The Oil Drum
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Are Green Times Just Around the Corner?

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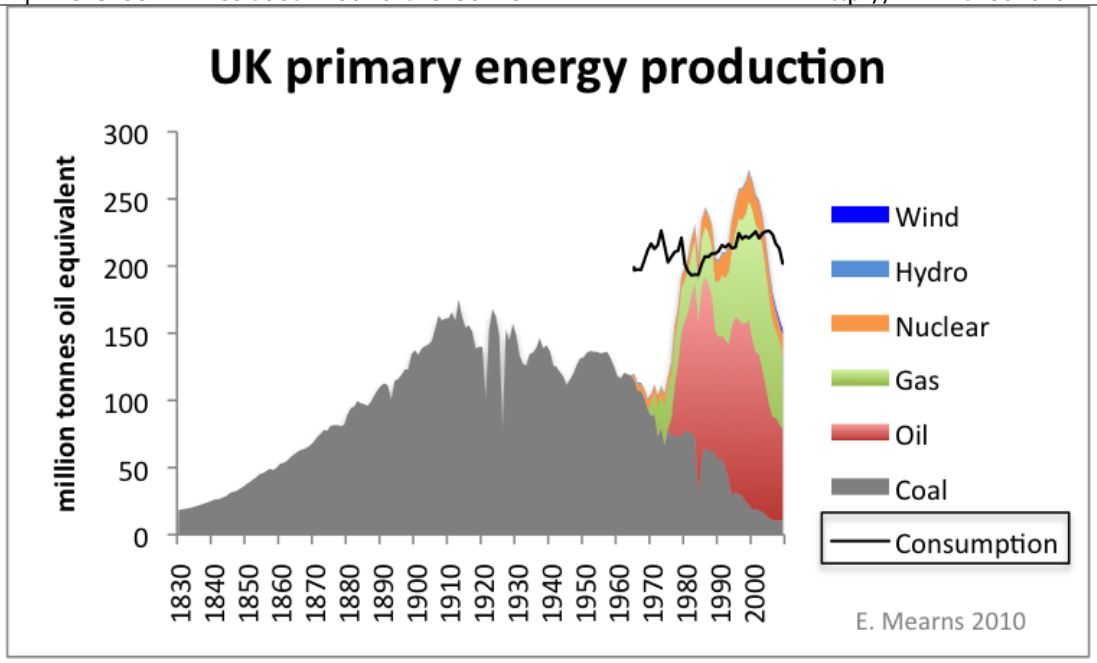
This is a guest post by Dr John Constable who is Director of Policy and Research at the Renewable Energy Foundation in London. This article first appeared in Standpoint, a leading monthly cultural and political news stand and online magazine. We thank the editor, Daniel Johnson, for permission to republish the text here. Hugh Sharman will shortly provide a review of John's article together with further opinion on the direction of UK energy policy.

In private, the best-informed analysts now agree that Britain's environmental policies have put the country on track to have the world's most expensive electricity. This is mainly because our competitors are almost certain to choose cheaper routes to emissions reductions, such as natural gas, or to shun emissions reductions altogether. The Coalition's own Annual Energy Statement for 2010 concedes that by the year 2020, nearly one third of the average domestic electricity bill will consist of green energy charges imposed by law (£160 out of £512, or 31 per cent). Business will be hit even harder, with environmental charges for the average medium-sized non-domestic user accounting for £404,000 out of £1.224 million, or 33 per cent.

If other economies are more cautious in loading burdens upon their wealth creators, Britain will be a less attractive place in which to deploy capital, with obvious implications: high green charges on domestic bills might be merely questionable when household income is both stable and generous, but they would surely be indefensible in the context of lower wages and unemployment.

Government takes comfort from estimates that energy-saving policies, for example to encourage the use of better fridges, will reduce annual domestic electricity bills by £187 in 2020, and by £128,000 for non-domestic consumers. Such savings are desirable, but they are also extremely uncertain, even improbable. And if, as seems likely, these savings do not materialise, then consumers will be looking at very testing bills made still more trying by environmental policies. They may not like what they see.

