

STATS' and FACTS



What is sustainability?

Sustainability is about using resources in a reasonable way, this includes people, assets, energy sources and materials. We cannot leave our grandchildren in a worse situation than we have now. For me the Brundtland definition still stands true: "Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs."

What will happen without sustainability?

It is important, because there is such a divide in those who have and those who don't. Equity and Equality is a major issue. We see that those in some of the poorest communities will be most impacted by the impacts of climate change because of poor resource management and over consumption of energy.

What can we do?

We can use a simple carbon calculator to work out where our impacts are. This might be in the things that you purchase, use or how you power your home. For me, it was travel emissions and food consumption. As a result, I have reduced my meat consumption and use public transport to get me to work. Planning meals can reduce food waste and growing your own is an option for some people. We can also review how we use our homes, turning off electrical technology when we don't use it. Sustainability as a mechanism for change has the potential to really impact in a positive way for the Greater Manchester population. Prolonged periods of issue around energy supply and energy bills leads to stressful situations, which can in part be addressed by efficiency measures. If properly financially supported and backed up with regulation. Any resource can run out, from fossil fuels to rare metals that we find in our smart phones. The issue is about addressing the waste that is created and making sure that the constituent parts can be reused and seen as a resource and not a waste. A throw-away society will run out of things to buy, but communities who embrace re-use and the circular economy will see a sustainable future.



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Sustainable Housing

What is sustainable Housing?

Sustainable housing is a way of making houses more energy efficient, to save our natural resources.

What can we do to make our houses more energy efficient?

A lot of our homes were built a long time ago, before we knew about climate change and before gas was very expensive like it is now. To help protect our planet, and save our money, we can insulate our homes (this means putting materials in our lofts and walls, so that we keep more heat in). We can control our heating better, by adding special valves to our radiators, or even upgrade our heating systems to include a system called, 'air source heat pumps' which take a lot less energy to heat our homes.

If we insulate a typical loft, we can save around 5% of our heating bills, insulating our walls can save around 20% of the heat being lost through them, and if we control our heating systems better than savings of around 10% can be made.

Sometimes we 'retrofit' a building. Retrofit means that we make a change to a building that leads to it using less energy and being better for the planet, it can also help us to save money on our energy bills. These are houses that were built a long time ago, that didn't have things like insulation.

At Salford University, we have built some houses and we conduct experiments to test energy efficiency. The facilities were amazing; we can even control the weather that surrounds our test houses, so we can make it rain or snow, like winter all the time! This helps us spot how we can make changes to these homes that will help us save energy.

If you would like to conduct an energy efficiency experiment at home, ask your parents/guardian, if you have a smart meter, this will be linked to a special display, try turning off lights, TVs etc and this device will show you how much you are saving. Ask if you can turn the heating down for a couple of days and see what difference it makes to your weekly energy bill, you might save some money



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Recycling

What is recycling?

Recycling is the process to transform one product without any value in another product with value. When we recycle, we change the characteristics of the original product/material. This process consumes energy, but this energy is less than if we made that new product from primary resources. On the other hand, when we reuse, we only change the way we use that product, but it remains essentially the same. Therefore, energy is not consumed in that process.

What can be reused?

We can reuse many things that we usually discard at home. For example, we can give multiple uses to plastic bags, bottles, glass containers, newspapers, old clothes, etc. Reuse is always better than recycling as we only change the use of the product, but we do not make any transformation. We save effort, energy, raw materials and money. On the other hand, repair helps put in operation many other products that would be considered as waste when they break or are worn. Therefore, this is another good option when feasible.

Why is recycling important?

Recycling reduces the volume of waste as well as the consumption of raw materials. Additionally, it contributes to reduce pollution and produces less carbon emissions. In some ways, it reduces costs as handling and transport is reduced, as well as energy consumption.

Does recycling make a difference?

