

## Oxford Energy Comment

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# Current German Energy Policy - the “Energiewende”: A UK and climate change perspective<sup>1</sup>.

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**John Rhys**

A common assumption, perhaps particularly in UK media debate over climate and alternative energy issues, is that the UK lags other European countries, with Germany held up as a champion of Green policies and a paradigm of progress in the application of renewable energy sources. And it is certainly true that Germany, as might be expected from the EU’s foremost manufacturing economy, has been a leader in developing green technologies, promoting their use within Germany, and exporting worldwide. Germany’s contribution to low carbon technology is therefore a real one.

However this only serves to conceal a broader and fundamental weakness of German energy policy, usually referred to as the Energiewende, and its inability to confront adequately the biggest single global challenges of this century – securing low carbon sources of energy to fuel modern economies, while reducing CO<sub>2</sub> emissions with urgency. The harsh reality is that in this respect Germany underscores the failure of the EU as a whole, a failure highlighted by the recent collapse of the carbon price under the EU ETS, which will continue to make it harder for firms, and governments, to justify investment in the low carbon economy.

In this comment we suggest that the inadequacies of German policy making are explained, at least in part, by a misconceived and erroneous approach to risk, and to comparative risk in particular. Such misconceptions, and indeed inadequacies of energy policy in general, are not confined to Germany, and they are therefore of wider international relevance. A further factor, again of international relevance but not explored in this comment, is perhaps the strength of coal interests, even within the environmental debate, and Germany’s historic commitment to coal.

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<sup>1</sup> Many of the observations in this comment were published in March 2013 in *The European*, in German, under the title *Großbritannien: Eure Angst verpestet unseren Planeten*.



## **Carbon emissions and energy policy in Germany.**

First we should note that Germany starts with one of the highest per capita carbon footprints in the EU, largely driven by its use of coal. The most recent IEA statistics<sup>2</sup> on per capita emissions of CO<sub>2</sub> put the German footprint above the EU average and higher than that of, for example, Poland. It is higher than the UK and substantially higher than France. It is higher on a GDP basis, and appears to be high even when manufacturing, which in Germany is relatively large, is left out of account. The prime explanation for this is, on most measures, but unsurprisingly, the relative dependence of the German power sector on coal. The emissions content of the power sector is, and will continue to be, a prime driver of success or failure on CO<sub>2</sub> objectives almost everywhere. Germany has a legacy of dependence on coal.

What is more disturbing is that Germany is moving its power sector in the wrong direction.<sup>3</sup> Phasing out nuclear will increase coal use significantly. Germany is building new lignite stations without the prospect of carbon capture and storage (CCS). These are the worst possible policies from a perspective of seeking to limit or reduce CO<sub>2</sub> emissions.

Germany does not promote CCS, which would substantially mitigate coal emissions, apparently on the basis of safety or environmental issues. It is also foregoing gas. Gas is a second best in relation to low carbon generation, but it is far superior to coal. This choice reflects the higher cost of gas, and in that sense is a natural consequence of current gas prices and power producers seeking to minimise their fuel costs. However German energy policy, more broadly, has placed high reliance on expensive incentives for intermittent renewable energy in order to meet its “Green” CO<sub>2</sub> objectives. This contrast implies a policy full of contradictions, in which the worst fossil fuel is preferred on cost grounds, at the same time as pursuit of expensive and possibly unaffordable “Green” policies is apparently failing to offer a low carbon footprint.

The science relevant to the understanding of anthropogenic emissions and their effect on climate also tells us that CO<sub>2</sub> is essentially cumulative<sup>4</sup>. Current and early emissions are therefore substantially more damaging. They promote earlier onset of climate change, with less time for adaptation. So the immediacy of the nuclear shut-down, and the failure to embrace gas as a second best solution, is particularly unwelcome from a perspective of global responsibility.

### **Treatment of Risk.**

The core of the German energy policy conundrum, and the contrast between its professed Green ambitions and a decidedly un-Green reality, lies in implicit comparisons of the very

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<sup>2</sup> CO<sub>2</sub> Emissions from Fuel Combustion. Highlights (2012 Edition). IEA.

<sup>3</sup> See for example The Energiewende – Germany’s gamble. David Buchan. OIES Working Paper. June 2012. Coal projections are shown on page 23.

<sup>4</sup> Cumulative Carbon Emissions and Climate Change. Has The Economics Of Climate Policies Lost Contact With The Physics? John Rhys. OIES Working Paper. July 2011.



different risks and dangers associated with nuclear accident, CO<sub>2</sub> storage, and climate change. We all find rational and consistent consideration of risk difficult; the problem is accentuated by the emotional and political charge attaching to both nuclear and other environmental concerns. That makes rational comparison of the real risks even more important.

Concerns on nuclear safety are real, and amplified by individual disasters such as Chernobyl and Fukushima; and technical and scientific evaluations of nuclear risk are controversial. But the 2005 WHO report on Chernobyl showed that even this, by a margin the most serious nuclear incident in history, was finite in its effects. British environmental campaigner George Monbiot took a similarly restrained view after Fukushima<sup>5</sup>, changing from a nuclear-neutral to a pro-nuclear stance, and inter alia criticising the wild exaggeration of the health risks of radioactive pollution. Risks associated with geological storage of CO<sub>2</sub>, the other casualty of this risk aversion, are less well documented, and controversy is more recent. But there must be suspicion that these too have been exaggerated in pursuit of an illusory “no risk” future. The Monbiot view is not complacency. It is perspective.

