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Toward an intelligent design for energy and environmental regulation

UK energy regulation over the past 25 years

In the 1980s the UK set a new course for energy policy, based upon the promotion of competitive energy markets and regulation by independent agencies. The central policy principle can be summarised, in a rough and ready way, as: promote and rely on competitive markets wherever feasible, and regulate in the interests of consumers where competition is not feasible.

Notwithstanding setbacks and difficulties along the way, the policy has proved highly successful, has been much admired and copied abroad, and has been sustained by successive conservative and labour administrations. As a result, the UK has enjoyed a well deserved reputation as a world leader in energy policy and regulation.

These achievements are not secure, however; and they could very easily be lost. There are persistent pressures on regulatory policy, which, if not resisted, tend to undermine effective regulation and to lead to “regulatory failure”. It is not our aim here to provide an anatomy of these various sources of regulatory failure, but three of them merit brief discussion because they are so directly relevant to current policy choices facing the UK government.

Overly broad regulatory objectives/duties

A key factor in the success of independent regulation in energy, as in other sectors and for other functions, is that the objectives/duties of independent regulators have been narrowly specified and, where there are multiple objectives/duties, they have been specified in a hierarchical form, making it clear that some are more important than others. In consequence, regulators have been able to focus on choosing the best means of achieving ends which have been relatively clearly defined by Parliament. (The best single example of the approach comes from monetary policy, where the objective of the Bank of England’s Monetary Policy Committee is very tightly defined indeed.)

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There are a number of advantages arising from the specification of focused objectives, including:

- improved accountability of regulators to Parliament – with relatively narrow, focused aims/duties, it is easier to assess the performance of the regulator;
- stability of aims/duties – shifting policy preferences among different ends was one of the central failings of the old nationalised industries, and in today's market contexts it has potentially highly damaging repercussions for the provision of private capital (regulatory instability/uncertainty has a chilling effect on investment);
- democratic legitimacy⁴ – regulators are not delegated powers to make major choices among competing ends, choices that should properly lie with Parliament;
- much more effective management within regulatory agencies – large executive agencies are exceptionally difficult to manage at the best of times, and broad objectives make the task almost impossible.

Some of these points are well encapsulated by a saying of Sir Peter Parker, one time Chairman of British Rail, who, in relation to becoming the head of one of the nationalised industries, declared that it was the first job in his life in which he did not know what would constitute “success”.⁵ Regulatory agencies with broad and multiple objectives can expect to encounter the self same problems as the public corporations of old.

In regulation, supply creates its own demand

On the other hand, the temptation for governments to give existing regulatory agencies new powers and duties is exceptionally strong. Established agencies are conveniently on hand and potentially available to be used for new purposes. Indeed, to the extent that independent regulators have been considered successful, that very success can sometimes (wrongly) be counted as an argument for giving them more work, in which case success might be said to carry the seeds of its own destruction in the form of regulatory over-reach.⁶

This is one aspect of a more general characteristic of regulatory processes: when regulators have powers to intervene in markets, they might as well put signs in the

⁴ Legitimacy not only has value in its own right, but also can have highly significant effects on market performance – as is obvious from studies of performance in jurisdictions in which such legitimacy is lacking.

⁵ Herbert Morrison's vision for the public corporations was that their boards should act as “high custodians of the public interest.” However, whereas determination of what constitutes the public interest is a matter on which the legislature and judiciary rightly have to adjudicate from time to time, delegation of this type of adjudication to executive or administrative agencies has proved to be an unwise practice, not only in the UK but across the world.

⁶ This is not unlike the Peter Principle: *In a hierarchy every employee tends to rise to his/her level of incompetence.* Agencies can have a tendency to expand until they reach a scale and scope at which they become incompetent.

office windows saying something like “*powers available for use, call in if you want us to use them.*” Every Tom, Dick and Harry is liable to knock on the door asking for “*something to be done*” about this or that ‘problem’ in the marketplace. Producer interest groups tend – for well analysed and well understood reasons – to be the most persistent, systematic and influential petitioners. Thus, whilst ‘business’ tends to be against more regulation in general and in the abstract, any individual business will tend to find that there are particular interventions or restrictions, which would favour its own particular market position, and that are therefore worth supporting. But business is not the only culprit: power available for use (‘supply’ of power) will also attract a swarm of other groups and individuals, each pursuing sectional or personal interests, or giving exercise to particular bees in bonnets (of which, in matters to do with energy and the environment, there tend to be lot).

