

EU renewable energy and biofuel targets - what will they mean?

Background

- The EU Commission has today tabled proposals for reductions in carbon dioxide emissions - a 20% cut by 2020. Alongside this legally binding target for absolute emissions reductions, the proposals also specify the means by which it should be achieved: a 10% minimum use of biofuels in transport fuels and 20% of overall energy consumption sourced from renewables.
- The Commission has given the UK a target of achieving 15% of overall energy use from renewables. This is a sevenfold increase on current levels. It would mean between 30 and 40% of electricity production would need to come from renewables.

10,000 more wind turbines in Britain

- Open Europe estimate that in order to meet the EU targets the UK will need to build around 10,000 new onshore and offshore wind turbines by 2020.¹ There are currently just under 2000 turbines in the UK.
- This would mean just over 6000 new onshore wind turbines in the UK. The British Wind Association has recently estimated that "at least" 7000 turbines would be required for onshore use only.²
- Open Europe's estimates would suggest an average of 2.5 new wind turbines having to be built per day up until 2020.

Massive costs - £5-11bn extra investment per year - up to £730 per family

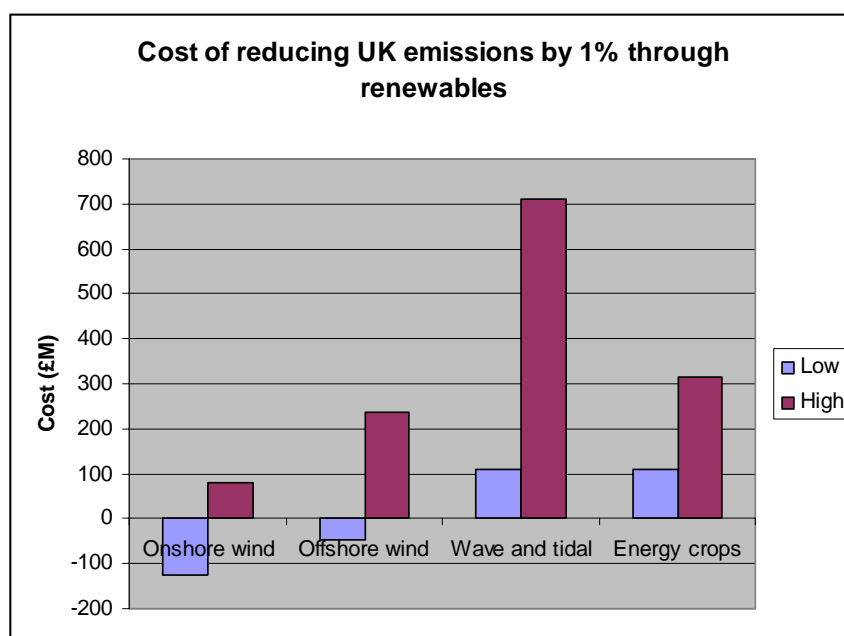
- In order to meet the EU's targets of 20% renewable use, subsidy would be required on a massive scale. Costs are still uncertain, but a range of estimates exist. A leaked internal DTI paper obtained by the Guardian gives preliminary per annum costs to the UK for meeting different levels of obligation under the EU renewables target. For a 14-15% use of renewable energy in 2020 the paper estimates a broad range of costs - between £5bn and £11bn per year. The lower range figures refer to scenarios with higher reliance on renewables in transport and heat, but the DTI paper concedes that there is "considerable uncertainty" regarding the costs,

¹ Based on on-shore wind-power accounting for 31%, and off-shore for 21% of new capacity built to meet the 2020 target (as estimated by OPTRES 2007); assumes 2MW turbines operating at a 28% capacity factor; and 34% of electricity production from renewables.

² Estimate cited in *Mail* (22.01.08)

viability and capacity for renewables expansion in these fields.³ These projected cost increases would equate to extra costs of £330 - £730 per family of four per year in the UK.

- The Commission has estimated that a 20% renewable target would mean additional average costs compared to conventional supply options ranging from 13bn to 18bn euros per year (across Europe).⁴ This is a huge amount, but could well be an underestimate given the size of the UK-only estimate and the current costs of subsidising renewables.⁵
- In a recent study commissioned by Open Europe, Europe Economics have estimated the costs of renewable energy generation in 2020. They argue that “renewables generation technologies are typically a very costly way to reduce carbon emissions. In many cases, this is true even once the potential for costs to fall through time has been taken into account”. Their estimates for costs of different types of renewables are set out in the graph below:



- Current available figures show large disparities between the future costs of renewables, reflecting significant uncertainties on the issue. Wind power may become economically viable, but the actual costs still remain highly uncertain. The large degree of uncertainty is the salient feature of Europe Economics' conclusions, and should alone be reason for scepticism over the wisdom of binding targets. They indicate that even after more than a decade of technological improvements and cost reductions, new renewable technologies such as wave energy, tidal generation and energy crops are likely to remain expensive solutions for reducing carbon emissions.
- In any case, even if we assume that on-shore wind power does become cost-effective, given the sheer size of the EU target, there is no way that wind power

