

ENVIRONMENTAL ISSUES

This mobile revision pdf is based on detailed work found in the Product Design section.

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ENVIRONMENTAL ISSUES

1. CARBON FOOTPRINT

2. REPLACING THE
MATERIALS ECONOMY

3. ENVIRONMENTAL
MODERNISM (Ecological
Modernism)

4. DESIGNED TO REPAIR
AND MAINTAIN

**FOR MORE ENVIRONMENTAL
FACTORS - DOWNLOAD THE APPS
“RECYCLING” and “ENERGY
PRODUCTION” and “MORAL,
ETHICAL, ENVIRONMENTAL
ISSUES RELATING TO DESIGN,
MANUFACTURING AND THE
CONSUMER”, from the App Section
of www.technologystudent.com**

CARBON FOOTPRINT

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An individuals carbon footprint is a measurement of a persons negative impact on the environment. Everyone has a carbon footprint, it does not only apply to industry and business. It relates closely to the amount of pollution a person creates through the use of energy (for example electricity) and resources such as fossil fuels. Environmental pollution can be created every time we get into a car, bus, train or plane by the burning of fuel. Every time we use something that has been manufactured we also add to our carbon footprint.

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MANUFACTURED ITEMS AND OUR CARBON FOOTPRINT

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In order for a product to be manufactured, energy is needed (electrical power is usually produced through fossil fuels). Finished products are distributed throughout the world using the existing transport system and this uses polluting fuels

In this way, every manufactured product creates a carbon footprint, whether is a small iPod/mp3 player or a large luxury car. We should aim to reduce our own carbon footprint to the smallest possible amount.

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HOW IS OUR CARBON FOOTPRINT CALCULATED?

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A carbon footprint is very difficult to measure accurately. Generally it is the amount of greenhouse gases produced in our everyday lives. These gases are normally produced by burning of fossil fuels to produce the electricity or by burning fuel when we use the family car or take public transport.

Complex calculations are used to calculate carbon footprints. To work out your carbon footprint search the internet for a carbon footprint calculator and try it out.

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OUR CARBON FOOTPRINT

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The start of a typical day for a typical pupil is outlined below:

Gets out of bed at 7.30am and turns on the bedroom light – using electricity.

Turns on the radio - more electricity used.

Has a wash - electricity has been used to pump water to his/her home and heat it up.

The waste water produced is released down the drain and has to be cleaned at a water treatment plants, before returning to rivers and lakes. All this requires energy often produced by burning fossil fuels.

Breakfast - cooked using gas. If cereal is eaten, it has been grown on a farm. The farmer has planted the cereal crop using vehicles and equipment burning petrol or diesel (creating pollution). When cropped it is transported to factories where it is processed, all this uses more energy.

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HOW CAN WE REDUCE OUR CARBON FOOTPRINT?

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RECYCLING

Recycling our waste is a good way of reducing our carbon footprint. Most packaging can be recycled and used again.

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TRANSPORT

Cars, and planes are responsible for much of the carbon we 'pump' into the atmosphere and environment. If we reduce the journeys we make by cars and planes our carbon footprint will also be reduced

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an exercise



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HOW CAN WE REDUCE OUR CARBON FOOTPRINT?

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HOLIDAYS AT HOME

If we stayed in this country for our annual holiday, instead of flying abroad, our carbon footprint would be reduced. Aeroplanes produce a large amount of pollution!!

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Information / an
exercise



BIO FUELS

Bio fuels are fuels that are produced by growing crops that can be processed to give us fuel, that is more environmentally friendly than fossil fuels.

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HOW CAN WE REDUCE OUR CARBON FOOTPRINT?

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HOME GROWN FOOD

Supermarkets import cheap food from abroad. Supermarkets are stacked with foods that could easily be grown in this country and locally. Often food is transported from countries far away.

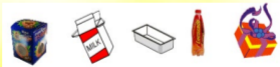
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REDUCE PACKAGING

Most products are 'over' packaged when we buy them in the shops. If we reduce the amount of packaging this will help reduce our carbon footprint.

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HOW CAN WE REDUCE OUR CARBON FOOTPRINT?

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ENERGY CONSERVATION

Turning down our heating or wearing a jumper/pullover instead of turning up the heating, conserves fuel. We should all ensure that our homes are insulated against the cold.

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exercise



GREEN ENERGY

It is now possible to purchase electricity from a green supplier. A supplier that does not supply electricity from fossil fuels.

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HOW CAN WE REDUCE OUR CARBON FOOTPRINT?

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ENVIRONMENTALLY FRIENDLY HOMES

Modern building techniques enable us to build energy efficient homes, constructed from sustainable materials including, natural woods. Solar thermal hot water heating systems on the roof and photovoltaic panels for generating electricity can also be included.