All this is entirely to be expected, and has been subject to extensive study. It should be unsurprising, therefore, that our institutions function so as to create persistent excess demand for incremental regulation.

Moments like now, when a major review of energy and environmental policy is in process, can therefore be moments of clear and present danger to good regulation. Every vested interest will be on the prowl and every crackpot scheme ever dreamt of is liable to be put into play for consideration. A combination of intelligence and strong self control is required to resist what might, at first sight, appear to be tempting options. As a sage once said: *for every complex problem there are solutions that are direct, simple and plumb wrong.*

In another context, we have learned the hard way that the tendency of governments to obtain temporary advantage by increasing the supply of money has highly damaging consequences, by tending to undermine the integrity of the currency. As yet, however, and notwithstanding the not inconsiderable efforts made by successive governments under the better regulation agenda, there has been no ‘Jim Callaghan moment’, when an administration, at its highest level, has publicly recognised that a firm grip has to be taken on an over-accommodating supply and has gone on to develop a demonstrably effective response.⁷ That is not entirely surprising, since the supply of regulation involves far more complex processes than the supply of money, but there can be no intellectual excuses. We know enough about “regulatory failure” to build coherent strategies to mitigate the risks.

Something must be done, ergo government should do something

In the *Wealth of Nations* Adam Smith expressed the view that:

“The laws concerning corn may every where be compared to the laws concerning religion. The people feel themselves so much interested in what relates either to their

⁷ Programmes such as the current efforts toward simplification and the reduction of administrative burdens are at best partial, and show no sign of being able to address the key problems. For example, whilst extolling administrative simplification, current government proposals for the future of the renewables obligation involve a *large step increase in administrative complexity*; and policy concerning the appropriate use of regulatory impact assessment (RIA) appears to be in near total confusion, and certainly in much worse shape intellectually than when the rather good 2003 Cabinet Office assessment guidance was developed.

subsistence in this life, or to their happiness in a life to come, that government must yield to their prejudices, and, in order to preserve the publick tranquillity, establish that system which they approve of. It is upon this account, perhaps, that we so seldom find a reasonable system established with regard to either of those two capital objects.”

Thinking about the Common Agricultural Policy and other examples of agricultural protectionism, and about various fundamentalisms (including the quasi-religions of fascism and communism) and religious conflicts, Smith’s view has certainly stood the test of time.

The point of recycling A. Smith’s views here is that ‘the environment’ is fast acquiring a status that is akin to food and religion: large parts of the public are coming to care about it deeply. There is, of course, absolutely nothing wrong with that: indeed it is arguable that such deepening concern is a *necessary* condition for any sort of adequate policy response in the face of the prospect of global warming.

The difficulty arises when the urgency of the message “something must be done” leads, almost automatically, to “doing X is better than not doing X”, where X is virtually anything that might conceivably be believed to do ‘some good’.

The lack of logical connection between the two statements is manifest, but, as Smith recognised, that is no barrier to the establishment of such a connection in the domain of popular opinion. In the context of the Energy Review, the very, very tempting ‘X’ is “*give the energy regulator a much greater role in environmental policy*” or, nearly the same thing, “*create an energy agency with a wide environmental remit.*”

Such ‘bundling’ of duties and responsibilities has been considered in earlier times and, for reasons noted above and which have been developed in much greater detail in other documents in the literature on economic regulation, it would likely be a very major policy mistake.⁸ It is a tempting ‘X’, perhaps because of an intuition that good quality energy regulation would drive up the quality of environmental regulation, in the manner in which a good management might take over a failing firm and improve its performance. It is wrong because the quality of energy regulation itself depends heavily upon the structure and design of the policy system. Change the structure/design in this way and the most likely result will be deterioration in regulatory performance in the energy sector. The expected outcome of bundling the different functions of energy and environmental regulation is that poor environmental regulation will undermine good energy regulation, and it should be one of the fundamental goals of the Energy Review not to let that happen.

