

KNOWLEDGE ORGANISER

Word equation
work done = force x distance
efficiency = $\frac{\text{useful output energy transfer}}{\text{total input energy transfer}}$
power = $\frac{\text{energy transferred}}{\text{time}}$
power = $\frac{\text{work done}}{\text{time}}$

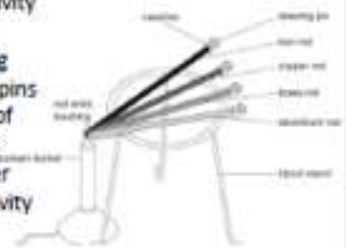
Key word	Definition
Non-renewable energy resource	Cannot be replenished as it is used. So it will run out at some point.
Renewable energy resource	Can be replenished as it is used. It will not run out.

Conduction is a method of thermal energy transfer through the passing on of particle vibrations.

The higher the **thermal conductivity** of a material the higher the rate of energy transfer by **conduction** across the material.

How quickly houses cool down is known as the **rate of cooling**. Houses have a slower rate of cooling if they have thicker walls. The rate of cooling can also be reduced by decreasing the thermal conductivity of the walls by installing **cavity wall insulation**.

The thermal conductivity of materials can be investigated by timing how long it takes for pins to drop off the ends of heated rods. The less time taken, the higher the thermal conductivity of the material.



Energy Resource	Advantages	Disadvantages
solar - using sunlight	Renewable, no pollution, in sunny countries it is very reliable.	Lots of energy needed to build, only works during the day, cannot increase power if needed.
geothermal - using the energy of hot rocks	Renewable and reliable as the rocks are always hot. Power stations have a small impact on environment.	May release some greenhouse gases and only found in specific places.
wind - using turbines	Renewable, no pollution, no lasting damage to the environment, minimal running cost.	Not as reliable, do not work when there is no wind, cannot increase supply if needed.
hydroelectric - uses a dam	Renewable, no pollution, can increase supply if needed.	A big impact on the environment. Animals and plants may lose their habitats.
wave power - wave powered turbines	Renewable, no pollution.	Disturbs the seabed and habitats of animals. Unreliable.
tidal barrages - big dams across rivers	Renewable, very reliable, no pollution.	Changes the habitats of wildlife, fish can be killed in the turbines.
biofuels	Renewable, reliable, carbon neutral.	High costs, growing biofuels may cause a problem with regards to space, clearance of natural forests.
non-renewable - fossil fuels	Reliable, enough to meet current demand, can produce more energy when there is more demand.	Running out, release CO ₂ , leading to global warming, and also release SO ₂ which causes acid rain.