

Renewables—time for a rethink?

To some, renewables are—with energy efficiency—the solution to climate change. That, in effect, is what the government believed when it set out its energy policy in the 2003 White Paper. To others, they are at best an irrelevance when set against the great global expansion of coal and the 50% increase in carbon emissions projected for 2030 by the IEA. Neither position turns out to be correct, but in the presence of so much lobbying and political positioning, good policy tends to get lost in the debate about the role of renewables in climate change policy.

The scale of the new targets

In the next decade or so, renewables in practice means primarily wind. The renewables case has been taken on by the European Commission in its January 2008 climate change package of draft legislation. It has proposed that 20% of total energy should come from renewables by 2020, and national targets allocated accordingly. For the UK, this amounts to around 15% for the economy as a whole (in recognition of the failures of renewables policy so far), and since there is little prospect of transport achieving much of this, the 15% translates into roughly 35-40% of electricity generation by 2020 to come from wind. That is an increase of 30-35% from the current level, and to be delivered in just 11 years.

It takes a little while for this to sink in: in the next 11 years, the plan is to develop perhaps seven times more wind power generation than has been built in the last 15 years. The Secretary of State for Business, John Hutton, has gone even further, stating that he is looking for some 33GW of new wind capacity, as part

of his attempt to create 'energy independence' (whatever that means).

It is, of course, quite possible to achieve this. After all, the British economy was transformed from a peacetime one in the mid-1930s to a war economy by 1940. If government chooses to harness the full powers of the state, much can be achieved. But this is hypothetical: there is no intention to harness this sort of direct regulatory intervention. There is to be no state-directed command-and-control of the necessary resources. On the contrary, the British policy is to have the market deliver, and to set incentives accordingly to harness private finance through the Renewables Obligation (RO)/Renewables Obligation Certificates (ROCs) regime (now banded).

Little chance of success—even with oil at \$120 a barrel

Will this work? The recent decision by Shell to pull out of the London Array provides a wake-up call. Since the 2003 White Paper (DTI 2003), which reconfirmed the approach to the RO and ROCs, the oil price has gone up from the assumed \$25 a barrel to over \$120 a barrel. If the government thought it could deliver its renewables objectives at \$25 a barrel, it would perhaps be reasonable to expect that increasing the oil price by a factor of six should do the trick—especially since the 2003 White Paper assumed that the costs of wind power would fall over time (economies of scale, learning-by-doing and technical progress being among the expected contributing factors). The 2006 Energy Review (DTI 2006) and the 2007 White Paper (DTI, 2007) confirmed this governmental confidence.

Yet what we learn from the London Array is that the competitive advantages of the rise in oil prices have been swamped by the rise in the costs of wind power. Instead of going down as the architects of the 2003 White Paper, Patricia Hewitt and Margaret Beckett, assumed, the costs have risen very sharply. It might also have been assumed that manufacturing capacity would have geared up to meet the new demands driven by policy. But again this is not the case: in fact there are but two main suppliers of offshore wind turbines, one with some reliability problems and the other yet to have much up and running. Investors and manufacturers clearly did not take seriously the aspiration of the British government—or indeed those of many other governments.

So far, so expensive

Thus there is little doubt that wind has turned out to be, so far, much more expensive than forecast by the politicians and the wind power lobby. This has had political repercussions. For politicians were keen to reap the political benefits of announcements about their renewables plans, safe in the knowledge that the costs would be paid in the future, not now. But time moves on, and the costs are beginning to feed through into bills, just when customers are already stretched by the rise in the underlying fossil-fuel prices.

Such renewables-induced price increases have, however, so far been muted. But 33GW will be a very different story. And there is little reason to believe that in the next 11 years—as Europe is overwhelmed with new orders for wind capacity—the costs will fall. Quite the contrary: the dash-for-wind will if anything increase costs still further.

Return to the European drawing board

So what is to be done? There are two parts to the solution: reconsider the targets, and rethink the policy framework to deliver them.

