ZERO CARBON BRITAIN and an adequate economics?

By Philip James

The cost of achieving the Zero Carbon Britain scenario has not been quantified. However, a scenario approximating to ZCB can be costed using the DECC 2050 Pathways tool (see http://2050-calculator-tool.decc.gov.uk/pathways/1011w2no312lw3110444132004423440444203202304420420341). Due to the constraints of the tool, this scenario is not exactly equivalent to ZCB, for example, it still includes a small amount of fossil fuel use and has higher levels of aviation, and the transition is completed by 2050 not 2030. However, the results are somewhat informative.

The DECC 2050 Pathways tool calculates the cost on average per person of the whole energy system under alternative scenarios (mean undiscounted real pounds per person per year 2010-2050). This is not just fuel costs but also other energy system related expenditure such as on buildings and vehicles. As shown in Figure 1, the approximation to ZCB is comparable with a range of other scenarios achieving 80% reductions in GHG emissions by 2050, or more (the ZCB approximation achieves a 93% reduction). It is around £750 per person per year more expensive than the 'do nothing' scenario (which does not attempt to tackle climate change); and around £1,000 more than the lowest cost scenario that achieves an 80% GHG emission reduction. This lowest cost scenario combines high levels of energy efficiency and a large deployment of nuclear power (with no renewable such as wind, tidal and solar).

As can be seen from Figure 1 (next page), the main cost is transport and, of this, the main cost is personal vehicles. Other key expenditures are fossil fuels and bioenergy, electricity, and buildings. As with all modelling of future scenarios, the results are dependent on the assumptions of future costs. For example, for fossil fuels, electricity from wind, solar and nuclear, electric vehicles, and building insulation. If DECC's high estimates for oil and gas prices, and their low estimate for electric vehicle and offshore wind prices are used, the approximation of ZCB is only £250 per person per year more than the 'do nothing' scenario.

Assumptions about the cost of financing are very important as high capital expenditure is required for low carbon infrastructure such as renewable energy. DECC's default assumption is 7% per year, however, if 0% is used with the above assumptions the approximation of ZCB is around £100 cheaper than the 'do nothing' scenario. This shows the importance of finance cost, and of who benefits from financing.

Perhaps of most importance, though, is what is <u>not</u> included in analyses of this kind.

Most obviously, the costs of failing to prevent dangerous climate change are not included here. The Stern review estimated that failing to tackle climate change could reduce global GDP by up to 20% (equivalent to up to £6500 per person per year on top of the cost of the energy system included in figure 1). Of course, just how one puts a price on species extinction or lost or blighted human lives is problematic to put it mildly. However, we must in some way put a measure on the huge value of climate stability. And should we not also include the value of insuring ourselves, by developing secure indigenous energy supplies, against the spikes in energy prices that can do such economic damage?

Perhaps more importantly though, in convincing the UK public of the benefits of a scenario like ZCB (over a 'do as little as possible as slowly as possible' scenario), is the exclusion of the wider economic benefits. Most crucial are the benefits from the greater retention of energy system expenditure within the UK, and greater dispersal of

