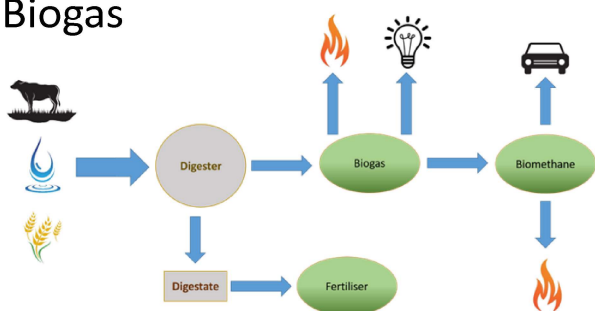


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Solving the energy crisis with renewable fuel diversity

Faster uptake of renewable energies is a must, if we are to tackle climate change and ever increasing costs of fossil fuels. As with the diversity of fossil fuels and their uses, we must analyse differing renewable energies for differing situations, and how they can adapt and scale to use.

Biogas



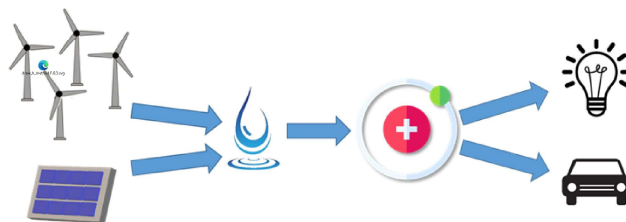
Biogas is produced from organic material break down, with different percentage levels relative to the feedstock used. Using waste organic material in a closed environment to produce biogas can reduce this waste going to landfill, which in turn can reduce air and water pollution.

Even though large scale production is still in it's infancy, using a feedstock that would be otherwise redundant, allows biogas to be produced 'cheaply', and this can be used to tackle energy poverty, or allow production on a small scale in an area that would otherwise be unable to have gas.

Hydrogen

Known as the gas of many colours, hydrogen can be produced using differing methods, and these colours refer to the process used.

Material	Method	Process
Brown Coal	Gasification	$\text{CO} + \text{H}_2\text{O} \rightarrow \text{CO}_2 + \text{H}_2$
Grey Gas	Steam Methane Reforming	$\text{CH}_4 + \text{H}_2\text{O} \rightarrow \text{CO} + 3\text{H}_2$
Turquoise Gas/Methane	Pyrolysis	$\text{CH}_4 \rightarrow \text{C} + 2\text{H}_2$
Blue Coal/Gas	Steam Methane Reforming/Gasification	$\text{CO} + \text{H}_2\text{O} \rightarrow \text{CO}_2 + \text{H}_2$
Pink Water	Electrolysis	$2\text{H}_2\text{O} \rightarrow 2\text{H} + \text{O}_2$
Yellow Water	Electrolysis	$2\text{H}_2\text{O} \rightarrow 2\text{H} + \text{O}_2$
Green Water	Electrolysis	$2\text{H}_2\text{O} \rightarrow 2\text{H} + \text{O}_2$



Hydrogen, at present, is predominately produced using non renewable fuel methods, and is used in many industrial purposes.

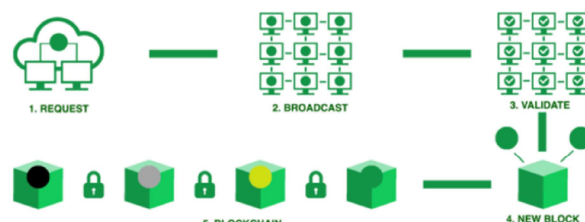
Ultimately, long term, as renewable technologies become more prominent, with the use of excess energy generated from these we can produce hydrogen than can be stored, and then used when required, allowing us to re-evaluate conventional battery use.

Hydrogen vehicles can be seen as a competitive alternative to electric. The ability to fuel a vehicle faster than to charge a vehicle, and with a longer range, hydrogen is an excellent competitor for heavy vehicles, such as public transport or heavy goods.

Blockchain

Many consumers today are conscious of their environmental footprint, and by using certification of renewable energies, it can create a traceable path of where the energy came from, how it's produced, and allow consumers to make proactive choices.

Using blockchain with certification allows for tracking in real time can prove the definite origin of the energy, the amount or volume, and allows for customer cyber safety.



COOPERATIVE ENERGY TRADING SYSTEM