

AQA Design & Technology 8552
 Unit 1 New and Emerging Technologies
 2.1 Sustainability and the environment

1. Sustainability

Avoidance of the depletion of natural resources.

Finite Resources e.g. Ore and Oil

Materials which are in limited supply. Use of these should be avoided where possible or only used in small amounts.

Non Finite Resources e.g. Trees and Plants

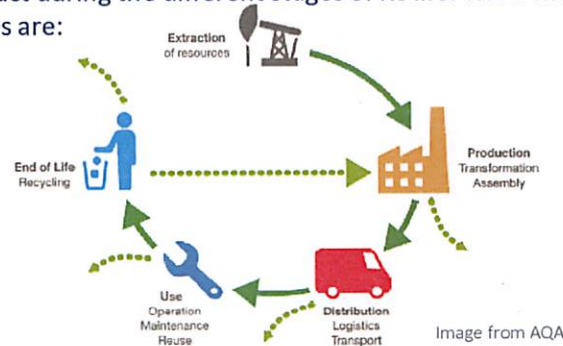
Materials in abundant supply and are unlikely to ever run out or ones that can be grown again.

The impact of the use of resources can be measured by the following:

- CO₂ emissions
- Transportation method and distance travelled
- Impact on the environment through mining or harvesting
- Availability or scarcity
- Maintenance or repair costs
- Ethical and moral issues

2. Life Cycle

Life cycle assessment (LCA) to assess the impact of a product during the different stages of its life. The 5 main stages are:



3. Waste Disposal

Consideration to waste disposal has an impact on the environment and a product life cycle.

Businesses are charged for waste disposal, reducing waste disposal will save money.

The effects of careful consideration of waste disposal within a business are:

- Less raw materials required
- Reusing waste materials/components within a company
- Sale of recyclable waste
- Energy to heat and power a business could be generated

4. Environment

Technologies that have a **positive impact**:

- Renewable materials from managed resources
- Use of renewable energy
- Using recyclable materials
- Consideration to the 6r's
- Designing products with low power consumption
- Designing products with fewer components and reduced weight
- Designing products that are upgradable extending their life
- Creating products that are sourced, produced and sold locally

Technologies that have a **negative impact**:

- Use of finite/non-recycled materials
- Use of components that are hard to repair
- Use of fossil fuels for power
- Products with high power consumption
- Products that have built in **planned obsolescence**
- Components that are shipped globally

5. Key Terms

Continuous Improvement

Kaizen, also known as continuous improvement, is a long-term approach to work that seeks to achieve small, incremental changes in processes in order to improve efficiency and quality. It is best known for being used in **lean manufacturing**.

Efficient Working

Just in time (JIT) and **lean manufacturing** are examples of how businesses reduce costs. Other examples are members of staff doing 'energy walks' to turn off lights etc. to reduce costs and CO₂ emissions.

Pollution

Business's should aim to reduce pollution by conducting an LCA.

Global Warming

The release of CO₂, methane (CH₄) and nitrous oxide (N₂O) into the environment resulting in the rise of average temperatures of the earth's atmosphere and oceans.

Carbon Offsetting

Image from AQA

