All living organisms and social arrangements are physical systems; capitalism is no exception and we have ignored this at our peril. The physical engine of capital relentlessly destroys carbon and methane sinks, releasing greenhouse gases. It wreaks havoc with ecosystems, biodiversity and human wellbeing. By early 2006, some expert climate change modellers had estimated that the global CO$_2$ concentration level above which dangerous climate change is unstoppable had already been reached. While the building of an ecological capitalism is being imagined, the creation of any kind of ‘re-humanized nature’ under capitalism cannot be achieved without an increase in physical waste and increased entropy, as defined by Elmar Altvater in his essay in this volume.

In the final chapter of his influential book, *The Future of the Market*, Altvater seeks the genesis of a new kind of socialist project in a ‘re-moralization of resource allocation’ which he thinks neither markets, nor the ‘thin’ democracy permitted by markets, allow. He concludes: ‘(t)oday the further evolution of society is possible only if the economic rationality of market procedures is firmly embedded in a complex system of social, non-market regulation of money and nature’. Energy must be central to such a project, but the systems properties of its fixed physical infrastructure exemplify the formidable obstacles it faces. For many good reasons nuclear energy is an unacceptable option; and if energy conservation (or so-called ‘energy efficiency’) is recognized as insufficient, we are left with renewable energy generation. It is from renewable energy that Altvater’s alternative of a low-impact, ‘entropy-minimizing’, democratically-regulated social infrastructure might be developed.
Any alternative must start from where we are now. This essay describes how the market-driven politics of energy in the UK (whose economy is now powered by coal, oil, gas and nuclear energy) are blocking the development of renewable energy, which has physical and technological properties consistent with new, lower-waste forms of capitalism and also with a sustainable socialist economy.

RENEWABLE ENERGY: THE ISSUES

Renewable energy is energy in which the energy transfers in production are too small to deplete the resource. It started to develop in the 1970s, due much less to Rachel Carson, Barbara Ward or the Club of Rome than to the first oil crisis and the need to ensure energy security. By far the most quantitatively important ‘green’ source, accounting for 95 per cent of renewable energy, is hydro–electric power. This was developed long before the politics of renewables emerged, and not with a view to economizing on CO$_2$. (It isn’t all that green either – the flooded organic matter in dammed lakes produces huge quantities of methane as itrots.) Next in importance is gas from landfill, sewage and waste. This is a secondary revenue stream for companies which commodify waste. For the most part it is the product of sealed municipal rubbish dumps. British waste, not being much recycled, contains organic matter whose decomposition generates methane and CO$_2$ which can drive small turbines. Of course, the process generates ‘additional combustion products’ – more waste, pollution and hazards. But landfill itself is estimated to contribute nearly half of the UK’s methane emissions, so that its conversion into energy is now regarded as ‘green’, and as such is eligible to receive state incentives and a guaranteed market.

It was not until 2000 that the Utilities Act officially identified a set of renewable sources of energy in Britain (the full range of which is outlined in the Appendix to this essay). Alongside hydro–electric power and energy from waste the list includes, first, wind turbines, the production of which, apart from small specialized firms, is under oligopoly control and consists of by-product lines from other industries. Then there is solar energy from photovoltaic panels, a decentralized field of accumulation with a small number of significant installation firms and an expanding base of small builders. Agricultural and forest residue and biofuels (in the UK mainly from varieties of willow and poplar) is a very small sector at present, and wave power is completely undeveloped – although a Scottish firm is to build a commercial wave power station in Portugal. Geothermal energy is also undeveloped.

None of these sources is at the cutting edge of research; most are at the infant industry/development stage, and some are already established as fields
Moreover, what counts as ‘renewable’ has been continually and opportunistically re-defined. In July 2005, in a Washington agreement among states on the Pacific rim, ‘cleaner’ coal, one of the world’s most polluting industries, was even relabelled a green technology. Meanwhile ‘sustainability’, which has never been given a testable definition, is used interchangeably with ‘renewables’; it has been watered down to ‘resources sustainably available in the environment’, and even leached into mere ‘growth’.

Two powerful arguments have been made for renewable energy as a socially and politically transformative technology. One stresses the potential of its optimal small scale to service ‘sustainable communities’ and to decentralize and democratize energy control. This argument is mainly beamed at ‘late-developing’ countries where energy grids are defective, transmission losses are profligate, decentralized energy generation is necessary and ‘rural communities’ which could manage it are believed to exist. Another argument, which stresses the social value of ‘self reliance’, can be used at any social scale. Self-reliance is a very far cry from socialism, but insofar as supply security would be one of the basic socialist securities, then renewable energy does not impose any obstacles to it, as so much existing capitalist technology does.

The economic efficiency of renewable energy has, however, come under relentless attack, on three main grounds. One is that the operating costs of renewable energy are, and always will be, essentially higher than those of fossil energy. A second concerns the lack of security and the unreliability of renewable energy, either for base or peak load generation. A third highlights the technical difficulties and costs of making decentralized generators compatible with the electricity network.

Against the first criticism, concerning cost, it needs to be said that all energy technologies have required protection until scale economies and learning effects have been realized. The subsidies provided for research and development in renewable energy are only a minute fraction of those provided historically for fossil and nuclear technology. ‘Capital costs’ also change over time for other reasons: green technology is currently being created in the OECD, transferred to developing countries, reverse-engineered there and re-exported to its countries of origin. The debate over cost will not be resolved until the total costs over the lifetimes of all types of generating source have been computed on reasonable assumptions about optimal scale. But, not least because of the secrecy in which nuclear energy is shrouded, this research has apparently never been carried out.

The second objection is that renewable energy can only play a walk-on part in any energy scenario due to the physical impossibility (let alone prohibitive capital cost) of providing the excess capacity needed to cover...
fluctuations in both demand and supply, and of providing cover for main- 
nance and repair. Against this it can be argued that optimal mixes of renew-
able energy can meet fluctuations in predictable ways, particularly once the 
technical problem of storage batteries has passed from the research to the 
development stage. It can also be argued that the physical potential of renew-
able energy has been deliberately underestimated. This potential is huge: for 
instance, a ‘combination of offshore and onshore wind could provide up to 
35 per cent of the UK’s electricity’.  

The third misgiving, about the engineering infrastructure, needs to be 
taken quite seriously. Capital in the UK has from the beginning cherry-
picked energy sectors and developed them as monopolies. An electricity grid 
was subsequently created, into which energy from generators throughout 
the country could be supplied and distributed in accordance with demand 
and supply movements, and subsidised as a ‘natural-monopoly’ public serv-

ice. Half a century old, and impossible to either replicate or dismantle, the 
British grid is not designed to enable the easy connection of decentralized 
micro-generators or to protect the operation of the grid under conditions of 
decentralized maintenance and repair. It cannot be denied that cost-effective 
technology will have to be developed if the number of small-scale renewable 
energy sources is to be vastly expanded and linked to the grid. 

The case for renewable energy can also be based, of course, on concep-
tions of social justice. This seems to be better understood on the periphery 
than in the heart of the capitalist system. To quote the Indian National Fo-
rum of Forest People and Forest Workers: ‘the major impact of the tempera-
ture increase foreseen for this century will be increased climatic turbulence 
and a rise in sea level; the impact is expected to be disproportionately visited 
on the poorest workers in the most deprived physical ecology’, while ‘(t)he 
major responsibility for avoiding social, environmental and planetary crisis 
should fall on industrialized countries’ which have caused this destruction.  
The global climate change negotiations have been unequal and unjust both 
in the process and in their outcomes; people alive today are actively reduc-
ing the capacity of the earth’s atmosphere and biosphere to sustain not only 
current generations living at the ecological and social margins, but also fu-
ture generations everywhere.  

