

How to conserve, adapt and use clean energy is crucial for the future

Most countries have a power grid, built at great expense, which is highly intermittent with significant losses

Building new renewables assets attached to an old grid is complex and problematic

Users of this system will pay for renewable energy and the overall infrastructure to deliver it

Moving electrons around to supply electricity is practical if supplying electricity

But in many economies, electricity is less than 20% of energy consumption

50% of energy consumption concerns heating and cooling (with around 30% for transport)

At present, Heating and Cooling, Transport and Power all require decarbonisation from the current situation where more than 80% is from fossil fuels

Using clean energy such as hydrogen makes sense for hard to decarbonise sectors like heavy transport and industry

But the complex, costly and resource intensive production and migration of hydrogen from one part of the world to another, to produce heat or cooling makes no sense when local solutions are possible

Using electricity to generate heat in cold seasons or cold in hot seasons doesn't compete with direct supply of heat or cool

Having the ability to interchange heating, cooling, power and hydrogen will be an important diversified strategy for energy supply

Globally, we generate massive excess of heat in industry much of which is wasted

Simultaneously, key industries needs high grade heat for processing

We need to repurpose waste heat for industrial processing

Alternatively, we need to use waste heat for domestic or commercial use

Understanding how best to focus energy systems towards the best form of energy to be consumed at least cost and complexity is essential