

# Savings and Renewables

## The Way to Zero Carbon by 2050



### Notes:

The sector percentages of greenhouse gas emissions (GHGs) are approximately those for the UK in 2015

The 'Others' sector includes Waste Management (4%), Industrial Processes (2%) and Other (1%)

Zero Carbon (GHGs) may be achieved by Energy Saving (~ 70%) and Renewable Energy (~30%)

Although shown as uniform, these proportions are likely to differ somewhat for each sector

To meet its national and international obligations, and to prevent disastrous levels of climate change and sea level rise, the UK must transition to zero carbon by 2050. In so doing, we must account for our offshored Greenhouse gas emissions (GHGs), such as those emitted as a result of the food and goods which we import. By avoiding all fossil fuel imports, we will also greatly increase our energy security.

The most important energy services are food, from Agriculture, and shelter, including Heat for buildings.

Agriculture accounts for 10% of UK reported GHGs, but the UK imports half of its food. Exports of grain from the USA and Canada are expected to fall to zero by 2025, due to domestic demand and the loss of topsoil from the Mississippi basin. As well as the GHG targets for food production, the UK must also ensure food security. This will require increased production in the UK, with lower meat consumption and improved farming practices to control agricultural GHGs. Policy changes are needed to ensure that farming is seen as an essential profession, with excellent job prospects, and rewarded accordingly.

Heat accounts for some 30% of UK GHGs. All cities, towns and villages need 'Heat Plans', featuring mass energy retrofits of most existing buildings, and transition from electricity and gas to heat networks (district heating). Denmark and many other countries are showing that this can achieve near-zero GHGs by harnessing reject heat from power plants and industry, and by the use of renewable heat. Copenhagen will achieve this by 2025. As the UK heat transition will take decades, it should be delivered in all settlements at once. This would offer many local jobs during the design and long-term delivery, then ongoing skilled and local jobs in operation and maintenance.

Electricity supply emits some 29% of UK GHGs, yet there is huge potential for electricity savings in homes, offices and industry. The GHGs have fallen recently due to less generation from coal-fired plant and more generation from renewables – mainly wind. In fact, the UK has sufficient wind resource to exceed our entire energy demand, not just the electrical demand! So, many more could find jobs in the design and manufacture of efficient appliances and wind turbines. The UK could then supply these to world markets. We could also export large amounts of surplus renewable energy.

Transport emits some 24% of UK GHGs on the 'territorial' basis, and more if international transport is included. Most of the latter GHGs are from heavy trucks, non-electric trains, ships and aircraft. These will continue to require liquid fuels of high energy density, currently derived from fossil oil. Renewable synthetic fuels, already being produced in Germany, can replace these fossil fuels, so helping to reduce Transport GHGs to zero. All subsidies for the exploration and production of fossil fuels must end and the price of carbon must increase to ensure the economic viability of renewable synthetic fuels. This would reduce the use of transport fuels, so avoiding the need for more infrastructure (roads, docks and airport runways). Cars and vans will become battery powered, charged by renewable electricity, with zero GHGs. The demand for transport can be reduced by encouraging local shops and services, the use of walking, cycling and public transport. Also a concerted effort is needed to get more people working from home via the internet.

To meet the zero carbon target, the UK must phase out activities that are expensive in money, energy and GHGs, and damaging to people. These include most of the military services and the design and manufacture of armaments. It also includes nuclear power, which is inseparable from nuclear weapons. As all the current sites are coastal, they are at risk from storm surge and sea level rise. Yet decommissioning each site will take 50 to 100 years. So no new nuclear plants should be built, and decommissioning of all existing sites must start at once. This is a UK obligation to the rest of the world and will provide many skilled jobs for very many years.

For more detail, see <http://cms.energypolicy.co.uk/312>