Polluters have an obligation in natural justice drastically to reduce, at whatever economic cost, their emissions of damaging 
greenhouse gases, both to mitigate climate change and to enable adaptation 
to it. But how far do people see and acknowledge this obligation? One of 
the last public remarks the former Labour Foreign Minister Robin Cook 
made before his death in 2005 was to express perplexity about the contrast 
between the mobilization of public sentiment on behalf of Africa, but not
about climate change, that ‘will swamp progress made on debt… [and] cause Africa to suffer more’.25

Finally, there is a self-interested geopolitical argument focused on the collective threat of the greenhouse gases expected to be produced by the coal-based industrialization of populous countries such as India and China. In a ‘soft’ version of this argument, industrializing countries will be subsidised by the heavily-polluting old industrial countries (or by companies headquartered in them), to protect carbon sinks and develop renewable energy.24 A harder version of the development argument stresses the need for a demonstration effect – the extreme improbability that newly-polluting countries will follow any unorthodox models, especially ones requiring substantial state direction and subsidy, unless the OECD or G8 countries do so first. In the absence of evidence that long-established, massive polluters are meeting their obligation to develop renewable energy, many people in developing countries feel they too have a ‘right to pollute’.25

Renewable energy means less destructive entropy, and is urgently needed to stabilize climate change in five decades’ time; it has been successfully demonstrated in small-scale applications and yet is also not resistant to scale economies, and has already been proved to be consistent with a range of forms of ownership from corporate capital to experiments in common ownership; it has also been developed on a much larger scale elsewhere – notably in Scandinavia and Germany; and the use of renewable energy by industrialized countries is a *sine qua non* for a demonstration effect on China and India, whose additions to global warming are about to become catastrophic.26

This brings us to the main focus of this essay, the lamentable record of the UK in relation to the development of renewable energy. What are the conditions retarding the development of renewable energy sources in the UK? These conditions are mainly political. In the first of the two sections which follow, the focus is on the state and its politics; in the second on the politics of markets and civil society. Markets, moreover, are inter-connected. We must look at the politics of all the significant markets which might be threatened by the emergence of renewable energy, and at the interests (including those of labour) which might resist its development. We have to deal not simply with the market-driven politics of commodification,27 and not only with the politics of ‘new’ technologies and energy sources, but also with the politics of ‘path dependence’. What may look like a simple question about the slow development of renewable energy has the widest possible ramifications.28
UK ENERGY POLITICS I: STATE PARTICIPATION AND REGULATION

Under capitalism, the state is compelled to participate in energy production in order to contain the many sources of risk, to manage the network of networks by means of which electricity is produced and distributed, to manage the R and D phase of desirable new technology, to mediate trade-offs, moderate social interests and cater to the needs of key constituencies (‘fuel-poor’ pensioners, for example), as well as raise resources for all this. It has to regulate and coordinate energy markets within the broader framework of state-market relations. Most modern states are up-front about these complex obligations, but the British state, even though it is not completely gripped by neoliberal ideology, has been shedding them. Over the last two decades the British state has swung from active participation to a politics of discursive aspiration. In opposition, the Labour Party was ambivalent about leaving electricity in the hands of private capital; in power, it has presided over the creation of so much excess private energy capacity that by 2000 it was undermining not only nuclear energy but also renewable energy not to mention energy conservation or energy efficiency.

New Labour has been officially committed to evidence-based policymaking, with clear emissions reduction goals and with a leader who repeatedly claims that climate change is ‘our top priority’. But the UK’s CO₂ emissions have risen at least 5.5 per cent above 1997 outputs, when Labour came to power, and rose by 2.5 per cent over 1997 levels in the first six months of 2005 alone. With just 1 per cent of the world’s population the UK produces 2.2 per cent of the world’s greenhouse gases. Only 2.7 per cent of UK electricity generation is from renewable energy – a ‘lamentable record’ compared with Spain (16 per cent), Denmark (20 per cent), Finland (26 per cent), and Sweden (47 per cent). Stuck for years at the ‘infant industry’ stage, renewable energy in the UK has been described by the leading authority on energy policy, Dieter Helm, as ‘not much more than a political lobby’. In 2000, the House of Commons Audit Committee described UK climate change strategy as ‘seriously off course’. In 2004 the House of Lords’ Science and Technology Committee deplored ‘the minimal amount that the Government have committed to renewable energy-related R and D’. And in 2006 the Environmental Audit Select Committee accused the Treasury of ‘mystifying institutional inertia on green policies’.

Yet New Labour’s rhetorical commitment to environmental protection has remained heavy and consistent. Why then has its development in the UK been so slow, and why has this fact not attracted more attention?
The architecture of bureaucratic politics

Responsibility for vital sectors of the economy is often spread across more than one department of government, just as responsibility for defence is not restricted to the Ministry of Defence. On the one hand this reflects the importance of such sectors, and might even be interpreted as rational – a case of ‘policy mainstreaming’ across the state (of the kind that is today advocated, among other things, for gender!). But then strong co-ordination is required to prevent conflicting departmental/ministerial objectives from creating incoherence, and that is most notably absent.

In the case of UK energy policy, responsibility is spread across the Department for Environment Food and Rural Affairs (DEFRA) whose responsibilities include targets, regulation, globally sustainable development, and emergencies; the Department of Trade and Industry (DTI) with responsibilities for energy generation, utilities regulation, and a low carbon economy; the Department of Communities and Local Government, responsible for urban planning, on-site renewable energy, and energy efficiency; the Department for Transport, concerned with marine and land-based environmental risks, fuel and transport infrastructure, and sustainable travel; the Office of the Deputy Prime Minister, responsible for what are known as ‘residual neighbourhood renewal functions’; the Treasury, where the economic instruments to compensate for the impact of climate change are centred; and, last but not least, the Department for International Development (DFID), responsible for overseas aid related to renewable and non-renewable energy. Also involved in energy policy-making are the Prime Minister’s Office, two formal sectoral agents (the Chief Scientific Adviser and the regulator, known as Ofgem), the Head of the Economic Service (who straddles the Treasury and the Cabinet, and chairs the review of the economics of climate change), the Environment Agency (the major ‘quango’, as semi-independent ‘quasi non-governmental’ organizations are known in the UK), and many advisory bodies with state funding (such as the ‘Carbon Trust’, advising on renewable energy with authority from the energy industry).

Far from being coordinated, some of these departments and agents are known to be at loggerheads. For example, the publication of the ‘plan of action’ review on climate change targets, inaugurated in 1997, was delayed by a year from the summer of 2005 due to differences between DEFRA (optimistic) and the DTI (pessimistic) on the likelihood that the targets could be met. Departments have been reorganized and relabelled and their remits altered, and internal departmental inconsistencies have seriously affected the public interest. The DFID, for instance, is rhetorically committed to renewable energy, yet has funded only £3.6 million in research on renewable energy.
energy over the entire decade ending in 2004, a sum completely swamped by its investments in oil infrastructure and other fossil fuel projects. Yet DFID might have been expected to spearhead the whole British response to climate change, given its responsibility for development in the Third World, if only because this is where mitigation and adaptation, seen from a global perspective, would be cheapest. In addition, conflicts of economic interest have long been politically institutionalized. Industry groups openly devise government policy (the Emissions Trading Group, for instance, makes official policy for carbon trading) and individual government advisers, supposedly giving disinterested advice to the government, personally embody conflicts of interest (one was discovered in October 2005 to be simultaneously advising the government, the nuclear lobby and green energy clients), while the periods in office of ‘environmental trustee-politicians’ and civil servants are often inappropriately short.