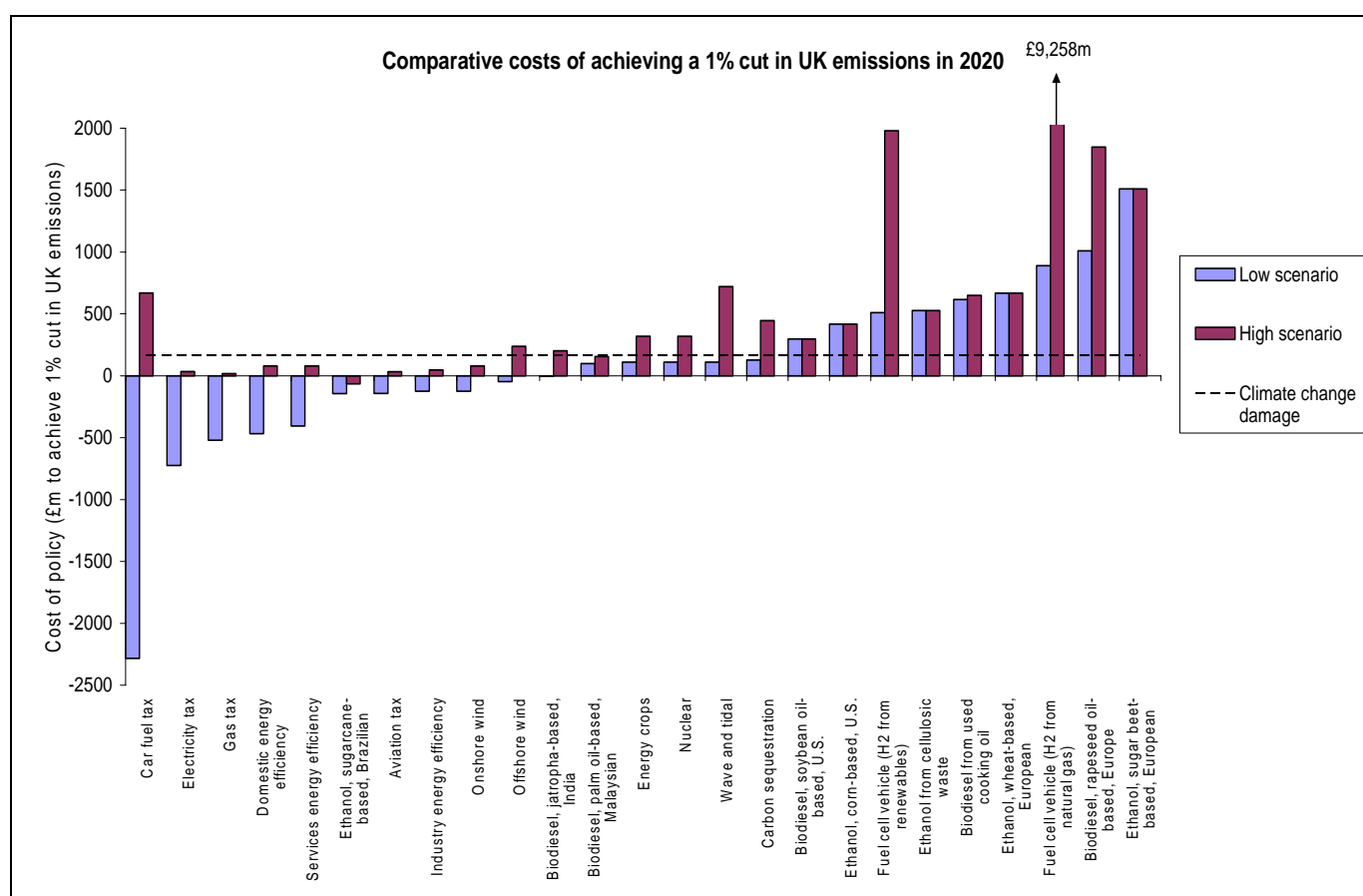
³ To view the paper, visit <http://www.openeurope.org.uk/research/dtileakedpaper.pdf>

⁴ European Commission, *Renewable Energy Roadmap* (10.01.2007)

⁵ The EC figures suggest carbon reductions through renewables achieved at a cost of £14 - £20 per tonne of CO2 in 2020. However, Ofgem note the current system of support for renewables in the UK costs around £65-140 per tonne of CO2 avoided. Ofgem, *Response to BERR consultation on reform of the Renewables Obligation* (13.09.07).

alone can provide the capacity needed to cover such a commitment. The marginal costs per tonne of achieving carbon reductions through renewables will also increase as the opportunities to realise cheaper options within these boundaries become progressively diminished - i.e. as the best sites are used up.

