your-own-business-energy-audit.html

1) Assess your current energy use
2) Conduct a site walk-around
3) Create a plan of action
4) Get your employees involved

b. Stratification

Thermal stratification in tall buildings can reduce occupant comfort and reduce energy efficiency.

One way to check if temperature stratification is occurring in your building is to plot kWh (or another measure such as litre of oil) against monthly 'heating degree days' (used to estimate required space heating based upon outdoor temperatures) – if the plot curves upwards (see example below) this is indicative of stratification. Ceiling fans can be used to reduce the thermal stratification.



c. Heating options for the future

- In move to carbon neutrality new heating options will be required for the future, which don't rely on fossil fuels.
- Changing a heating system can alter the building temperature and humidity, which can cause issues for older buildings – you may need to seek professional advice about what the impact on your building would be if the heating system changed.

i. Potential heating options:

- Hydrogen-ready boilers – gas-fired heating boilers, which can run on gas or pure hydrogen.
    - Burning hydrogen gas is a carbon free fuel and produces water as the by-product.
    - These boilers are designed to be installed to run off the gas grid until there is a local hydrogen network which it can switch onto.
    - As these become more widely available, they may offer a solution towards low carbon heating if you were looking to replace your gas boilers in the near future.
    - This relies on the assumption that a hydrogen network will become available.
- Infra-red panel heaters
    - Efficient because it directly heats the people and objects, not the air so heat is not lost to the surroundings.
    - No pre-heating time
    - Heat will only remain whilst the panels are on, after that it will cool down quickly.
    - Run off electricity – may be more costly and is only fossil fuel free if the electricity has been generated using renewables.
    - Low maintenance
- Electrification of heating
    - heat pumps
        - Air source heat pump – less efficient than ground source, but easy to install. Perform less well in cold weather.
        - Ground source heat pump - Deep Geothermal
            - vertical hole is bored, so requires less space
            - expensive to drill
        - Building needs to be well insulated first
        - Keep building at constant temperature
        - Heat via under-floor heating, radiators (may need larger radiators) or a system with hot air being blown into the room). May be best combined with underfloor heating
    - Hybrid boilers – combine traditional heat fuels like gas, with a renewable system like a heat pump – it uses the heat pump, and the fossil fuel boiler 'tops up' the heat if the heat pump cannot provide all the heat required alone.
- Biomass boilers
    - Renewable fuel source, it does emit carbon dioxide but less than fossil fuels
    - Nurn wood pellets, chips or logs to power central heating and hot water boilers
    - The fuel needs to be sustainably sourced.
    - There are air pollution concerns. May be impractical because of the space required to store the chips.
- Underfloor heating
    - Recommended for buildings in regular use and ideally using air or ground-source heat pump.
    - Expensive to install

- Can change floor height

d. Window options

To improve energy efficiency single glazed window units should be replaced with double glazed or triple glazed windows. The new window units should have a U-value of 1.8W/ (m^2.K).

When replacing window units consider gas filling between the panes and special coatings on the glazing:

- Gas filling between panes is often argon or krypton – krypton will likely give a lower U-value (Jelle, et al., 2012) (the lower the U-value the better the insulation and the less energy lost to the outside as heat).
- Low-E coatings – windows have a coating (metal oxide) on the inside which is 'spectrally selective' – this means they reflect radiant heat back inside without reducing visible light (Rezaei, Shannigrahi and Ramakrishna, 2017).

e. Floodlights

The FA have a useful guide to floodlights (see supporting resources section) - including a Cost of Ownership Calculator to work out how much different floodlights will cost.

Sport England have some guidance too (although dating from 2012): https://www.sportengland.org/how-we-can-help/facilities-and-planning/design-and-cost-guidance/artificial-lighting

LED floodlights are the more efficient option then metal halide. LED floodlights will lead to lower running costs (energy bills) and have a longer lifespan. However, there will be a higher initial installation cost.

f. Onsite Renewable Energy Generation

Onsite renewable power generation can be provided by "solar, wind, geothermal, biogas, eligible biomass, and low-impact hydro".

Information for businesses on renewable energy (and some relevance to organisations): https://energysavingtrust.org.uk/business/renewable-energy/

i. Solar PV

Solar photovoltaics uses the energy from sunlight to produce electricity.