What is to be done?

In the current UK policy context, it is difficult to overemphasise the importance of avoiding the worst of the potential regulatory mistakes in the face of irresistible pressures to ‘do something’. Avoiding the doing of things that would unnecessarily

⁸ See, for example, George Yarrow and Tim Keyworth, *Energy and the Environment: the Institutional Framework*, Royal Commission on Environmental Pollution, February 1998.

waste billions of pounds would itself be a very major contribution to the wealth of the nation.

There is, however, an opportunity to do better than this, and to put UK environmental regulation on the road to much improved effectiveness without undermining what has been achieved in energy regulation. The key is to identify, much more precisely than hitherto, what needs to be done on the environmental side – thus opening the way to delegated, independent regulation built around narrowly specified objectives (the approach that we know, from experience, actually works). A closely related question is: *what kind of regulator is required?*

The first point to note in this context is that environmental policy is traditionally seen as dealing with what economists call ‘externalities’, or third-party effects of economic activities, whether harmful or beneficial, which attract no associated, compensatory, financial payments. Atmospheric emission of CO₂ is a classic example of an externality: incremental emissions contribute to global warming, and hence to any harmful effects of that warming; any harm falls on third parties, but the polluter does not have to compensate those third parties in full for any harm caused.

At a first level of generality, then, we can say that *an environmental regulator should be primarily focused on the task of correcting or at least mitigating a defined set of (environmental) externalities*. And to say that is already to make it clear that this is a very different activity from the sort of activities that might be considered appropriate for a focused energy regulator (e.g. setting charge levels for use of monopolistic networks, supervising competitive energy markets).

The next step is to consider the ‘instruments’ that might be available to such an environmental regulator. Economics textbooks usually draw attention to a number of different instruments, including:

- the specification of rights that are enforceable in the courts,
- command and control measures, and
- ‘economic instruments’ such as taxes to discourage harmful pollution, subsidies to encourage pollution-reduction activities, and tradeable permits to pollute, such as those that underpin the EU ETS for carbon.

So far so good, but at this point the textbooks tend to stop and the difficulties tend to begin. Consider, for example, the EU ETS. The price of carbon will depend upon the total allocation of rights to emit, which is a factor that is subject to heavy political influence. Suppose that, in consequence of political pressures in some Member States to make relatively high allocations of permits, the carbon price is judged to be sub-optimally low. There would then be a case for the introduction of extra measures in the UK, to add to the impact of the ETS. The most effective forms and scope of any such measures should depend on the performance of the ETS scheme itself, since the rationale for the existence of the extra measures depends on limitations of the EU ETS. The more effective is the EU ETS, the less extra it is appropriate to do.

This is, of course, exactly the current position in relation to UK renewables policy, and what is required is an environmental regulator who:

- is able to combine the various policy options already available, and is able to develop innovative policy options for the future, in ways that are maximally effective in achieving the delegated objectives, and
- is highly focused on the atmospheric emissions (global warming) issues, and is not liable to distraction by other policy issues and trade-offs.

Roughly, the requirement is for an institution that can select among diverse means (some of which remain to be discovered or invented) to achieve the narrowly focused ends of mitigating a specific set of harmful effects caused by economic activity.

The system operations approach

If we next ask whether there is an existing institutional structure that can be used as a first base or first comparator in designing and developing more effective structures for environmental regulation, the answer is yes – although it is perhaps slightly ironic that whilst (a) such an institution exists within the energy sector, (b) it is not the energy regulator Ofgem. Rather it is National Grid, or at least those parts of National Grid that are concerned with what is called *systems operations*.

The system operations (SO) function has developed as a distinct activity in the energy sector to handle those problems of economic co-ordination that cannot efficiently be addressed by bilateral contracting alone. Its development has led to major institutional innovation, and it has been and remains⁹ central to the successful development of liberalised energy markets.