- The sheer magnitude of the EU targets would inevitably mean that investment would have to be forced towards far more expensive renewables options - irrespective of whether this extra expenditure could be better spent on achieving greater emissions reductions through other means. Europe Economics' research shows that carbon taxes and measures to promote energy efficiency are likely to be far more cost effective means of cutting emissions than large-scale renewable energy and biofuel use.
- Europe Economic's conclusions on costs of different carbon abatement policies are set out in the graph below:



Renewable energy targets contradict and cancel out other key EU environment policies

- The EU often claims its primary tool in combating climate change is the EU Emissions Trading Scheme (ETS), which relies on restricting quantities of carbon that can be emitted. However, EU ETS and renewables targets are mutually contradictory, and risk creating a 'waterbed' effect - reducing emissions in some areas, but leading to increases in other areas. UK officials have already expressed their concerns on this issue: "If the EU has a 20% GHG [greenhouse gas] target for 2020, the GHG emissions savings achieved through the renewables risk making the EU ETS redundant, and prices to collapse."

- Another source of tension with the ETS will arise as a result of free allocations of carbon permits to participants in the scheme, which effectively constitutes a form of covert industrial subsidy, meaning that high carbon alternatives to renewables (especially brown coal in Germany) are being promoted under current EU policies.⁶ If the EU is serious about encouraging more renewables investment, the most obvious place to start would be removing favourable treatment to fossil fuel power sources. But the EU will not even consider this until after 2013.

Biofuels will be an environmental and humanitarian disaster - and a massive waste of money

- Europe Economics' figures clearly show that biofuels - especially those grown in Europe - are the most cost-ineffective way of reducing carbon emissions amongst the policy options modelled. They are also far more costly than the official social cost of carbon - e.g. sugar beet based biofuels cost over £300 for every tonne of carbon avoided, compared to a government guideline of £33 for the social cost of carbon.
- Even the Commission's 2006 strategy paper acknowledged that "Most available studies indicate that the abatement costs of EU-produced biofuels are quite high compared with the current 'carbon price'. This means that EU-manufactured biofuels are currently not the most cost-effective way to reduce greenhouse gas emissions." (Biofuels Impact Assessment, 2006)
- Using estimates from the GSI and Europe Economics, Open Europe estimates that the 10% EU target would lead to total annual transfers to the wider biofuels industry of 11-23bn euros by 2020. Considering that the CAP currently accounts for around 40bn euros of annual EU spending, this is an enormous level of subsidy. Biofuels are only likely to achieve between 0.9% and 1.1 % reductions in total EU emissions. This is a serious misallocation of resources. If the huge expense of achieving the miniscule reduction in greenhouse gases through biofuels were to be redirected towards reforestation projects, almost 28% of the EU's total emissions would be saved. Even if it were to be redirected towards (relatively cost-inefficient) renewables (at current costs), these funds would deliver a 2 - 5% reduction.

EU Biofuel targets will starve tens of millions in the developing world

- It is certain that this shift to biofuels will contribute to higher world food prices - this is already happening as a result of US demand, with 2007 seeing dramatic rises in food bills. The IFPRI estimates increases of up to 26% for various staples created by biofuel demand alone. Professors CF Runge and B Senauer from the University of Minnesota estimate that for every percentage increase in real prices of staple foods, 16 million extra people will be drawn into food insecurity. This would mean 240 million people being pushed into food insecurity, of which the EU would be responsible for 60 million.

Biofuels will mean more expensive food in the UK and Europe

- Open Europe calculates that by 2020 the average family of four in the UK can expect, in today's prices, a rise in annual food expenditure of between £200 (260

⁶ Carbon Trust, *EU ETS Phase II allocation: implications and lessons* (May 2007)

euros) and £260 (340 euros) as a result of worldwide biofuel demand. Of this, the EU would be responsible for £50 - 65 (65 - 85 euros).⁷

EU's sustainability criteria are a distraction

- Even if it could somehow be guaranteed that all biofuel used in Europe did come from 'sustainable' sources (almost impossible), the increased demand for biofuels will lead to increased food prices and force increased rates of clearance for food. The targets themselves are the central problem, and this serious issue cannot be neutralised with more paperwork.

For more detailed analysis of the issues discussed above, view the following:

Open Europe, "What works? How to reduce emissions at the lowest cost" (January 2008)
www.openeurope.org.uk/research/whatworks.pdf

Europe Economics, "A Comparison of the Costs of Alternative Policies for Reducing UK Carbon Emissions" (January 2008)
www.openeurope.org.uk/research/eereport.pdf

⁷ Figures derived from DEFRA, OECD/ FAO, IFPRI, IEA and IMF