To estimate the benefits of installing solar PV, the following calculator can be used: https://energysavingtrust.org.uk/tool/solar-energy-calculator/

Information (aimed at domestic but still useful) on solar PV: https://energysavingtrust.org.uk/advice/solar-panels/

In 2020 the smart export guarantee was introduced as a way to pay small scale generators for the electricity they feed back into the grid: "a support mechanism designed to ensure small-scale generators are paid for the renewable electricity they export to the grid." https://energysavingtrust.org.uk/advice/smart-export-guarantee/

ii. Batteries

An energy-storage system, such as a battery, stores electricity generated in the day so that it can be used at another time (e.g. at night).

The energy can be stored as electricity in a battery, or as heat (either as hot water or a heat battery).

Batteries are currently expensive:

Estimates vary:

1) Which? : “members we spoke to typically paid either less than £3,000 (25%) or between £4,000 and £7,000 (41%) for a battery storage system (excluding the cost of solar PV, where relevant). Quoted prices range from £2,500 to £5,900.”
2) Energy Saving Trust: “4 kWh battery = £5,000 with a lifespan of around 9 years (though both the cost and lifespan of the battery will differ depending upon the size)”
    a. “PV system has a life expectancy of 25 years, meaning that you may need to install more than one battery and inverter over that time. With this in mind, it’s safer to say that the cost of batteries (we’re estimating three) and inverters (two) is likely to be something on the lines of £22,800.”

Read more: https://www.which.co.uk/reviews/solar-panels/article/solar-panels/solar-panel-battery-storage-a2AfJ0s5tCyT#can-i-save-money-with-a-solar-battery

See https://energysavingtrust.org.uk/home-energy-storage-right-me/ for more details, including questions to ask a potential installer.

6. Travel & Transport

a. Cycle to work scheme

The cycle to work scheme can be used to help encourage staff to cycle to work. The scheme uses a salary sacrifice process (the employee gives up some of their salary pre-tax in return for the benefit).

https://www.gov.uk/government/publications/cycle-to-work-scheme-implementation-guidance

“You can set up and run your own salary sacrifice scheme, or there are Cycle to Work scheme providers who can run a scheme for you. Scheme providers will normally:

- Ensure the scheme is fully compliant with legislation;
- Administer the scheme for you, reducing complexity;
- Advise you on salary sacrifice arrangements;
- Help you promote the scheme to your employees.”

b. E Bikes

Lots of e-bikes have batteries which can be removed and then charged via a normal domestic socket. This may mean there is the option to allow staff or members to charge whilst they work/play.

c. EV charging points

Energy Saving Trust: Guide to charge point infrastructure for business users:

https://energysavingtrust.org.uk/sites/default/files/reports/6390%20EST%20A4%20Chargepoints%20guide_v10b.pdf

There is the Workplace Charging Scheme (WCS) – “voucher-based scheme that provides support towards the up-front costs of the purchase and installation of electric vehicle charge-points, for eligible businesses, charities and public sector organisations.”

The scheme can cover “75% of purchase and installation costs, up to a maximum of £350 for each socket, up to a maximum of 40 across all sites for each applicant”.

https://www.gov.uk/government/publications/workplace-charging-scheme-guidance-for-applicants-installers-and-manufacturers/workplace-charging-scheme-guidance-for-applicants-chargepoint-installers-and-manufacturers

https://www.gov.uk/government/collections/government-grants-for-low-emission-vehicles

7. Procurement and Waste

a. Green electricity tariff

Swapping to a 'green' or renewable electricity tariff is an easy way to reduce your organisation's impact. There are however different ways energy companies can provide 'green' energy and depending on what they mean can drastically change the impact.

They can mean (Energy Saving Trust):

- Best: "your energy supplier buys renewable (green) electricity and its accompanying certificates directly from generators"
- Middle: "Some larger electricity suppliers will own or have partnerships with a mixture of green (renewable) and brown (regular fossil fuel) generators. Their standard tariff will provide electricity from a mix of sources, while the green tariff will be backed up by the REGOs from their low carbon electricity sources."
- Worst: "Some electricity suppliers, including some who claim to supply 100% renewable energy, will do so simply by buying up excess REGO certificates."

https://www.cse.org.uk/advice/advice-and-support/green-electricity-tariffs

b. Guidance on looking for installers

It is recommended that three or more quotes be gained for any work from three separate contractors. Ask for the same details from all the contractors to allow for direct comparison.