The UK has been a pioneer in this area, and Ofgem has for years now been making policy decisions concerning the rights, responsibilities, powers, and incentives of the relevant system operator.¹⁰ Yet there is little or no discussion in economics literature of this type of institutional response to externality problems, little is known about it outside the energy sector, and energy analysts tend to think of it as a particular feature of the operation of energy networks, not as an approach that might have wider applicability. Policy practice is, therefore, well ahead of theory in this area – although only on a narrow front – and what theory there is tends to be embedded in energy market institutions rather than in academia.

We have, in previous reports on aspects of regulation in sectors other than energy, pointed out the potential to adapt and adopt the SO model for policy problems involving what might be called ‘connected sets of externalities’. For example, we identified its relevance for air traffic control management in a report for the European

⁹ See, for example, the debate surrounding the European Commission’s Sectoral Inquiry into competition in gas and electricity markets.

¹⁰ For example, during the development of the NETA reforms, Ofgem assessed and rejected the independent system operator (ISO) model developed in California, based on a not-for-profit organisation whose discretion is strongly constrained by a rule book. Instead, the UK has preferred a for-profit arrangement, in which the SO is less constrained by rules but is guided in the exercise of its greater discretion by incentives set by the regulator

Commission on the development of economic regulation for the European Single Sky Programme.¹¹ Perhaps more relevant here, we set out its potential significance for environmental regulation in a report for Defra, which may be the first document to consider its relevance outside the ‘connected sets of externalities’ associated with the operation of an energy or a transport network.¹² An Annex to this note contains an extract from that Defra report.

Re-framing the issues, re-defining the questions, re-designing the policies

Environmental issues in general tend to involve ‘connected sets of externalities’, and the issues surrounding global warming are a case in point. The problems are not, for example, to do only with atmospheric emissions of CO₂ in, say, the generation of electricity. There are many other sources of CO₂ emissions. Further, activities that lead to increased absorption or capture of CO₂ confer *positive* (i.e. beneficial) external effects, so it is not just a matter of controlling emissions. And CO₂ is far from being the only greenhouse gas.

Putting matters this way, it becomes natural to ask questions such as:

- Is it possible to identify a well-defined set of externalities that can be used to define the domain of a particular area of policy?
- If so, is it possible to specify, in relatively precise terms, the relevant public policy objective(s) in relation to the defined externalities?
- Is it then possible to identify a well-defined set of means by which the given ends might be achieved?

In answering these and similar questions, policy makers are, in effect, going through the early stages of an institutional design process. If, for example, ends/objectives can be defined precisely and narrowly but the means of achieving the objectives are many and varied (and, in our view, global warming satisfies this condition), the answers point toward giving careful consideration to the SO model.

It seems pretty clear, at least in broad terms and for many years ahead, that UK governments will be set upon a course of seeking to reduce atmospheric emissions of greenhouse gases. Whilst there is considerable uncertainty as to *how much* abatement will be sought by each staging post along the way, the directional movement is not very uncertain at all.

It is arguable that, given such a well defined objective, only one policy instrument is needed, and the best candidate for that role is the EU ETS. For reasons already given, however, we do not think that, central to environmental policy as it will likely be, the EU ETS will be considered sufficient. By implication, that is the current view of the

¹¹ Decker, C., Jeunemaitre, A., Keyworth, T. & Yarrow, G. (October, 2003) *Study on the Implementation rules of economic regulation within the framework of the Implementation of the Single European Sky, Final Report to DG TREN.*

¹² Tim Keyworth and George Yarrow, *Economics of regulation, charging and other policy instruments with particular reference to farming, food and the agri-environment*, Defra, October 2005.

UK government: if it wasn't, the government would not be proposing to extend the prospective lifetimes of existing policies toward renewables. And even if the EU ETS were a sufficient policy instrument for harmful effects caused by CO₂, there are other greenhouse gases to consider too. In our view then, policies motivated by prospects of global warming can be expected to have a number of strands. Combining such strands in a way that maximises policy effectiveness and efficiency is exactly the task of SO-like institutions.