The maze-like structure of energy policy-making is a recipe for policy failure – and also one that may be easier for business to infiltrate than the structure of a unified, dedicated department. Not that there is much evidence that infiltration is resisted. Quite the reverse.

*From hard production technology to dematerialized markets*

New energy markets require significant and stable public subsidies. In the case of renewable energy this is not merely a problem of providing subsidies for capital and running costs; it also involves the public costs of managing the integration of renewable energy into the ageing electricity network. State economic support for renewable energy is generously estimated as having been the equivalent of 2.5 per cent of the subsidy for the nuclear industry’s processing costs alone.

In the light of what has just been said it is not surprising that the British state has a history of incompletely informed and highly politicized decisions on energy technology. In the name of theories of market efficiency, it has shed both public ownership and its risk-bearing role. Irreversible decisions on energy have been taken on assumptions of cheap and abundant supplies, consumer sovereignty, and market competition. The problem of climate change has been treated sector by sector and policy tweak by policy tweak. Yet at the same time policies are being promoted based on the need for the state to compensate for market failure, the need to stabilize market shares and the necessity for stable finance for implementation. Indeed, such policies as it has for renewable energy – subsidising renewable energy use and taxing energy to subsidise the development of renewable energy, as well as setting (shifting) targets for the market share of renewable energy – can be seen as
state compensation for the failure of the very market mechanisms it otherwise promotes and extols. Furthermore, the state has been left bearing the cost of the long-term liabilities for the coal and nuclear industries (pollution, waste disposal and land rehabilitation). Labelled ‘residual’, they are anything but.

The British state has shrunk from practising an explicit policy of ‘picking winning technologies’, ‘creating champions’, or even bearing the vital long-term costs and risks of infrastructure provision, leaving such decisions to ‘market forces’. But simultaneously it veers in the opposite direction. It has finally managed to define the renewable energy sector both broadly and arbitrarily in order to meet its own pollution reduction targets at least cost – for example by labelling energy from waste as ‘renewable’. But it has remained unwilling to correct non-environmental market failures (in R and D and finance) which handicap the very same set of renewable energy sources. It actively discouraged tidal energy technology at the development stage, by aborting the controversial Severn and Mersey barrages for capturing tidal energy. (The very recent revival of the Severn barrage by a consortium backed by the Secretary for Wales has met with a hostile reception from environmental lobbies.44) It suddenly gave landfill gas expanded scope for meeting renewable energy targets, and equally suddenly halted subsidies to solar energy in such a way as to jeopardize its development phase.45

Apparently unwilling to bear the risks of its own policies, and adamant that British industry’s competitiveness must not be threatened, the government has shifted the development costs of renewable energy onto consumers. And not only the costs: the government is now invoking moral duty and placing responsibility for reducing carbon emissions on the purchasing behaviour of private individuals.46

Stealth has been required to protect the coal industry, so instead of a tax on the production of carbon, which might have concentrated business minds wonderfully, energy has been taxed instead – with negligible effects on the carbon content of supply. Misleadingly labelled the Climate Change Levy, this energy tax was introduced in 2000, festooned with politicized exemptions and ‘negotiated agreements’ (but not exempting the then out-of-favour nuclear energy sector).47

Even the ‘Non-Fossil Fuel Obligation’, which had required a set proportion of electricity produced by renewable energy to be purchased by the regional electricity companies at a premium price, and which was justified as a cross-subsidy to renewable energy, was grossly under-fulfilled – and the DTI has never explained why. Of some 3,000 MW of renewable energy contracted for, only 907 MW materialized. This under-performance
has been challenged by the European Commission but the issue remains unresolved. At its maximum in 1995–6, 8 per cent of the tax which the special price represents was actually used to support renewable energy, and that money was distributed through competitive contract auctions. The bulk of the receipts have actually been used to help bail out nuclear energy, and not through competitive bidding. Similarly, a ‘Renewables Obligation’, according to which non-renewable private electricity suppliers were required to slowly ratchet up their proportions of renewable energy, is clearly being resisted and under-fulfilled. Yet in 2005 the Labour government scuppered an all-party Climate Change Bill that would have increased the state’s modest powers of enforcement.

Instead, advised by expert groups from industry (the Energy Task Force led by Lord Marshall of British Airways and the Confederation of British Industry; and the Emissions Trading Group which rejects renewable energy), the British government has played its contracted part in operationalizing the Kyoto Protocol (the many problems with which are analyzed by Achim Brunnengräber in this volume). Even though the regulation of emissions is less efficient than a carbon tax as a way of mitigating climate change, the government supported the creation of property rights in the form of certificates for carbon markets. These were so-called ‘carbon credits’ (though the carbon-charged, coal-fired generators were exempted). Industries which default on their CO₂ emission targets in relation to a ‘guestimated’ 1990 baseline can continue to pollute provided that they purchase ‘rights’ to preserve existing carbon dumps, or buy stakes in projects purporting to economize on energy, to an amount equivalent to their ‘excess’ pollution. If they pollute less than their limit they may sell their unused ‘rights’ or credits to other polluting firms. A new sector of carbon brokers and consultancies is rapidly emerging which prospects for carbon dumps to privatize in the third world, and which negotiates the price of excess carbon emissions. Currently the price is too low to act as a disincentive to the use of fossil energy. Emissions trading is defended on the unambitious grounds that the institutional pre-conditions are now being established for real carbon-compensating markets to develop. But the price of carbon would have to be very much higher than it is at present for carbon sequestration technology to be made profitable, let alone materially effective.

The Labour government appears to have capitulated, then, to political forces which we will revisit later in this essay. Advised by a task force (composed of energy industry representatives and ‘independent’ regulators, with no representatives at all from the state) charged with devising the regulatory framework for renewable energy, it has settled on a set of unsystematic
and relatively poorly-funded incentives for renewables (see Appendix). These have favoured wind power, a technology originally favoured in the early 1980s by the old Department of Energy on the recommendation of – typically, again – an advisory unit at the British Atomic Energy Authority. Far from picking winners, more than two decades had to pass before a plan for £6bn of investment in offshore wind power was announced by the government. And this is not public, or even state-subsidised, investment; it is a mere target set by the government for private capital to achieve.

State regulation: the politics of necessity, and the politics of ‘aspirational discourse’

Market enthusiasts argue that a universal supply of a basic necessity such as electricity can be assured through private rather than public ownership provided independent regulators have adequate enforcement capacity. But this condition is practically never met. Worldwide, so-called independent regulators are all too often found to be ‘captured’ by governments or bureaucrats who prevent them from acting in accordance with their remit. British regulatory culture is characterized by flexibility and discretion. The capture of Ofgem, the gas and electricity markets regulator, by the New Labour government was seen when it was required in 1998 to support coal and to delay combined-cycle gas turbines. During the 1990s state control over the regulator had already grown massively – along with the costs of regulation – culminating in the vast number of rules and regulations in the Utilities Act of 2000.