i. Things to ask:

- A full description of the measure being installed (including: the model type, the location of the measure, the quantity of items, lighting wattages)
- Confirmation of the existing specification if being replaced
- Estimated timescale for installation
- Estimated energy saving, in kWh per year, if possible
- Provide certification, e.g. gas safe or electrical certificate, if applicable
- The contractors should be reputable, in order to guarantee a satisfactory service will be carried out, and they will need to be registered with any installer accreditation schemes that are necessary to carry out the work legally and safely
- What qualifications & credentials do the company and surveyors have?
- Do they have appropriate contractor insurance?
- Will they be sub-contracting?
- For proof of any accreditations or certifications
- Paying for work with cash is not advised.

ii. Look at:

- TrustMark - a 'not for profit' social enterprise and Government Endorsed Quality Scheme – focused on home installations but has a useful installer search https://www.trustmark.org.uk/
- MCS - a standards organisation, which certifies low-carbon products and installations used to produce electricity and heat from renewable sources https://mcscertified.com/about-us/
- Track record of delivery – references and experience – have a look on 'Check a Trade', 'Trustpilot', 'Trust a Trader', Facebook and Google reviews, etc and look at reviews.
    - These sites can provide some basic checks, for example 'Trust a Trader' lists the name of the owner of a company, and lists qualifications the company claims to have – again ask for proof.
- Ask for a written quote and then a written contract

iii. Installer accreditation schemes:

- For gas work, it is important that they are listed on the Gas Safe Register. Please check using: https://www.gassaferegister.co.uk/
- For electrical work, contractors should be registered with a 'competent person' accreditation scheme. Please check using: https://www.electricalcompetentperson.co.uk/
- For solar panels and other renewable energy installations, the contractors should be registered with the Microgeneration Certification Scheme (MCS). Please check using: mcscertified.com/find-an-installer
- For windows, doors, roof windows or roof lights, the contractors should be registered with any of the following self-certification accreditation schemes: Fensa, Certass, Blue Flame Certification, Certsure, NAPIT, ASSURE or Stroma
- For internal or external solid wall insulation the contractors should be registered with any of the following self-certification accreditation schemes: BBA, Blue Flame Certification, Certass, Certsure, NAPIT, Stroma
- For cavity wall insulation the contractors should be registered with any of the following self-certification accreditation schemes: Blue Flame Certification, Certass, Certsure, CIGA, NAPIT, Stroma
- For more information on Competent Person Schemes see https://www.gov.uk/guidance/competent-person-scheme-current-schemes-and-how-schemes-are-authorised

iv. Governing bodies:

Figure taken from Sainsbury's Bank, Money Matters Team, 2020

8. Green Space & Land Use

a. Nature area

Consider:

- Native planting (supports local species and pollinators)
- Having a pond
- Having insect 'houses', or leaving deadwood for insects
- Bird boxes and bird feeders
- Plant climbing plants around the perimeter

See links below for more specific information:

- ARC Trust, Amphibian and Reptile Conservation https://www.arc-trust.org/
- Badger Trust https://www.badger.org.uk/
- Bat Conservation Trust http://www.bats.org.uk/

- Canal & River Trust https://canalrivertrust.org.uk/
- The Green Roof Centre http://www.thegreenroofcentre.co.uk/
- RSPB https://www.rspb.org.uk/
- Wildlife Trusts, Helping Hedgehogs http://www.wildlifetrusts.org/hedgehogs
- RHS, Pollinators: https://www.rhs.org.uk/science/conservation-biodiversity https://www.rhs.org.uk/science/conservation-biodiversity/wildlife/plants-for-pollinators