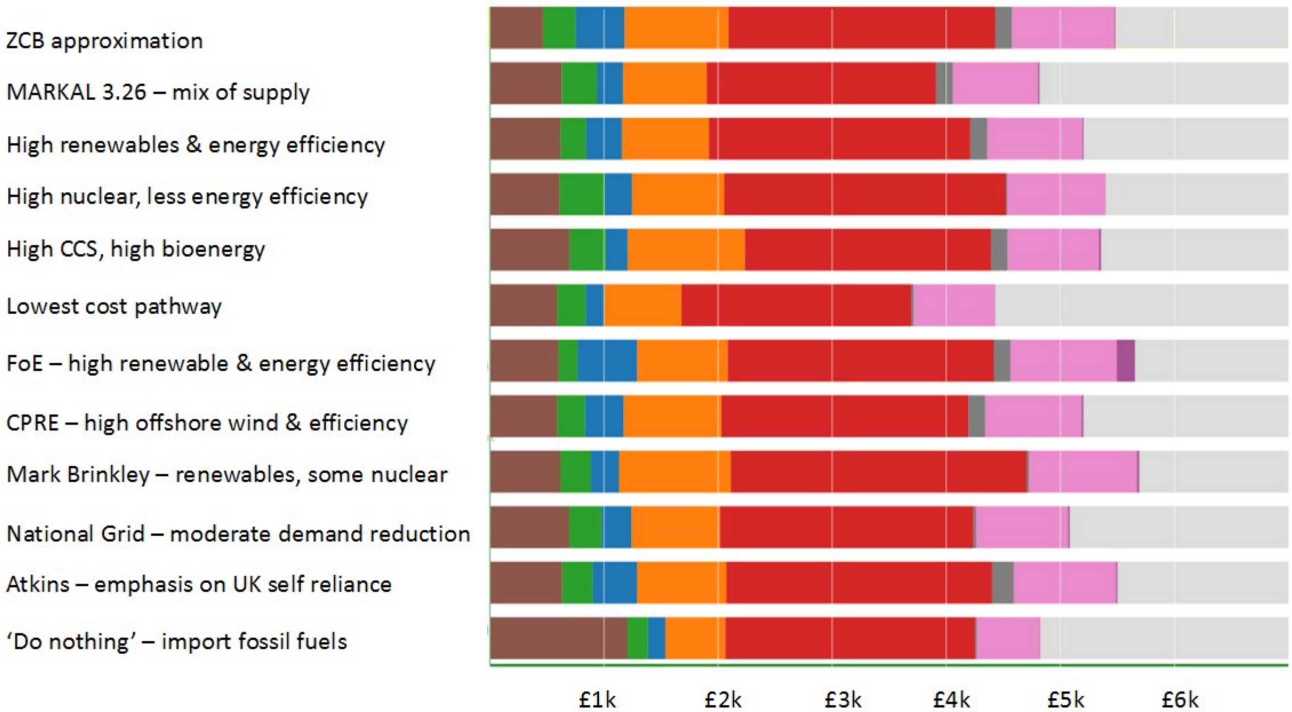

Figure 1: DECC 2050 Pathways cost comparison of alternative scenarios (brown = fossil fuels; green = bioenergy; blue = electricity; orange = buildings; red = transport; grey = industry; pink = finance; purple = other).

expenditure throughout the UK, which would occur in scenarios such as ZCB if supply chains and financing structures were put in place. With this would come the creation of hundreds of thousands, perhaps millions, of good jobs; the multiplier effects of energy system expenditure going on systems made and maintained in the UK rather than on increasingly imported fossil fuels; the possibility for communities to take a greater share of ownership and profits from an energy system rooted in their land and seas; and the potential to export knowledge and technology if we lead rather than lag. In short, a better off and more equal society with a more balanced economy and a healthier balance of payments.

In order to capture these wider benefits, perhaps we need to show a vision of two versions of the UK twenty or 30 years from now. In one, per person energy system expenditure is slavishly minimised in the short-term at the expense of wider benefits. In the second, per person energy expenditure may be slightly higher but the result is a better off, more secure, and more equal society with greater opportunities for good jobs, and more people owning and benefitting from a stake in the system. The choice can then be a fair one, weighing what we must pay as individuals against what we could gain, and in the context of the kind of country and society we will create.

The key objective is to replace the narrow dialogue around our energy system (or our other systems for that matter) in which all expenditure is seen as a burden to be minimised, and replace it with a fuller discussion of the implications: costs, benefits and societal changes that will result depending on the choices we make. In short, where the money goes, who benefits and how. The current government is committed to a 'least cost' strategy; even if the analysis were to include *all* costs it is necessary but not sufficient - we need an adequate economics that can help us find the 'maximum benefit' strategy for our society as a whole.

About the author:

Philip James was Energy System Researcher on the research phase leading to the publication of our latest report, Zero Carbon Britain: Rethinking the Future. Prior to working on ZCB he completed an Engineering Doctorate at the University of Manchester, researching strategies for low and zero carbon buildings.