But the state in turn was captured by capital and, as the next section shows, abandoned its responsibility for the reduction and stabilization of CO2 emissions. The scope of the Utilities Act was drastically pruned by ‘industry revolts’. The changing roles of coal, oil and gas in electricity generation illustrate this further. Britain’s energy sector is increasingly dominated by gas turbines and imported private oil and gas. Price shocks for gas, in 1999-2000 and 2005-2006, factored in relative scarcities, risks and market turbulence due to the replacement of longer term contracts by spot purchases. Private imports of coal have surged, compensating for high gas prices with scant regard either for climate change or for the development of renewable energy which in 2000 Ofgem had been ordered to support. The sorry result was that in late 2005, under ‘intense industry pressure’, the UK government made a legal appeal to the EU to increase its carbon credits.

Here is where the politics of aspirational discourse comes in. ‘Our first priority is climate change’, said Lord Whitty, the environment minister, in 2004. ‘Low carbon dioxide emissions are at the heart of our way of life’, declared the Labour Party Manifesto in 2005. ‘No country has done more than
Labour (sic) to advance the cause of action on climate change’, announced the minister for environment, food and rural affairs, Margaret Beckett, in January 2006.55 Such is the disconnect between the Labour government’s claims about its achievements and the facts on the ground (such as they are) that something else is at stake. The paramountcy of utterance – often completely un-technical utterance – has a political role and real material consequences.

First, aspirational utterance – the ‘priority’, the urgent political cause – dominates the public presentation of climate change politics and renewable energy. Since 1990, the government’s targets on the reduction of carbon dioxide emissions have been unstable. By and large they have become increasingly ambitious, moving from a 1992 target of getting emissions back to the 1990 level, to – from 2000 onwards – a target of emissions 60 per cent below that level. The velocity of production of statements about targets has also accelerated, while the target dates have receded farther and farther into the future – from 5 to 10 years at the start, to 45 to 99 years at present. The technological means and policy instruments by which these targets are to be reached have never been well specified; the public is deluged with arbitrary slogans and binary choices (first the dash for gas versus imported coal; then nuclear power versus gas; now cleaner coal or nuclear power versus renewable energy). The weighting of announced means and instruments also changes with a speed unrelated to the investment time spans required. They remain strategically vague. The targets and target dates for renewable energy are comparatively modest, yet even these are currently far from being on track.

Energy policy is climate-change policy, and it is hard to see what it is doing other than serving as a mass tranquillizer. David Cameron’s ‘New Tory’ party has also discovered the allure of aspirational climate-change policy, putting ‘the environment at the heart of the repositioning of the party’ and ‘urging the government to re-state its absolute commitment’.56 As of mid-2006, the government was still delaying by many months the publication of research evaluating the dangers of climate change.57 Sir Nick Stern, the government’s chief economist, was not due to report on the economics of climate change until the autumn of 2006 and any hope of cross-party consensus on climate change policy had been abandoned. The material consequence is that while the political system is tranquillized, to judge by trends in aggregate CO₂ emissions it is very much business as usual for polluting production, distribution and consumption.

The second point is that aspirational discourse may allow a given policy to serve changing and multiple objectives over time. Under the complicated, contradictory and unstable regulative regime that prevails for UK energy,
wind and solar energy generation and energy efficiency have all suffered from the ‘multiple objectives’ syndrome. Relabelled as social policy (help for the ‘fuel-poor’, investment in housing, rural development, changes in consumer behaviour, social inclusion, improvements in the quality of life) and hardly ever incentivized, renewable energy and energy efficiency policy is offloaded onto a further set of departments and agencies, each with their distinctive politics, and devolved to regions of the state where all hope of coordination is lost.

Of 300 local councils surveyed in 2005 by the Local Government Association, over 90 per cent reported no progress on renewable energy. Two-thirds attributed this to ‘lack of leadership’ by the government or to active political undermining by Whitehall. At the local level, renewable energy is under-funded and under-staffed. A third of the officers of the non-performing councils also blame resistance by voters and councillors. The permutation of multiple objectives and decentralized responsibility clearly works to prevent the renewable energy sector from developing – and energy efficiency from improving.

Dieter Helm concludes cautiously that while there was a UK energy policy in the past, there is now, despite the regular publication of White Papers, no energy policy addressing ‘the new problems of the environment’. The British government has either actively destroyed – or has passively agreed to lose – the in-house technical knowledge base necessary for devising systematic, stable policy, even in the increasingly discursive and un-grounded way in which policy is now framed. This knowledge-base and every component of the policy process is being systematically commodified. It has also lost the in-house capacity to devise regulatory infrastructure or ‘management technology’. Without strategic authority, the British state is itself undermined and fragmented. It is politically disabled.

Given all this, can it really be said that renewable energy’s halting progress is due to its being inefficient? Sweden’s and Denmark’s progress at least suggests that renewable energy can be efficient. The truth is that renewable energy has not been seriously promoted. On the contrary, the political marginalization of renewable energy has prevented it being seen as a serious energy option. Already three years before the muzzled public debate of 2006, renewable energy was being de-prioritized even at the level of discourse because of the British Prime Minister’s apparent personal wish to rehabilitate nuclear energy. The politics of renewable energy reveal a weakened state at the mercy of industrial interests, and it is to these we now turn.
UK ENERGY POLITICS II: MARKETS AND CIVIL SOCIETY

The struggle for market shares generates a politics as important as that initiated by the state. The practice of treating energy policy by sectors masks the political struggle between companies and between individual companies and the state. Even though it is also labelled as a sector, renewable energy exists in two extreme forms of capitalist organization. One is what one commentator called a ‘fashion statement’ by diverse corporate capitals, while the other is a much larger set of small specialist firms. There is little connection between the two. Despite green rhetoric, corporate capital may have used its influence deliberately to slow down the renewable energy it controls, while small-scale, specialized renewable energy capital is divided between competing renewable energy sources and subjected to inconsistent and intermittent state support which has without doubt constrained its development.

Through their collective organizations, moreover, very powerful disunited industrial interests scramble over a wide range of concessions, subsidies, brokerage activities and infrastructural provisions, all of which are preconditions for their competing, inside and outside the energy sector. Through their funding of, and influence over, knowledge-based services and quangos, they are vitally implicated in the creation of policy about policy on climate change. At the same time the collective organization of renewable energy currently consists of a multiplicity of special lobbies, while the politics of collective action by civil society is entangled around energy at all levels from informal geopolitical activity at the highest scale of strategic importance, down to the NIMBY politics of rural Wales (where the terrain is most attractive to wind-power energy companies). The politics of renewable energy includes not only combative collective action on the part of all these interests but also the inputs of intellectual interests – epistemic communities which have reason on their side, but little else.