9. Supporting Resources

a. Start Here: Most Useful Resources

Resource Name	URL	Notes
Carbon Trust Carbon Footprinting Guide	https://www.carbontrust.com/resources/carbon-footprinting-guide	"explains the different types of carbon footprints, how you can measure and communicate them and the benefits of doing so"
Centre for Alternative Technology Advice Line	https://cat.org.uk/info-resources/free-information-service/	Excellent source of online information, plus can submit enquiries over email.
Centre for Sustainable Energy	https://www.cse.org.uk/	

b. Carbon Footprinting

Resource Name	URL	Notes
Carbon Trust SME Carbon Calculator	https://www.carbontrust.com/resources/sme-carbon-footprint-calculator	Offers a one-year carbon footprint calculation based on data for gas, electricity and transport fuels.
UK carbon intensity	https://carbonintensity.org.uk/	This website is useful for determining the carbon intensity of East Midlands. Also provides a PDF of the methodology they used to calculate the carbon intensity of each region.
WWF list of footprint tools	https://www.wwf.org.uk/sites/default/files/2021-04/Emission%20Possible%20Toolkit%20-%20Carbon%20Reporting%20Tools.pdf	List of alternative carbon accounting tools.
Carbon Trust Carbon Footprinting Guide	https://www.carbontrust.com/resources/carbon-footprinting-guide	Page 11 & 12 How to calculate an organisational carbon footprint
Carbon Trust Conversion Factors Guide	https://www.carbontrust.com/resources/conversion-factors-energy-and-carbon-conversion-guide	Includes downloadable spreadsheets.
UK Government	https://www.gov.uk/government/collections/government-conversion-factors-for-company-reporting	Government conversion factors for company reporting of greenhouse gas emissions.

GHG Protocol	https://ghgprotocol.org/ghg-emissions-calculation-tool	"Free, Excel-based tool from Greenhouse Gas Protocol and WRI that helps companies estimate their greenhouse gas (GHG) emissions based on the GHG Protocol."
Carbon footprint for electricity generation	https://www.parliament.uk/globalassets/documents/post/postpn268.pdf	2006 Postnote on the carbon footprint of electricity generation.

c. Action Planning

Resource Name	URL	Notes
One Planet Living	https://www.bioregional.com/resources/one-planet-living-toolkit-for-community-groups	Offers a framework to run a workshop to create a shared vision and structure for action planning. Has been used by several community groups in Evington, Leicester.
WWF Step by Step Guide	https://www.wwf.org.uk/sites/default/files/2021-04/Emission%20Possible%20Toolkit%20-%20First%20Steps.pdf	First steps to develop a climate plan.
WWF Policy Guidance	https://www.wwf.org.uk/sites/default/files/2021-04/Emission%20Possible%20Toolkit%20-%20Developing%20a%20climate%20and%20environmental%20policy.pdf	Steps to develop a climate and environmental policy
Carbon Trust Resources	https://www.carbontrust.com/our-projects/green-business-fund	Range of short guides to action planning and practical issues – including sector-based guides.

d. Climate Change Learning and Behaviour Change

Resource Name	URL	Notes
Carbon Literacy Training	https://carbonliteracy.com	A one-day learning experience (online or in-person) that introduces the basics about climate change and carbon footprints and inspires individual and group action planning to respond.

		Many Leicester-area organisations offer this training.
Footpaths	http://www.leicesterfootpaths.org.uk/	Group-based intensive learning to develop individual climate actions, looking at food, travel, energy and more through a series of friendly meetings.
How to conduct your own business energy audit in four easy steps	https://www.eonenergy.com/business/news-and-insights/your-business/how-to-conduct-your-own-business-energy-audit.html	EON suggest 4 steps to carrying out your own energy audit for your organisation.
Energy Audit Handbook	https://www.seai.ie/publications/SEAI-Energy-Audit-Handbook.pdf	This guide is far more detailed, and is aimed auditors but there is some useful information.
Checklists of Energy-Saving Measures	https://www.energystar.gov/buildings/save_energy_commercial_buildings/ways_save/checklists	This is US based, but lots may still be relevant – this also includes sections for low-cost measures.

e. Buildings, Energy and Equipment

Resource Name	URL	Notes
Green BELLE	https://www.greenbelle.org.uk	Advice and financial support for Leicester area businesses and organisations to save energy and install renewables
Sustainability Audits	https://le.ac.uk/enterprise/development/innovation-hub/support-for-smes/sustainable-development	Through Leicester University's Innovation for Good programme