But the devils are in the detail

The above discussion is broad brush in nature, and many devils can be expected to lie in wait for explorers of the detail. Nevertheless, we strongly believe that the way in which public policy issues are 'framed', right at the outset of any policy development process and whether the framing is explicit or implicit, is critical for the evolution of effective regulation. As the Irish proverb goes: *Tús maith, leath na hoibre* (a good start is half the work).

Time and time again we have seen things getting muddled at the outset, and have witnessed the virtual impossibility of turning round the thinking of administrative agencies or government departments once they have set off along a particular track. At the moment, there is little in the Energy Review to give comfort that major issues are being framed in the most productive (for policy development) ways, or even that the right questions are being asked. The process looks more like jackdaws accumulating a collection of disparate, unorganised, bright shining tat, than like a set of intelligent designers hard at work trying to map out coherent and well-functioning policy structures.

As to the detail, considerable work lies ahead. The institutional innovations that underpin liberalised energy markets were not developed overnight, fully formed. Major innovations require very considerable effort, persistence and endurance, as well as vision. At this stage it would be a major step forward to ask, and to take seriously, just one or two basic questions, such as: is there a basis for believing that that a SO-type institution could offer the best framework for the future development of certain environmental policies, including in relation to global warming; and is that basis sufficient to warrant the effort that will be required to develop this particular policy approach?

In answering these questions, we find ourselves in the position of the old man in an old joke who was asked by an earnest young man: *Do you believe in baptism by total immersion?* The old man answers: *Yes, of course, I've seen it done.* We have seen the SO approach in action, and would only add that, not only has it been done, but it has been done quickly and done well here in Britain.

Extract from the Defra report: *Economics of regulation, charging and other policy instruments with particular reference to farming, food and the agri-environment*

The notion of service provision in the context of externalities can be related back to the basic characterisation of the relevant economic problem. That is, externality issues are often presented as arising in situations where there are ‘missing markets’, linked, for example, to an underlying limitation in the definition and allocation of property rights. Discussions of environmental regulation frequently then turn to consider (at least implicitly) ways in which these rights can be allocated to affected parties. However, the notion of service provision in a context of public policy directed at externalities, and more particularly the notion that such service provision might be made the responsibility of a particular institution, suggests the possibility of an alternative (intermediate) approach, in which rights and duties are allocated to specialised institutions. In abstract terms, this approach retains some degree of centralisation in the enforcement and trading of rights, in order to achieve savings in transactions costs relative to more decentralised approaches.

Such a ‘re-framing’ of the arrangements to address externality issues could bring the regulatory model much closer to that which operates in network industries. The idea that, in the network sectors, there has been a separation between service provision (the responsibility of companies) and regulation by an ‘independent’ authority with delegated powers and duties is now a very familiar one. Less familiar is the development whereby the distinct service activity of ‘co-ordination’, supplied to companies in the relevant sectors, has been identified and whereby responsibility for its provision has, subject to regulatory supervision, been allocated to a specific organisation or part of an organisation (a ‘system operator’). In this context, if the word ‘co-ordination’ is replaced by the words ‘minimisation of production externalities’, the more general implications of the policy development become more transparent.

There would appear to be many useful analogies between the activities of and constraints on the ‘network manager’ (or ‘system operator’) in the utility industries and the activities that could be (and to some extent implicitly already are being) undertaken by service providers charged with some or other aspect of environmental management. In both cases, the central role of the institution is to efficiently internalise externalities, and in order to do this it is necessary for the manager/operator to be able to ‘contract’ with the set of economic agents whose activities potentially give rise to externalities.

A particularly important feature of this UK-led policy development is that the incentives that the activities of the network manager put on system users have tended to be matters of ongoing focus and development. Thus, for example, the method of charging for bringing gas on to the gas network has changed significantly over time with (long run marginal) cost-based prices being supplanted to a significant extent by different forms of auction. These changes have nonetheless taken place in the context of a stable set of regulatory principles with respect to charging. The point here is simply to illustrate that an institutional model which separates – even if only at a conceptual level – the activities associated with managing relevant flows of activity (whether they be physical discharges, provision of information, etc) can allow for the

development of a set of relatively stable regulatory principles, whilst at the same time providing for the coherent development of new approaches to 'flow management'.