The politics of market structure

One of the ways in which analysts depoliticize policy is by considering the structure of energy sector by sector. They are consumed by the drama of privatization and its environmental tensions (not the least of which is the maximization of sales and the minimization of pollution). In the operations of energy companies, however, the various energy sources and markets are mixed up together. And not just energy companies, but industrial capital as a whole. Companies combine energy sources in a great variety of permutations and coordinate their energy investments better than the state coordinates energy policy. What is the impact of the fact that the main political actors are companies, not sectors?
The energy sector used to be structured as a monopoly at each stage. Now it is shaped like an hourglass. Generation is by a range of firms but dominated by a powerful oligopoly; the grid is a monopoly – a heavily regulated quango – while street-level distribution, billing and retailing is done by many firms. Individual companies shape the structure of UK energy and wield huge political clout. The crises and the scandals which attract public attention are a distraction from the deeply contradictory roles they play. Shell’s Lord Oxburgh, for example, is a high profile advocate for the urgency of the problem of climate change. Yet according to Henderson Global Investors (a ‘socially responsible’ investment fund manager), Shell and BP alone are responsible for 40 per cent of the CO₂ emissions of the leading 100 companies on the Financial Times’ Stock Exchange listing and have a large appetite for electricity. BP is also at the heart of carbon trading policy formation. As early as 2001 BP had succeeded in reducing CO₂ emissions from its UK facilities to below 1990 levels. Yet it compensates for under 10 per cent of the 82 million tonnes of CO₂ generated by its operations by carbon-offset, ‘sustainable efficiency’ projects. BP’s products remain massive polluters, generating 5 per cent of the entire world’s fossil fuel emissions.

Just as General Electric proclaims that ‘climate change is a critical driver of new business opportunities’, Shell re-markets itself as an ‘energy company’ and says it cannot ‘make sufficient solar panels to satisfy demand’, while BP has ostentatiously re-branded itself as ‘Beyond Petroleum’ and adopted a sunflower logo to boot. Yet renewable energy accounts for just 1 per cent of the $8bn that BP spends annually on fuel exploration and production, which is even less than ‘the very small proportion of capital expenditure’ devoted to renewables by Shell. BP has also lobbied to block legislation to introduce curbs on greenhouse gas emissions in the USA. Big business thus not only benefits from the government’s obsession with aspirational policy discourse, but also uses a distinctive complementary discourse involving the selective use of evidence. For the oil majors, renewable energy is currently little more than a public relations exercise for those fooled by – or with interests in – the politics of utterance.

The politics of collective organization and collective action

While individual firms must continually seek to exercise political leverage, the energy sector is also collectively organized. The collective organizations of capital with an interest in energy policy occupy such a crowded, active, complex and secretive field that its internal politics cannot be described, let alone analyzed, in this essay. We can, however, describe its architecture and make inferences about politics from its outcomes. The big players include the
Confederation of British Industry, the Institute of Directors, the Engineering Employers’ Federation, aggressive transport and fuel lobbies, investment fund managers and insurance companies. Smaller players include the energy market regulators, lobbies concerned with subsidies for the energy consumption of vulnerable households, and even groups of officials with turfs to defend. With few exceptions (such as unions with a vested interest in nuclear energy), trade unions are conspicuous by their absence from this kind of politics.

The nuclear lobby’s successful campaign has been a good example of the blurring of boundaries between the state and the nuclear industry. The British media relations of the major French atomic energy company EDF, which is already operating in Britain, are directed by the brother of the Chancellor of the Exchequer, Gordon Brown. The head of corporate affairs for British Nuclear Fuels Limited is chairman of the Nuclear Industries Association, and the NIA’s chief executive in turn came from the UK Department for Trade and Industry. Other lobbyists have come from the Labour Party, and their energetic involvement has been a key factor in breaking the former cross-party consensus against nuclear power.69

Although capital’s collective action on energy is anything but unified, and whether or not any of these groups act deliberately to thwart the development of a specialized renewable energy sector, it is notable that special pleading has been deployed by corporate lobbies in order to resist CO₂ emission targets under the Kyoto Treaty, to broker agreements giving exemptions from the Climate Change Levy, to use green energy under the Renewables Obligation, and to secure selective and lavish subsidies for ‘transition periods’. Helping to support the very industries which are most energy-intensive they have ‘turn(ed) climate change policy on its head’, Helm concludes.70 Construction industry lobbies have routinely resisted the implementation of energy efficiency requirements because they would raise the price of new houses – although if the government had a comprehensive fiscal policy aimed at improving energy efficiency, and properly implemented inspection and enforcement, their opposition could surely be neutralized.

Meanwhile, replete with contradiction, there is even a renewable energy equivalent of collective corporate social responsibility, with the Ashden Awards for renewable energy funded by British Airways, Sainsbury’s, and trusts and foundations which are in turn funded by other major fossil energy-consuming corporations.71 Even more significantly, a letter sent to the British Prime Minister in June 2005 by one lobby, the Corporate Leaders’ Group of the Prince of Wales’ Business and the Environment Programme (and signed by the CEOs of 14 UK-based MNCs, including Shell and BP) is instructive: it criticized the government for having failed to create a ‘trans-
parent, long term framework to help underpin the scale of investments that are now necessary.\textsuperscript{72} So much for New Labour’s embrace of the notion that ‘market forces will solve the problem’ – which was the government’s reply to a similar request a year earlier from the House of Lords’ Committee on Science and Technology.\textsuperscript{73} Meanwhile, city investors like pension funds and re-insurers press blue chip MNCs to lobby the state for clear ground-rules for investment in the context of climate change. Insurers have a keen interest in climate change because they wish to factor climate-change-related disasters out of their liabilities. And in June 2006, the cream of the cream of British industry was moved to repeat their demand to Blair for ‘eco-efficient’ regulation.\textsuperscript{74}

Not only is the renewable energy sector marginalized in this kind of politics, its own collective organizations have proliferated and its interests are fractured. No need to divide and rule; renewable energy is naturally divided. Lobbies with clear material interests at stake include the Renewable Power Association, the Micro Power Council, the Renewable Generators Consortium and the British Wind Energy Association,\textsuperscript{75} while the Chartered Institute of Wastes Management is the landfill gas sector’s advocate (two Department of Trade and Industry forums were held in 2005 to enable private capital to network with ‘developers and contractors’ in this sector).\textsuperscript{76}

The material interests of others are less apparent. The Green Alliance and the Forum for the Future exemplify organizations that receive funds from various major polluting industries, departments of government, environmental utilities and quangos, private environmental consultants, banks and charities; with governing boards that reflect the interests of funders, and with overlapping and complicitous missions involving policy formation and information on renewable energy and energy efficiency. The Aldergate Group, another such hybrid, argues for ‘smart regulation’ to corner innovation rents from ‘eco-efficiency’.\textsuperscript{77} Climate Change Capital is a bank that advises large energy-intensive companies and their financial backers on climate change regulations, negotiating EU carbon allowances, brokering emissions reduction projects (elsewhere), and investing residually in renewable energy.\textsuperscript{78} The Carbon Trust is a think-tank funded by the state with a range of experts from the corporate sector provoked into action by the Climate Change Levy. Energy Watch, also funded by the state, presents itself as ‘independent of industry and regulator’ and is dedicated to media campaigns and the provision of useful market information for consumers and producers. The Renewable Energy Foundation, on the other hand, is a consortium of nearly 100 local groups opposed to on-shore wind farms and backed by wealthy individuals.\textsuperscript{79}
Sorting out the wolves in sheeps’ clothing in the field of renewable energy is not easy.

The politics of civil society and of social embeddedness

Energy politics are socially embedded at all levels: from the Washington military and political security networks, which are enmeshed with big energy security networks and their associated think tanks and (global) bulletins, to increasingly powerful local NIMBY (‘Not In My Back Yard’) political organizations. The movement against on-shore wind generation, for example, is increasingly professionalized and science-based, able to put prices on environmental externalities – and supported by Prince Charles. It seeks to preserve one moment in the history of the landscape and represents a significant obstacle to the development of wind power.