Carbon Trust Lighting Business Case Tool	https://www.carbontrust.com/resources/lighting-business-case-tool	"Identify technology upgrades and estimate the savings associated, using a simple return-on-investment (ROI) analysis."
Lighting Overview Guide	https://www.carbontrust.com/resources/lighting-overview-guide	Guide to artificial lighting, including LED lighting

f. Travel and Transport

Resource Name	URL	Short Summary for Organisations	Notes
Choose How You Move	https://www.choosehowyoumove.co.uk/	Leicester/Leicestershire specific information on sustainable travel and support available	
Sustrans	https://www.sustrans.org.uk	Active travel (walking and cycling)	
Carbon Trust Fleet Upgrade Tool	https://www.carbontrust.com/resources/fleet-upgrade-tool	Estimate financial and CO_2e savings from upgrading fleet.	

g. Food and Catering

Resource Name	URL	Notes
Food for Life	https://www.foodforlife.org.uk/	Food for Life brings schools, nurseries, hospitals and care homes, and their surrounding communities together around the core ethos of healthy, tasty and sustainable food.
Soil Association Certification	https://www.soilassociation.org/certification/	Organic certification for cafes and restaurants.

h. Resources and Procurement

Resource Name	URL	Notes
Trust Mark	https://www.trustmark.org.uk/	A 'not for profit' social enterprise and Government Endorsed Quality Scheme – focused on home installations but has a useful installer search.

MSC	https://mcscertified.com/about-us/	A standards organisation, which certifies low-carbon products and installations used to produce electricity and heat from renewable sources.
Gas Safe Register	www.gassaferegister.co.uk	"Official list of gas engineers who are qualified to work legally on gas appliances."
Electrical Competent Person accreditation scheme	www.electricalcompetentperson.co.uk	
Competent Person Schemes	https://www.gov.uk/guidance/competent-person-scheme-current-schemes-and-how-schemes-are-authorised	"Current competent person schemes are listed".

i. Land Use and Space for Nature

Resource Name	URL	Notes
Woodland Trust	https://www.woodlandtrust.org.uk/plant-trees/schools-and-communities/	Free trees for schools and communities.
Leicestershire and Rutland Wildlife Trust	https://www.lrwt.org.uk/actions	How to guides about ways to help wildlife.

j. Grants and Funding

Resource Name	URL	Notes
Leicestershire Communities	https://www.leicestershirecommunities.org.uk/grants/environment-grant.html	Leicestershire grants for up to £3000 to help eligible community based organisations - grant will only be available for projects where the main beneficiaries are residents of Leicestershire, excluding Leicester City

Community Energy England	https://communityenergyengland.org/pages/funding-opportunities-2	List of funding options.
Centre for Sustainable Energy	https://www.cse.org.uk/local-energy/funding-your-project	List of funding options.

Leicester Innovation Hub

The Leicester Innovation Hub is a strategic investment into the provision of innovation and incubation support services along with innovation space to benefit local and regional businesses and start-ups, part-funded by the European Regional Development Fund.

The Innovation Hub's purpose is to support businesses, especially local Small to Medium Enterprises (SMEs), through incubation, innovation support and access to facilities and funding for specialist technical and academic expertise. The Hub also supports Leicester students looking to launch their own start-ups, develop their entrepreneurial skills and identify opportunities for work experience placements with businesses, including student projects to provide expertise to SMEs.

The Hub has supported companies in sectors such as health technology, space services, and food manufacturing and green technologies through a unique model that enables direct access to Innovation Fellows with academic, technical and business knowledge as the first line of support.

Our areas of expertise include earth observation and space related technologies such as multi-disciplinary design, advanced materials and manufacturing through dedicated engineering suites for prototyping, production and validation, AI and data analytics.

We also focus on life sciences with a strong emphasis on digital and precision medicine to support the development of new products for the diagnosis and management of chronic disease and multimorbidity.

Qualifying SMEs in Leicester and Leicestershire can access free/subsidised innovation support.

- Consultancy from our academics and dedicated Innovation Fellows
    - Specialist areas include: data analytics & AI, space observation and technologies, business and marketing, sustainability, manufacturing & engineering and health sciences
- Testing and analytical services
- Funding application support
- One year research and development projects
- Graduate internships and student volunteering projects
- Free or subsidised innovation support to qualifying SMEs
- We incubate graduates' business ideas to enable technology based start-ups:
- Graduate start-up mentoring and support
- Incubation space for recent qualifying graduates in the Innovation Hub's Start-Up Accelerator
- Up to £1,000 grants for qualifying start-up graduate businesses

To access free support from Leicester Innovation Hub email: leicinnovation@le.ac.uk

Follow us on Twitter at @LeicInnovation

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