Recycling is always necessary as it is the way we can transform waste in new products. It has a big impact in energy consumption during the manufacturing process, for example: recycling steel and tin cans saves between 60% and 74%; when we recycle paper, we save about 60% of energy; recycling plastic and glass saves about one third of the energy. Additionally, it reduces the impact of landfills as they are much more reduced, as well as the consumption of raw materials because waste replaces them. The recycling rate of households in England was 44% in 2020, which means we can increase this rate substantially if we use the different bins at home correctly.



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Transport

How can transport help with sustainability?

Energy efficiency is measured in how much energy is needed to move people or goods. The energy is measured in joules and the distance in meters. The less energy used to move 1 meter, the more efficient the form of transport is. In fact, the most efficient form of transport is an electric scooter which moves 0.03 meters per joule (m/J). Cycling moves 0.01m/J so slightly less efficient. Cars require 1,420 joules to move a meter (0.0007m/J) so are much less efficient.

What is carbon footprint and how is this measured?

Carbon footprint use is calculated through a “life cycle assessment”. This considers the energy needed to produce goods, as well as the energy required to power them, and all the infrastructure such as roads as well as the pollution they produce. This can be calculated in different ways, but Shreya Dave at the Massachusetts Institute of Technology (MIT) combines different calculations to work out the carbon footprint of different forms of transport based on the total energy needed for each mile travelled, and the amount of emissions of greenhouse gases and air pollutants. She concludes that walking and cycling are at least three times better than any other form of transport. Cycling needs less than 10% of the energy required by a car and produces 90% less pollutants than a bus.

What should we do to help the planet stay healthy?

The biggest thing we can do in terms of transport is drive cars less. Walking and cycling are the best forms of transport for the environment. Eating less meat and dairy, using sustainable forms of power, and repairing, reusing and recycling goods can also help reduce our impact on the planet.

What is the worst mode of transport for the environment?

The study by Shreya Dave above found that buses at off peak times are the worst form of transport, as they spend a lot of time idling (running their engines while not moving) and carrying fewer passengers. But public transport is important for moving people at peak times and performs important social functions. After off peak buses, pickup trucks and SUV's are the most damaging to the environment.



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Sustainability within Nature

How can we make a difference to sustainability within nature?

There are so many things we can do to make our natural habitats sustainable. This could include increasing protections for spaces, to creating more natural landscapes, particularly within our cities. A great recent example of this is Mayfield Park in Manchester, in which the city's first park in 100 years has been created on a piece of leftover land. This has made a difference to Manchester City Centre, through creating a new green space for residents and visitors alike. This is an example of a blue/green project. Green / blue projects come in all shapes and sizes, from rain gardens to green roofs, gardens, canals and even large parks.

What is a worm farm, rainwater table and rain garden?

Sometimes a worm farm is used as a composting system, which uses worms to break down organic material, instead of using harmful chemicals. A rain garden is an area of greenery which can manage water runoff from hard surfaces. This helps to save water.

Why is this important?

Nature is so important for our planet; from the complex ecosystems it supports to helping us feed populations and beyond. Without nature we would not exist, and it is important that we protect these landscapes for generations to come.

Over 90% of the UK is rural in nature, with Scotland having some 98% of its landmass classed in this category. There is around 200,000ha of formal parks and green spaces in the UK, yet only 6% of this is protected. Adding to this, some 2.8 million people live too far away from such spaces to benefit from their natural services. Urban nature is vital, with the ONS showing that the total annual value of cooling from green and blue space was valued at £243.6 million, with more benefits for noise mitigation, carbon removal and recreation.

What causes damage to nature?

A major threat to nature is the expansion of our cities, towns and villages. Urban sprawl is extremely unsustainable and can result in agricultural land, alongside more natural habits, being impacted in a negative way. With urban sprawl, we often have to build new roads and infrastructure to support the growing populations, which in turn can lead to air pollution and related issues which damage natural landscapes.



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