In embedding energy politics, the so-called ‘quality’ press plays a deeply contradictory role. Theirs is a polluting industry, implicated in what they criticize; and their vital role as major sources of evaluative information conflicts with their parallel agenda promoting the high-consumption lifestyle (including private cars and airline travel) required by their sources of advertising revenue. ‘I think it’s pretty obvious that a media company does not have a carbon issue’ declared a spokesman for News Corporation, clearly in denial about the polluting impact of the production of newsprint (let alone journalists’ air miles).

Despite being a champion of climate change science, and despite a general scientific consensus on the nature and urgency of man-made climate change, British science is divided about the social response to it. The 2000 Royal Commission on Environmental Pollution expressed the general position of the science elite of the Royal Society, which has played a major role in what public consciousness there is about climate change. The Royal Society favours a rapid and radical shift to a low-carbon economy. It was part of the unprecedented coalition of G8 Science Academies (together with those of China, India and Brazil) whose statement in 2005 stripped any residual credibility from those who stress the uncertainty attached to climate science forecasts. In practice, however, scientists are divided between enthusiasts for high-tech carbon sequestration, advocates of nuclear energy and research on fusion, supporters – rarer – for the low-tech and known technologies of renewable energy, and in a few cases, those who associate themselves with the desire for the simplification of lifestyles and a lowering of consumption levels.

Scientists in general should not be presumed to have expert knowledge of either the politics or the economics of climate change, or to be proof
against the private temptation to behave in ways which deny the scale and urgency of the problem. The criteria for high ratings in the state’s Research Assessment Exercise embed and incentivize polluting behaviour – e.g. flights to academic conferences – throughout the academic sector. Even so, organizations of concerned scientists proliferate – along with their reports. One such report, however, published under the imprimatur of the Royal Institute of International Affairs in December 2005, is significant both for its content and for its financial patronage. Reasoning strongly against both deliberative democracy and expert science in decisions on nuclear energy, it concluded in favour of firmness in ‘unpopular’ decisions – by strong implication to ‘go for nuclear’. The work was funded, among others, by British Nuclear Fuels Ltd and Electricité de France.

The organizations of lobbies that speak for environmentalists also proliferate, of course. The most prominent of the mass-membership, knowledge-based, campaigning NGOs in the UK include the World Wildlife Fund, Greenpeace, Friends of the Earth, Carbon Trade Watch, the UK Stop Climate Change Campaign, and Stop Climate Chaos (a poor relation of the ‘Make Poverty History’ campaign). They work by disseminating environmental information, giving advice on energy-efficient private consumption choices, mass events, the postal persuasion of MPs and CEOs (the ‘Big Ask’), boycotts, cyber-activism and sometimes direct action. Their material bases, however, are hard to track, and not all such organizations have uncompromised funding. The political fault lines among them are not so much varying degrees of support for renewable energy as their positions on the international interests involved in carbon markets, and on the conversion of carbon sinks into carbon dumps as ‘solutions’ to climate change. Only implicitly anti-capitalist, for most of them the word capitalism (let alone the word socialism) is taboo. The jury is out over the question whether the proliferation of organizations with intellectual but non-material clout can generate a kind of ‘political correctness’ which has a real impact on state behaviour, or whether it merely adds to the colourful marketplace of ideas and procrastinating ‘policy policy’.

CONCLUSIONS: CLEAN ENERGY AND DANGEROUS POLITICS

There is no coherent policy for the development of renewable energy in the UK, or indeed for the energy sector as a whole. The politics of renewable energy is enmeshed in the interests of capital, and for the most part these interests are defined in terms of their investments in energy technologies for which renewables would be substitutes.
The British government has moved from intervening in technologies, quantities and prices, and from fiscal mechanisms and marginal transfers to renewable energy, towards a politics of repeated utterances and increasingly utopian targets in relation to them. Is the government in collective denial? Is it a weak prisoner of capital? The government purports to be consulting the public in the 2006 consultation for a new energy white paper, but it presents the issue as a mere choice between imported gas and expanding domestic nuclear power. Consultation has been crudely pre-empted by the Prime Minister’s announcement that ‘nuclear energy is back on the agenda with a vengeance’. The ‘debate’ that then ensues does not acknowledge the relevance of renewable energy to the 60 per cent emissions reduction target to which the UK is committed let alone to the UK’s energy footprint in the rest of the world.

The state’s withdrawal from the production and distribution of energy, and its fractured energy policy architecture, enable its penetration by interests undermining renewable energy. Yet these interests shoot themselves in the foot because current bureaucratic political arrangements also prevent the formation and implementation of a coherent energy policy. State regulative autonomy is doubly compromised – by the ‘independent’ regulators’ vulnerability to state capture, and by the state’s capture by capital. In turn capital sheds activity that is low-profit and high-risk, and renewable energy is regulated so as to be both. The result is not serving capital well, but meanwhile renewable energy is marginalized.

The discourse of both state and business needs taking seriously – not only in its cynicism but also in its indifference, bordering on contempt for the chief victims, present and prospective. Undemocratic modern politics cannot be understood without the opiate role of discourse. The destruction of energy policy and the timid entry of renewable energy into politics is happening as the modes of policy formulation and implementation are themselves being transformed in very troubling and undemocratic ways. Climate change policy serves to hide increasing total energy emissions, relentlessly polluting energy use and increasing waste. This discourse co-exists with the devaluation and abusive dismissal of discussion based on non-economic values. It has long protected the privatization of control over the energy economy, and is now being employed in a new phase of commodification of all aspects of policy: the agenda, the making of regulative law, resourcing, and the mechanics of access. The state thus cedes to a diffuse set of private interests the capacity to steer public debate, and the privatization of the ‘public good’ of policy is naturalized and uncontested.
The British state is now almost completely saturated by the ideology of the market, a soft prey to capital. In the energy field, a mix of market-driven politics and state capitulation has undermined the framework of systematic regulation and stripped the state of its capacity to make the long-term plans necessary for capital to invest, let alone provide stable conditions for capital realization in a sector populated by firms with a tendency to crisis. It is unable even to satisfy reasonable needs for long-term policy or to provide the infrastructural and regulative security required by capital for its energy investments. The state also abdicates its minimalist role as co-ordinator of last resort, mediator between interests, and linker of policy between sectors, subcontracting these roles to capital – roles which capital cannot perform coherently. It has been stripped of any capacity to define the general interest or the public good. In this situation, the ‘energy sector’, indispensable as it is to every aspect of society, is much more dangerously vulnerable than the public is led to imagine. While retail energy prices are currently rising, by themselves neither price nor information is making mass social behaviour and the energy economy move towards renewable energy at the pace necessary to stabilize climate change in 50 years’ time – or perhaps ever.

Capitalism is not fixing the environment. It is not able to, either in theory or in historical practice. Not in theory because of the logic and thermodynamics of capitalist growth; not in practice because of its path dependence, and because of the contradiction between the pace of physical system dynamics and that of the global economy. Market-driven politics have ensured that renewable energy remains far from starting to form any kind of technological base, either for an alternative model of capitalist development – in the UK or in an engagement with large developing countries which are about to enter a highly polluting phase of industrialization. Sustainable capitalism is a fiction, and the politics of renewable energy are merely a reflection of the fiction.