Public awareness of these concerns has been inhibited since the costs of environmental legislation tend to be moderate in the short run, with the pain of the full impact only likely to be felt in years beyond the political horizon. However, it is clear that the impact of subsidies is already economically significant even if it is not yet psychologically salient. Britain is obtaining only a fraction of its electricity from renewable sources, just under 7 per cent in 2009-2010. The wholesale price of that quantity of electricity would be approximately £1bn, but the Renewables Obligation, a complex subsidy paid to generators but drawn indirectly from bills, adds a further £1.4bn, more than doubling the cost to the British consumer.



The predicament of UK energy policy illustrated by declining oil, gas, coal and nuclear energy production.

In its first three months, from July to September 2010, the Feed-in Tariff for microgeneration (guaranteed prices to support, among other things, solar photovoltaics [PV] and wind turbines up to a capacity of five megawatt) has produced roughly 0.005 per cent of UK annual demand, at a cost of £2.6m. This generous support has encouraged the construction of an installed capacity of microgenerators totalling 59 MW. To put that in perspective, peak load in Britain on a cold winter's afternoon is nearly 59,000 MW.

The implication is that should renewables contribute a large share of national needs in 2020, then environmental costs will become politically visible. If some 30 per cent of UK electricity were renewable in 2020, this would require an ongoing annual subsidy of upwards of £6bn (assuming an average subsidy of 5p per unit).

Furthermore, the subsidy is not the end of the additional costs implied by the policies. The character of most renewables increases overall system operating costs. Wind power, for example, requires sufficient flexible conventional generation to meet demand at times when the wind fleet is all but becalmed, and major grid expansion. Such costs are inherently difficult to estimate, but they are very unlikely to be trivial.

The question is whether these generous levels of tax and spend - and the Renewables Obligation is classed as such by the Treasury and the Office of National Statistics - will produce any compensating benefit. The government's own Impact Assessments are not encouraging. The lifetime cost of the Feed-in Tariff scheme is £8.6bn, while its benefits, including climate change benefits, amount to only £420m (technically, the Net Present Value is negative £8.2bn). Government's figures for the revised Renewables Obligation needed to meet the 2020 targets shows that costs exceed benefits by £33bn. The emissions savings fail the government's own cost-effectiveness tests.

Although such policies should never have been allowed to proceed, they duly became law under Labour and the Coalition has yet to grapple with this toxic inheritance. Indeed, it would seem that the current government has persuaded itself that the transition to a low-carbon economy will redeem the situation.

In a speech to the Confederation of British Industry last October, the Prime Minister David Cameron said of the offshore wind programme: "It's a triple win. It will help secure our energy supplies, protect our planet, and the Carbon Trust says it could create 70,000 jobs." Well-meaning talk of this nature needs to be tempered with cool reason. While the gross effect of public expenditure on renewables may well be positive, the net effect is likely to be negative as the costs of creating jobs in the green sector reduce activity in other areas. An authoritative 2009 study from the Rheinisch-Westfälisches Institute for Economic Research (RWI) in Essen notes: "Initial employment benefits from renewable policies soon turn negative as additional costs are incurred. Trade, and other assumptions...claiming positive employment turn out to be unsupportable." Such wealth destruction is hardly surprising when it is considered that the subsidies per worker in the German solar PV industry exceeded €175,000, far in excess of average wages. The study adds: "It is most likely that whatever jobs are created by renewable energy promotion would vanish as soon as government support is terminated, leaving only Germany's export sector to benefit from the possible continuation of renewables support in other countries such as the US."

Spain's experience is even worse. In a May 2010 document, the country's Ministry for Industry showed that businesses were paying 17 per cent more for electricity than their European competitors, largely as a result of subsidies to renewables, which were €5bn in 2009. It also noted that whereas prices should have fallen due to cheap fuels, they actually rose because of environmental policies.

Moreover, because Spanish energy companies do not recover the full cost of renewable generation from consumers, but accumulate government debt instead, one company alone, Endesa, was owed €8.3bn by the state at the end of September 2010. The total "tariff deficit", as it is called, amounted to around €16.5bn in 2010, and according to the ministry, will increase by a further €2bn in 2011 in spite of efforts to rein in subsidies. Whether Spain has fared any better than Germany in its attempt to create a self-sustaining green or low-carbon economy is also open to doubt. A study by Gabriel Calzada Alvarez of Madrid's Universidad Rey Juan Carlos has estimated that the market distortions needed to create one green job destroyed two jobs in other sectors. Since 2000, each green-sector job has cost €570,000, with wind-industry jobs costing €1m. The details here are debatable, but they are consonant with German experience, and do not bode well for Britain.