Let's start with the targets. It is patently obvious that the 2020 target cannot be achieved in Britain without a major change of policy (or indeed across Europe). There is no evidence that this is about to take place. Even if it did, it might still be impossible to achieve. So how might the target be better designed? The answer is necessarily European, since the policy is a European one which the British endorsed.

Defining sensible European targets

Targets which lack credibility are often worse than no targets at all. The EU might like the catchy 20-20-2020 ring to its environmental policy, but the chances that the three dimensions—the overall target, renewables and energy efficiency—would all magically turn out to be optimised at 20% are extremely thin. The 20-20-2020 is better regarded as political rhetoric. Its purpose is to provide 'leadership' at the Copenhagen Summit in December 2009. Yet to adopt targets which lack credibility can only be effective if, as a result, other countries are naive enough to believe them. To rely on ignorance or naivety is a very odd way of starting negotiations.

More sensible is to come up with stretching targets that can nevertheless be achieved. There are three ways to make the renewables target more practical: broaden the technology domain; increase the time period; and widen the geography. All also improve the efficiency of meeting the climate change policy objectives.

Broadening the technological domain

There is no such thing, in theory, as a pure renewable. All energy production and consumption involves some carbon production. As a result, renewables has two possible practical interpretations: very low-carbon technologies (none are strictly zero); or generation activities which, while generating carbon emissions, reduce them relative to the counterfactual of what would have happened otherwise. In the low-carbon camp are: wind, solar, tidal, some biofuels and nuclear. In the second camp, not only waste incineration and coal-based methane might be included, but even improvements in the thermal efficiency of existing coal plant, and carbon sequestration and storage (CCS) may count too. One way of thinking about this second group is that they are projects that might pass the Clean Development Mechanism (CDM) tests.

It is immediately apparent that if the objective is to address climate change, there are no good reasons for excluding nuclear from the first camp, and no good reasons for excluding CCS and related coal- and waste-burning technologies from the latter. Indeed, even in the current de facto wind-based definition, it is important to realise that wind itself may turn out to be far from low carbon in its effects. Across Europe, wind power is backed up by thermal plant (coal and gas)—indeed, it is possible to argue that the commitment to wind is ushering in a corresponding further dash-for-gas to maintain security of supply (for all the risk this implies of greater exposure to Russia and Gazprom).

Thus the 20% might refer to a broader, and more effective, technological domain. The notable additions would be nuclear and CCS, both of which would make considerable impacts on global warming.

Increasing the time period

Choosing 2020 as a cut-off date is not only arbitrary, but also distorts investment decisions. Climate change is not fixed on a specific date; it is a long-run process. Choosing 2020, as opposed to say 2025, will make very little difference to even a fraction of one part per million of CO₂e equivalent concentrations in the atmosphere.

The obvious distortions to investment is to divert funds from nuclear and CCS into wind, thereby accelerating wind investment, but slowing down medium- to longer-term technologies. The 2020 target makes wind urgent, but provides no benefit for accelerating post-2020 technologies, such as nuclear and CCS.

Perhaps worse still, by making all the 20-20 targets for 2020, it creates an enormous cliff edge for future decision-making in 2020 and the run-up to it. Thus, a modification would be to extend the deadline and, because other technologies could be delivered by 2025 for example, to change the 20% too.

Widening the geography

Climate change is global, not European or even British. The main contributions to the 50-60% projected increase in emissions between now and 2030 are from China and India, and in both cases from the burning of coal. There is no climate change benefit from renewables in a specific location: any renewable anywhere has the same effect. What matters is where they are most cost-effective.

It follows that if the policy objective is to do something about climate change (as opposed to meeting domestic or European political concerns) then a renewables policy should be geography-blind, and would probably be linked to the CDM.

By contrast, the EU policy is the exact opposite. It is not even geography-blind in Europe—it is national. As a result, it maximises the costs of achieving any given reduction in emissions. A modification is therefore to make trading across Europe integral to the target at the very least, but better still to integrate it with the CDM—in effect, creating a sub-class of CDM projects.

Renewables and the other climate change policy instruments in the 2008 Climate Change Package

These three changes to the renewables target would increase its efficiency, improve its contribution to the climate change problem, and provide a more credible basis for negotiations at Copenhagen. However, the resulting policy will still be inefficient, because of its relationship (or lack of relationship) with the other components of the 2008 Climate Change Package.