In this regard the differing UK<sup>6</sup> and German<sup>7</sup> assessments and responses to the Fukushima accident, called for by their respective governments, are instructive. The UK assessment was factual and analytical, drawing out the important lessons for UK nuclear safety, but concluding that the incident did not provide any basis for changing UK policy on nuclear power. The German report, by contrast, provided little in the way of evidence or analysis but appeared to proceed immediately to the conclusion that German nuclear plant should be phased out as quickly as possible. The analysis of comparative risk in this report appears to be completely absent and is therefore hard to criticise. It was however influential in triggering the current nuclear moratorium.

### **The nature of a risk and its economic consequences.**

It is important to understand the very different nature of the risks associated with operating accidents in the energy industries, and the risks associated with man-made climate change. The key factors in this context are the time interval between cause and effect, and the ease with which blame can be attached.

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<sup>5</sup> Why Fukushima made me stop worrying and love nuclear power. Japan's disaster would weigh more heavily if there were less harmful alternatives. Atomic power is part of the mix. George Monbiot. The Guardian. 21 March 2011.

<sup>6</sup> Japanese earthquake and tsunami: Implications for the UK nuclear industry. Final Report .HM Chief Inspector of Nuclear Installations. September 2011.

<sup>7</sup> Germany's Energy Transition: A Collective Endeavor for the Future. Prepared by the Ethics Commission for a Safe Energy Supply. Berlin, 30 May 2011.



Unfortunately for both the commercial prospects and public acceptability of both nuclear and CCS we know that if or when an accident were to occur, blame can be attached to a particular site and operator. Moreover the risk starts when the site starts to operate. It is therefore immediate in time and place. Identification of blame is of course not necessarily confined to the power sector. It occurs with activities such as oil exploration, which, as the recent Deepwater Horizon episode shows, are equally capable of generating damage claims running to many tens of billions of dollars. But incidents such as these, rarely compensated on the scale demanded by US courts, mostly fail to enter the public consciousness to the same extent as nuclear.

Identification of blame for individual events is important in one other sense. Unlike the serious climate impacts of fossil fuels, where responsibility will be diffuse and general, identification means that nuclear operations become in principle an insurable risk. This leads on to the accusation that governments provide a hidden subsidy to nuclear power because they are de facto forced to assume responsibilities for risk. They are of course by this standard unconsciously providing, collectively, a much larger subsidy to fossil fuel emissions, because they have no way of avoiding responsibility for addressing the uninsurable climate consequences for their own populations.

The contrasting nature of the risks of CO<sub>2</sub> emissions is very clear, both in terms of the time lag and the absence of an obvious party to blame. Except perhaps to an increasingly shrill and isolated group of sceptics, the science could not be more definitive in describing the mechanisms, the nature of the risks, and the residual uncertainties. It certainly rests on a far more secure foundation of evidence and analysis than many of the assumptions about the health risks from low-level radiation. The potential human and economic costs of unconstrained emissions are immense, and, in plausible worst case scenarios, catastrophic. But the effects are relatively long term and not immediate. Moreover they arise from the aggregation of a very large number of individual activities, are diverse in their impact and will never be attributable to a single plant or even a single country. The problem is therefore global both in scope and solution. Unfortunately these features of the risks encourage political responses that are both myopic and parochial. The political and emotional response is, for these reasons, oriented towards shorter term, locally visible, finite risks rather than the much larger threat posed by climate change.

### **German Policy in a Global Context**

The issue of carbon footprint, and especially through coal, corresponds to other economic imbalances in the world economy and the eurozone. China has a substantial trade surplus in global terms just as Germany has in the eurozone. These are perhaps the most important manufacturing economies in the world, but both retain high dependence on the world's most polluting fuel. This is pure coincidence, but we should in consequence expect to hear the very rational argument that part of the case for rebalancing trade is that it would reduce



energy use and hence coal consumption in those countries. China, in contrast with Germany, has a large nuclear investment programme, as well as being a leader in wind power.

The UK faces the same emotionally charged choices over effective climate policies and over continued nuclear power, and analogous economic choices on costs and subsidies. For the moment its fragile consensus continues to favour positive action on climate, and acceptance of a new nuclear programme. Germany's simultaneous capitulation to anti-nuclear prejudice and willingness to compromise on cheap high CO<sub>2</sub> emissions coal, is therefore a disappointment to British supporters of EU ambitions to lead on climate change. Ironically Germany's excellence in engineering means its nuclear power is likely to be as safe as anywhere in the world. The moratorium will mean, eventually, that more, less safe, nuclear is built elsewhere.

From this perspective, German policy, with a nuclear moratorium and a move to more coal but without mitigating CCS, seems shortsighted and parochial. It undermines the EU position on climate change issues, already weakened by the shortcomings of its flagship emissions trading scheme. It puts at risk Germany's primacy in manufacturing (if the "external" or true global costs of pollution are ever internalised to tax the use of coal). It raises the probability of global failure to address climate issues, and ultimately leads to a less safe world.