And, sad to say, at least in the field of energy there is no sign of any politics capable of generating a new kind of social, non-market regulation of money and nature. Workers themselves are unable to resolve the problems of the destructive nature of capitalism. On the shop floor they have been carefully manoeuvred into impotence. Rising disposable incomes have made workers complicit in the existing policy drift, a complicity reinforced by the psychological need for security and by the various social mechanisms which serve to avoid or deny reality. Furthermore it appears rational for labour not to mobilize, at least in the traditional fashion, since mass mobilizations (over Iraq, or Making Poverty History, for example) have been met with indifference on the part of the political establishment.
To be sure, in a global context workers’ perspectives can look very different. The Indian National Forum of Forest People and Forest Workers asks and answers two important questions. Who has the strongest interest in halting the flow of fossil carbon into the atmosphere? Who has a material interest in equalizing and limiting the use of above-ground carbon dumps? They say that those with the strongest interest are the victims of climate change-related disaster; people fighting immediate destruction due to the exploitation of fossil fuels, pipelines, logging and the commodification of forests in the name of the Clean Development Mechanism (the ‘third world’ component of the carbon trade regime). They themselves form and give support to groups for environmental justice, and energy efficiency, and to those monitoring the use of fossil energy and its impact. All this said, the development of renewable energy is included neither in their questions nor their answers, their power is very limited and their links with anti-climate change movements in the UK are exiguous. Still, they will no doubt be strengthened when the devastation related to climate change comes closer to home.

**APPENDIX**

**RENEWABLE ENERGY SOURCES AND THEIR INCENTIVE MECHANISMS**

<table>
<thead>
<tr>
<th>Source</th>
<th>Target (1)</th>
<th>RO (2)</th>
<th>CCL exemption (3)</th>
<th>Capital grants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Landfill gas</td>
<td>Δ</td>
<td>Δ</td>
<td>Δ</td>
<td></td>
</tr>
<tr>
<td>Sewage gas</td>
<td>Δ</td>
<td>Δ</td>
<td>Δ</td>
<td></td>
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<tr>
<td>Energy from waste</td>
<td>Δ</td>
<td></td>
<td>Δ</td>
<td></td>
</tr>
<tr>
<td>Hydro &gt;10 MW installed capacity</td>
<td>Δ</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hydro &lt;10 MW, installed capacity</td>
<td>Δ</td>
<td>Δ</td>
<td>Δ</td>
<td></td>
</tr>
<tr>
<td>Onshore wind</td>
<td>Δ</td>
<td>Δ</td>
<td>Δ</td>
<td>Δ</td>
</tr>
<tr>
<td>Offshore wind</td>
<td>Δ</td>
<td>Δ</td>
<td>Δ</td>
<td>Δ</td>
</tr>
<tr>
<td>Agricultural and forestry residues</td>
<td>Δ</td>
<td>Δ</td>
<td>Δ</td>
<td></td>
</tr>
<tr>
<td>Energy Crops</td>
<td>Δ</td>
<td>Δ</td>
<td>Δ</td>
<td>Δ</td>
</tr>
<tr>
<td>Wave power</td>
<td>Δ</td>
<td>Δ</td>
<td>Δ</td>
<td></td>
</tr>
<tr>
<td>Photovoltaics</td>
<td>Δ</td>
<td>Δ</td>
<td>Δ</td>
<td></td>
</tr>
</tbody>
</table>

Notes:
(1) eligible for promotion under the 10 per cent target for renewable energy generation required to be met by power companies
(2) covered under the Renewables Obligation
(3) exempt from the Climate Change Levy

NOTES
This is the short version of a paper with the title ‘Undermining Sustainable Capitalism: The Market-driven Politics of Renewable Energy’ that will be posted on the website of the Socialist Register http://socialistregister.com. A draft of this paper was presented at the Workshop on the Ecological Challenge and its Political Economy, February 2006, funded by British Academy, the Lipman–Miliband Foundation, Queen Elizabeth House and Wolfson College and organized through QEH, Oxford University. We are grateful to the workshop participants for their responses, especially to Pritam Singh; to Rebecca Clark, Jo Hamilton, Alan Hunt, George Monbiot and Robin Oakley for information (some of which is confidential), and to Dieter Helm for his useful engagement. Thanks also to Oxford graduate students Ben Champion, Chris Hansen, James Keirstead and Thomas Simchak who brainstormed with BH-W in March 2005. We are grateful to Elmar Altvater whose book triggered this project and to Queen Elizabeth House for a grant to support the review of literature carried out by EH. BH-W bears sole responsibility for errors of fact or interpretation and for the conclusions.

2 Most energetically in texts on environmental economics and on development in which capitalism is euphemized as ‘the market’, ‘the economy’, ‘the private sector’ or ‘growth’, and the environment is stylized as a costable externality.
4 Ibid., p. 260.
5 Nuclear energy would not be central to such a project on grounds of the carbon dioxide generated by mining increasingly poor grades of uranium; the costs and logistics of managing radioactive tailings and of extracting fissile uranium isotopes; the CO₂ generated in the construction, maintenance and decommissioning of plants and the removal of spent fuel; the creation, disposal and protection of waste without precedent in its toxicity and cost – which awaits technology which might redefine it as a raw material; the technology’s physical form as a target for terrorist attack; its history of vulnerability to catastrophic leaks and accidents (not reduced with advanced gas reactor technology); the risk of nuclear weapons proliferation (currently thought to be low); its history of un-viably high costs and externalities which have always been met by public subsidies and (implicit) public insurance. M. Schneider’s attempt to cost the carbon dioxide generated by France’s nuclear industry puts it at 10 per cent of
France’s total. M. Schneider, ‘Oui, le nucléaire produit des gaz à effet de serre’, L’Ecologiste, 1(2), 2000. Developed on the back of fossil energy, it is not a low entropy solution. Even so, environmental scholar-activists such as James Lovelock and George Monbiot have concluded that nuclear technology is inevitable, should political arrangements fail to change, energy efficiency continue to decline globally and consumption levels continue to rise. Should this happen, there would be a non-trivial skills shortage. Furthermore a thousand nuclear reactors worldwide would deplete all known uranium sources. So it is not a long term generalizable solution either. A. Simms, P. Kjell and D. Woodward, Mirage and Oasis: Energy Choices in an Age of Global Warming, London: New Economics Foundation, 2005, pp. 31–2, 37, 42; D.M. Donaldson and G.E. Betteridge, ‘Carbon Dioxide. Emissions from Nuclear Power Stations – A Critical Analysis of FOEY’, Atom, 400, 1990, pp. 18–22; New Scientist, 26 March 2005. In 2003 DTI Secretary Patricia Hewitt discounted the idea that nuclear energy would be other than phased out in the UK. In 2004, BH-W was advised by Michael Meacher (the former Labour environment minister who resigned on account of the Iraq War) not to waste time with this essay because ‘Tony Blair favours nuclear’; a view subsequently reiterated in New Scientist, 17 July 2004, p. 6. In 2006, as this essay was drafted, the British public was being psycho-politically prepared for a revival of nuclear energy.

