100% Renewable UK

https://100percentrenewableuk.org/

Energy Efficiency

Energy efficiency includes efficiency of **supply side** and also **demand side** efficiency.

A major method of **supply side** energy efficiency that goes along with a 100 per cent renewable energy strategy involves heat pumps. Please see the section on heat pumps, but essentially they are machines that use energy to extract heat from the environment (air, ground, water) and which can produce three or more times the energy input of the electricity. Heat pumps are a much more energy efficient way of using renewable energy than pathways such as substituting natural gas in heating systems with hydrogen (whether 'green' or 'blue'). Please see the sections on hydrogen and heat pumps for more information.

The main areas of **demand side** energy efficiency that need attention are pieces of equipment that use energy, such as lighting fittings, refrigerators and air conditioning units as well as industrial machinery and, a very big topic, buildings in general.

Maximum attention needs to be given to replacing energy using equipment which is the most energy efficient, eg ensuring that building refurbishments occur using the most energy efficient light fittings, and, if their use in unavoidable, the most energy efficient air conditioning systems. We have a major struggle now, with the UK leaving the EU, to ensure that energy efficiency rules, such as labelling of white goods such as fridges are improved, preferably with a better system that exists in the EU. See https://www.euractiv.com/section/energy/news/activists-hail-new-eu-energy-labelling-rules-for-tvs-fridges/

Crucially also, buildings energy efficiency needs to be upgraded for existing buildings with measures such as cavity wall insulation, loft insulation, internal wall insulation, and external wall insulation. Heating by fossil fuels needs to be replaced, preferably by heat pumps or district heating supplied by heat pumps. Even conventional 'resistive' heating using renewable electricity is a lower carbon solution than blue or green hydrogen (see sections on heat pumps and hydrogen).

New buildings need to be built to so-called 'passivhaus' standard. This is a system introduced first in Germany that involves buildings with very low heating needs. For more information on passivhaus, go to https://www.passivhaustrust.org.uk/

Unfortunately opportunities are being missed all time as the UK's building regulations do not encourage such standards to be met. An important part of a buildings strategy

is to ensure that new buildings do not use natural gas heating. Heat pumps should be the usual means for supplying heating in new buildings.

The Government has a target of banning natural gas heating from new buildings in 2025. However this in itself is too late, and like the earlier targets for zero energy in buildings, this could well be delayed as we approach 2025.

We need to spend public money on energy efficiency rather than nuclear power or fossil fuels. The energy efficiency business, involving the techniques outlined here, need to be supported rather than money being given to the big companies who are wasting money on nuclear power and carbon capture and storage. For example, innovative schemes can be devised to deliver external wall insulation by bulk – a known technology which deserves Government back guarantees rather than nuclear power with all of the risks (including financial) involved.

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