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PLANTING TREES

Planting trees is another way of reducing carbon in the atmosphere. Trees absorb carbon dioxide and produce oxygen.

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WHAT IS THE MATERIALS ECONOMY?

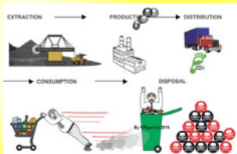
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The Materials Economy is a production system that dominates our manufacturing world. It starts with the extraction of raw materials and their processing into usable materials.

Followed by the materials being used to manufacture products in factories). The next two stages are the distribution of products to retail outlets, or direct to the consumer. At the end of the products useful life, is disposal.

The linear system called the 'Materials Economy', is unsustainable as it is not environmentally friendly

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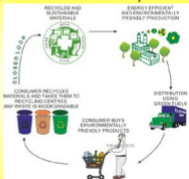


WHAT COULD REPLACE THE MATERIALS ECONOMY?

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A production system based on the environment being the priority. All products are designed to be environmentally friendly and completely recyclable. A 'closed loop system' of recycling and the use of sustainable materials, with any waste produced being biodegradable. The fuels used to power homes and industry are renewable and sustainable. A distribution / transport system based on renewable fuels, such as hydrogen or electricity (produced by wind, sea, solar and biomass).

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ENVIRONMENTAL MODERNISM

(Ecological Modernism)

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Environmental movements, often see 'technology' as the cause of 'ecological disasters' and 'environmental problems'. E.G. global warming is regarded as the result of our use of technology, the consumption of manufactured products and the resulting pollution / industrial waste. Environmentalists say we need to use less technology, in order to help protect the environment.

Environmental Modernists believe it is through the use of modern technology, that environmental problems can be solved.

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EXAMPLES OF ENVIRONMENTAL MODERNISM

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Older cars emit large amounts of pollution into the environment. Environmental groups say, that old cars should be scrapped / recycled, replacing it with an electric car or a bicycle.

Environmental modernists, say adding a pollution reducing exhaust (a catalytic converter), would solve the pollution problem.

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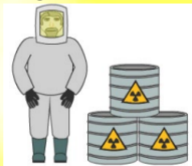


EXAMPLES OF ENVIRONMENTAL MODERNISM

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Environmentalists and Environmental Modernists, agree that coal powered electricity stations are extremely polluting. They also agree that there are cleaner ways of producing electricity and that old coal fired power stations should be replaced. Environmentalists favour wind power, water power, solar power and other forms of non-polluting methods of electricity generation. **Environmental modernists include Nuclear Power Stations as an alternative.**

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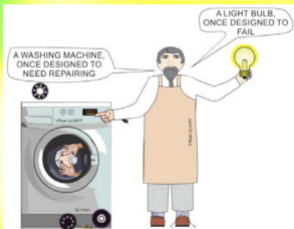
MAINTENANCE, REPAIRABILITY

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Products are often designed to be thrown away when they fail. This is especially the case in respect to small electronics devices.

However, there is a growing consumer campaign, to ensure that products are as environmentally friendly as possible. One way that this can be achieved, is through designing products that can be repaired and maintained.

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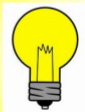


REPAIR AND MAINTAIN - THE OPPOSITE TO 'BUILT IN OBSOLESCENCE'

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There was once a time when designers developed products, so that they would eventually fail. This was an attempt to get the customer to buy a replacement product, from the company that provided them with the original. Light bulbs were once manufactured to fail after a certain number of hours. It is believed that washing machines were once designed to fail, forcing the owner to buy spare parts (at a high price) or to buy a completely new machine. For more on built in obsolescence go to [What is Planned Obsolescence?](#)

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ADVANTAGES OF REPAIRABLE PRODUCTS AND THOSE THAT CAN BE MAINTAINED

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Can be updated, to be more efficient, lengthening their useful life time.

It is cheaper to repair than replace an entire product.

Repairable products are environmentally friendly, as they save/conserve materials and help limit damage to the environment.

Some products need annual checks / servicing, to ensure they continue to work, are safe and efficient (e.g. a car).

Products that can be repaired / maintained are beginning to be popular with consumers.

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ADVANTAGES



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MAINTENANCE OF PRODUCTS

KETTLES

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The kettle shown below, is typical of kettles that are often thrown away, when they fail. For instance, when the heating element fails, it is difficult to replace and therefore the customer will buy a new kettle.

Another issue is that products such as this, are often difficult to dismantle, so that there parts can be recycled.

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MAINTENANCE OF PRODUCTS DRILLS

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Designers must ensure that customers know about maintenance checks and the servicing requirements for the product.

What parts of the drill need checking for damage or normal wear and tear?

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