For the energy needs of the ever-growing transport sector and for carbon sequestration see Dieter Helm, Energy, the State and the Market: British Energy Policy since 1979, Oxford: Oxford University Press, 2004, pp. 346–52; see W. Keepin and G. Kats, ‘Greenhouse Warming: A Comparative Analysis of Nuclear and Efficiency Abatement’, Energy Policy, 15(6), 1988, pp. S38–S61 on the dramatic contrast between the case for the immediate benefits from energy efficiency (up to 40 per cent savings; B. Boardman, Prospects for Achieving the 40 per cent House, Oxford: Environmental Change Institute, Oxford University, 2005); and on the one hand, the ready existence of technologies, and on the other, the ad hoc and poorly-funded projects for energy conservation in the UK and the US and the active sabotage of attempts to lift energy efficiency up the political agenda on the other hand (Simm et al., Mirage and Oasis, pp. 4–5). The UK is unusual in that transport accounts for a greater proportion of its CO₂ generation than does electricity, according to The Times, 24 October 2004. According to the government’s chief scientific adviser, David King, carbon sequestration, the de-contamination and burying of CO₂ pollutants is a ‘technological fix’ unavailable in the time span required to stabilize climate change (Observer, 26 July 2005; Observer, 11 June 2006). Its immense cost and unlikely geological feasibility speak more to the allure of hi-tech solutions to science than they do to seriousness of purpose.

As of 2004, the main fuels used by final consumers in the UK were: petroleum products 47 per cent, natural gas 34 per cent, and electricity 17 per cent. The fuels used to generate electricity were: gas 38 per cent, coal 35 per cent, nuclear 22 per cent, other fuels 3 per cent, oil 1 per cent, and hydro-electric power 1 per cent. Transport accounts for 33 per cent of all energy use in the UK as compared with the domestic sector’s 28 per cent, the industrial sector’s 21 per


There is practically no literature to help us understand the hidden politics of the eleven sectors officially recognized as sources of renewable energy. The high media exposure of wind and solar energy obscures the far greater current significance of hydro-electric power and landfill gas. Perhaps because landfill gas helps to tackle the pollution caused by landfill, rather than because it is seen as a solution to the greenhouse gas problem, it does not even receive a mention in the New Economics Foundation’s 2005 report on renewable energy vs. nuclear energy. Yet there are 174 landfill gas projects in the UK with guaranteed markets under the Non-Fossil Fuels Obligation and with considerable expansion possibilities. It is a normal field of private accumulation, supplying electricity to 700,000 homes and raising returns to the management of rubbish dumps.


By which is understood conditions of unalienated production for the long term common good. However it is sobering to acknowledge that the lifetime of a wind turbine is a mere 25 years.


18 Vestas and Sulzan have branches in India and export wind turbines to the EU.


23 *Guardian*, 10 June 2005.

24 550 coal-fired power stations are to be built in China between 2005 and 2030 according to Jonathan Porritt, Chair of the government’s Sustainable Development Commission (*Observer*, 26 July 2005). 10 terrawatts is needed to industrialize while the Clean Development Mechanism created under the Kyoto Protocol involves perhaps at best a 10–15 per cent subsidy to energy from polluting signatories.


26 See the essay by Minqi Li and Dale Wen in this volume. Despite plans for China to invest in nuclear energy and renewable energy, this is a coal-based industrialization and local environmental damage in China itself is accelerating, as is the damage due to global warming. See Chinese Academy of Social Sciences, *China Modernisation Report*, Beijing, 2006; versus Greenpeace China, ‘The Story of Yellow River’, Beijing, 2005.

Sources of information to answer it are also extremely diverse and many are fast-moving. To make them tractable, our main guide to state politics is Dieter Helm’s *Energy, the State and the Market: British Energy Policy since 1979*, which is based on a close reading of all UK energy policy documents, and is ordered sector by sector. The section on the politics of markets and civil society is less comprehensively covered by Helm and draws on a wider range of sources.

This section uses Helm., pp. 2-13, 295, 350-65, and 481.


£12.2 m in 2002-3 compared with $250m in the US. Quoted in Simms et al., *Mirage and Oasis*, p. 42. The House of Lords’ recent report on the ‘Economics of Climate Change’ criticized the IPCC for their ‘high emissions scenarios’ and argued that ‘there are some positive aspects to global warming’, that ‘far more attention should be paid to adaptation’ and that ‘current nuclear power capacity… should be retained’. House of Lords, *The Economics of Climate Change*, House of Lords, Select Committee on Economic Affairs, 2nd Report of Session 2005-06, 6 July 2005.


Monbiot *Captive State*.


This section uses Helm, *Energy*, pp. 2-12, 42, 179-92, 303, 345-80 and 404-5.

For instance, the state compensates for market failure by subsidising renewable energy; it has (shifting) targets for the market share of renewable energy and it
taxes energy through the ‘Climate Change Levy’ in order to subsidise the development of renewable energy.


47 For the tax rates see Helm, Energy, p. 357.


51 ‘The Untimely Death of Salter’s Duck’ (see note 17); Rand, ‘Why We Need Wind Power’ (see note 16).

52 McGarr, ‘Capitalism and Climate Change’.

53 The ‘politics of necessity’ is a component of a major ESRC funded multidisciplinary project, ‘cultures of consumption’: http://www.consume.bbk.ac.uk. See http://seis.bris.ac.uk/~lwbmm/necessity-politics-details.html for the project led by Bronwen Morgan on what used to be called the utilities and their regulation. This section uses Helm, Energy, pp. 42, 303, 362–8 and 380.

54 Helm, Energy, p. 380. On the Utilities Act see pp. 362–3, 368; on the EU pollution permits, see Friends of the Earth press release, ‘Government Legal Challenge to Allow UK to Pollute more under EU Climate Scheme’, 18 October 2005, http://www.foe.co.uk. The construction industry is also lamentably poorly regulated, has every incentive not to comply with energy efficiency laws and to act politically to preserve its current production conditions (George Monbiot, Guardian, 30 May 2006).


57 Wintour, ‘Carbon Emissions’.

58 P. Hetherington, Guardian, 8 February 2006.


This section uses Helm, _Energy_, chapter 19, pp. 345-71.

Ibid., p. 356-7, 366.

Energy companies have had a tendency to be delinquent: see the cases of Enron, British Energy, NEUSA in California, Powergen, Centrica (Helm, _Energy_, p. 30); G. Monbiot, _Guardian_, 13 June 2006.


One pro-nuclear former Labour MP represents a client of BNFL; another has abandoned party politics to do PR for a US decommissioning firm; while a third runs the Transatlantic Nuclear Forum. See T. Macalister, _Guardian_, 11 July 2006, p. 22.


See Jonathan Porritt, the Chair of the Government’s Sustainable Development Commission, _Observer_, 26 July 2005; and Larry Elliott, _Guardian_, 12 June 2006: ‘Executives from Vodafone, Unilever, BAA, John Lewis Partnership, Tesco, Shell and eight other companies demanded urgent action from the prime minister’.

Helm, _Energy_, p. 350; P. Brown, _Guardian_, 24 June 2005. The BWEA has a membership of 300 companies and has recently expanded its concept of wind to cover wave and tidal energy.


In the US climate change science is alleged to be under surveillance and harassment by the Republican Party backed by its oil interests. P. Brown, *Guardian*, 30 August 2005.


The funding of environmental NGOs from DEFRA and the FCO blurs the boundary between the state and civil society organizations, just as DFID’s funding qualifies the independence of development NGOs.

According to Larry Lohmann (http://www.thecornerhouse.org.uk), the WWF supports Third World carbon dumps, subject to (unattainable) quality standards of maintenance.


S. Ghosh, *Climate Change*. The question how renewable energy consumer demand is created and imagined, constructed, represented, organized and resisted is so big that it is outside the scope of this essay.