2. Carbon offsetting failures

With the urgent need to tackle the climate emergency, national and local governments together with their businesses and citizens are striving to achieve carbon neutrality.

This is largely attempted by using carbon offsetting - buying CO_2 emissions reductions elsewhere, principally through energy efficiency, renewable energy and forestation, often in developing nations.

However, the money saved from energy efficiency techniques is often spent on higher levels of heating or air conditioning. Otherwise it is spent on other products or invested. All these differing economic routes support activities which are energy-consuming, producing CO_2 emissions of their own, eliminating a major proportion of the expected reduction.

These further CO_2 emissions can be even greater than the initial reductions if the activities that the finance supports use fuels of higher carbon intensity. This may also result if the fuels are cheaper and used in greater quantities, in less energy-efficient processes being undertaken in countries with lower environmental tax policies.

This is likely because in industrialized countries it is probable that natural gas use will be reduced by energy efficiency whereas in developing nations, which are increasingly relied on for manufacturing many products, more oil and particularly damaging coal are used.

Additionally, renewable (and nuclear) low carbon energy supply technologies are not zero carbon systems and still produce significant CO_2 emissions over their life-cycles, largely through massive initial material inputs (e.g. steel and cement).

Forestation is also widely advocated for carbon offsetting. It can though take many years before emissions from tree planting soil disturbance alone are recovered and decades before substantial carbon sequestration is achieved. In particular, forests are also an unreliable carbon offsetting approach with increasing wildfire and other risks to carbon sinks and stores.