As currently set out in the 20-20-2020 targets, there is no mechanical relationship between the contribution of the EU Emissions Trading Scheme (EU ETS) and that of renewables and energy efficiency. But suppose the renewables and energy efficiency targets were met. Then the 20% overall CO₂ target would be met too, or at least great progress would have been made. Would then the full national allocations of permits be continued with? What would be the effect on permit prices?

This has a more immediate effect in respect of the proposed auctioning of permits for Phase 3 of the EU-ETS. If fossil-fuel generators really believed that the 20-20 renewables and energy efficiency targets would be met, they would expect a lower demand for energy and a lower market share. Faced with the need to raise large sums of debt up front to pay for the permits, the attraction of closing coal stations would be

considerable. But now suppose that the 20-20 targets are not delivered: the wind turbines are not built and energy efficiency remains stubbornly difficult to achieve (and indeed air conditioning increases demand). In this case, either prices would rise sharply or the lights would go out.

A better policy would be to let the carbon price take the strain—either through a carbon tax, or by making the EU ETS the dominant policy instrument. Then all the technologies (and demand-side measures) would be on a level playing field, and least-cost options would be preferred. There would in particular be no need to favour specific (politically appealing) technologies such as wind over, say, nuclear or raising the thermal efficiencies of existing plants. The winners would be picked by the market, not by lobby-prone politicians.

Financing renewables

If however the EU (and the British government) wish to pick renewables winners, then there are a number of options which might improve on the RO/ROC system. One approach—often advocated—is to move to so-called “feed-in tariffs”. This has many forms—from cost-pass-through to a series of banded tariffs. The key here is whether the tariffs are set *ex ante* or *ex post*, and whether they are linked to a ROC-based system of permits or tied to project costs alone.

But if the government really intends to deliver wind on the scale required by the EU target, then it might as well give up on market-determined returns and treat renewables as another utility. The projects would then be placed within a regulatory asset base (RAB) once completed, and customers would be committed to financing the RABs through their bills. The merit of this approach

would be that it would significantly reduce the risk, and hence the cost of capital, since the RAB could be debt-financed, with a return close to government bonds. The efficiency incentives would remain for the development phase of the project—building and connecting wind farms. This utility approach would be a radical departure from the current system - but then the current system is neither low cost, nor likely to deliver the target. It is the cost of capital that dominates the costs of wind.

A better way forward

In the run-up to the final decisions in the EU over the Climate Change Package, there is now an opportunity to reconsider what was hastily agreed in the absence of a detailed analysis of the costs and benefits of the proposals. Over the past few months, officials across the EU member states have had time to reflect on the implications of a nationally based set of demanding wind power targets. Privately, most governments know their share of the 20% targets cannot be met. Yet there is a politically understandable desire not to question the policy too closely. After all, none of the existing leaders can reasonably expect to be in power in 2020 when any failures will be observed.

The consequences of going ahead are serious. They will be damaging to EU credibility at Copenhagen (since no one will believe the Europeans), and they will be damaging to the objective of tackling global warming. The case for renewables will be damaged too. Costs will be (unnecessarily) high for the limited reductions in emissions that result, and there will be serious risks to security of supply. Voters are less likely to be convinced to do what is necessary to face climate change when they have been

misled by political leaders. They will have paid much, and got very little reduction in global warming as a result.

In Britain, the consequences are among the most serious across Europe. It is no accident that the British government set among the most ambitious domestic CO2 target in 1997 (20% below the 1990 level), and, with it, a renewables plus energy efficiency (minus nuclear) strategy to achieve it—and then singularly failed on all counts. The British government's claim to be a leader in climate change by setting itself tough targets, and demonstrating that they could be achieved at low cost, has been a failure. It would be better to learn from these mistakes, rather than compound them further. Britain, and Europe, has perhaps six months to reconsider. Renewables have a serious part to play, but by overplaying the role of renewables, there is a very serious risk of a backlash, and excessive costs too.

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11 June 2008

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