Perhaps the most instructive example, and of particular relevance to the Coalition, is the Japanese solar thermal hot water industry. In response to the first oil shock, governmental support created a market that was by the early 1980s installing 2.7m square meters of panels a year. Unfortunately, the resulting companies were weak and the products were either poor or poorly installed, with the result that the industry not only collapsed as the oil price fell but, due to consumer disenchantment, has failed to recover in recent years in spite of higher hydrocarbon prices. Installation rates have flat-lined for the last decade at around 0.25m square metres a year and it is at least arguable that the Japanese solar thermal industry is less vigorous than it would have been had the government never offered a helping hand. The Japanese call this the "solar tragedy".

All told, subsidies and targets are unlikely to be a successful means of driving energy system change, and probably entail government responsibility for the income of a large part of the electricity sector, perhaps in perpetuity, with consequential gross inefficiency and wealth destruction through misallocation of resources.

Despite these dismaying precedents, the Coalition is attempting to drive a green industrial revolution by means of state-guaranteed rates of return for investors in nearly half the electricity sector. The Government's own figures show that this will be expensive, resulting in costs that will seem all the more insupportable if natural gas prices remain low. In addition, current ambitions may have disastrous opportunity costs. To achieve targets, government must commit itself to

currently available emerging technologies and thus will forestall or forego as yet unknown inventions and innovations.

No one knows whether there is a green low-carbon economy waiting for us in the more distant future, but we can be confident that the current policies — the EU Renewables Directive, the Renewables Obligation, the Feed-In Tariff and the Green Deal — are most unlikely to deliver such an outcome. Indeed, they are probably counterproductive, since they insulate nascent technologies from competition and thus infantilise them.

But push is coming to shove, and as quotidian pressures make themselves felt, the green subsidies will be slowly reduced, and our short-term electricity needs met by patched-up coal and nuclear stations, and by older gas plants. A new generation of Combined Cycle Gas Turbines is likely, though build rate will not be of satisfactory scale or pace if government fails to restrain the growth of subsidised on- and off-shore wind power, which is damaging the investment case for all unsubsidised technologies.

Concerns over gas availability and price appear to be alleviated by the unexpected growth of global shale gas production, though there are residual anxieties that the UK may become overwhelmingly dependent on one fuel for reliable electricity. As a consequence, there will be pressure for nuclear and for high-efficiency super-critical coal after 2020.

There is a strong argument for steering into this skid, rather than looking away as the Coalition seems inclined to do. Britain could renegotiate a more realistic and equitable commitment under the EU Renewables Directive (one quarter of the EU-wide costs of the scheme fall on us), while the various renewables subsidy mechanisms could be wound down or cancelled retrospectively for those generators whose capital has been recovered. Instead, government could announce a combination of a carbon tax and a realistic set of emissions regulations. The emerging Emissions Performance Standard might be a basis, but will need revision if it is not to discourage any and all conventional generation.

Regulation and judicious tax could be used to specify the character that we wish to obtain of our electricity system, so that the energy sector can quickly find the most cost-effective way of realising that desire insofar as it is practical to do so. However, this would require significant improvements in the transparency of Britain's electricity market, which at present is far from truly liberal. Many of the costs imposed on the consumer are still concealed and there are areas in which relevant information is either difficult to obtain or simply non-existent, inhibiting new market entrants and preventing understanding of problems and system inefficiencies that might be solved by novel technologies. The government's forthcoming Electricity Market Reform could serve as the vehicle for such a radical programme, but it would require all of the PM's charm to overcome the objections of vested interests.

With current errors decisively corrected in this way it is just possible that we might see the beginnings of a self-supporting low-carbon economy that also generated sufficient wealth to fund adaptation to climate change, should that be necessary. By contrast, the present policies can only offer emissions reductions through further deindustrialisation and significant economic contraction, effects that are unlikely to be popular with the electorate whatever the weather.