

Impact of EU environmental policy and national regulation on asset investment and risk management

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Good regulation is all about creating appropriate and durable signals for investment. According to Andy Duff, Chief Executive of RWE npower, energy market regulation needs to become less interventionist on a day-to-day basis, more focused and integrated with competition and environmental policy.

Network regulation

The regulatory framework in the UK has the twin purposes of controlling prices for the monopoly sectors of the gas and electricity industries and promoting competition where possible. Inevitably the incentive arrangements adopted by the regulator have been significantly different for each purpose. For the monopoly networks the setting of target revenues has been based on classical rate of return on a regulated asset base with an RPI-X incentive over a fixed term, usually 5 years. This allows the network company to retain any cost reductions that can be achieved in relation to the cost base assumed when setting the target. The target cost assumes the need to finance some level of capital expenditure but it is then for the company to decide whether the investment is undertaken or whether higher operating costs are incurred. At the end of the price control term any cost reductions that have been achieved tend to find their way to the customer.

The approach has undoubtedly proved effective at 'sweating' the assets inherited by the network companies at the time of privatisation (1990). Certainly the customer has seen significant benefits with network charges now typically around 60% in real terms of those seen a decade ago. However, efficiency gains are now probably almost fully exploited and it remains to be seen if the approach is effective at stimulating new network investment at a time when other government policy objectives that encourage a growth in distributed generation require selective expansion of the system. To some extent the regulator has already recognised the prospective deficiency by supplementing the core framework with additional incentives that reward incremental investment for specific purposes, or reward some types of connection by relieving the connecting party of particular elements of the charge. These supplementary schemes also have a cosmetic advantage in that they enable the regulator to retain a positive X in the RPI-X headline whilst ensuring that the network companies continue to earn a return that attracts investment.

Incentives for efficient investment in England and Wales are carried through to the customer by incorporating locational signals in network charges based on the incremental costs of adding demand or generation at any point on the system.

These signals, which were first introduced in 1992, have had a significant impact on the siting of new generation, but even more so in determining which capacity should close when surplus generating capacity emerged during the 1990s. This methodology has been extended to Scotland from 1 April of this year and it remains to be seen how Scottish generation will fare now that it must compete on equal terms with that in England and Wales. Ofgem is contemplating extending these pricing principles to distribution networks although the radial nature of these networks, especially at lower voltages, will make this particularly challenging. More importantly the investor in distribution connected generation must try to predict the outcome of the methodology the regulator is likely to adopt in order to assess the viability of any proposed investment. The introduction of locational pricing in network charges is, of course, a pillar of the Commission's aspirations for EU market liberalisation.

Whilst the rate of return on a regulated asset base and RPI-X have become an enduring feature of network price regulation, Ofgem has recognised that the approach is not appropriate for system operating costs. Predominantly these comprise costs of balancing and congestion management, and system losses. For these costs the regulator has adopted an incentive arrangement based on a sliding scale whereby the annual costs are predicted and the system operator (SO) permitted to keep a share, typically 50%, of any saving that can be made against the target. Conversely, the SO must bear a similar proportion of any costs incurred above the target. The target has traditionally been reviewed annually, although the regulator would prefer to see the target cover the same period as that of the RPI-X incentive. It is argued that such congruence would enable the SO to make an economic choice between investments in assets and reduced operating costs. In practice achieving this congruence is high impossible because the operating costs have a significant dependence on fuel costs and the market arrangements themselves. Encouraging network owners into a world of hedging fuel costs would be a slippery slope.

There is a more fundamental difficulty with sliding scale regulation of system operating costs. Generally speaking, these costs involve the provision of energy or options to acquire energy at short notice. Such system services would be more efficiently provided through competitive processes. Institutionalising the arrangements with the SO as a monopoly buyer militates against the emergence of competition. The confidentiality applied to market information that is retained by the SO on the grounds that it could lead to an abuse of a dominant position means that prices for reserve services, for example, never achieve a market level. The SO is also permitted to trade in the forward market for these purposes. This has the potential to distort the energy market and thus produce perverse signals for the rest of the market. It is held that permitting the SO to operate in this manner keeps prices lower and thus benefits the customer. However, low prices are not necessarily economically efficient. If artificially low prices cause flexible generation to become uneconomic then it will threaten system security.



There is a general problem in setting the targets for efficiency improvements in the management of networks and their operation. Detailed incentive arrangements of this type require considerable insight and knowledge into the functioning of the system. Generally, regulatory authorities do not possess this in any significant depth. As a consequence network companies and the system operators can often set their own agenda in determining the nature of the incentive arrangements. Certainly, in the entire 12 year history of the SO incentive scheme, the target cost has always been met, often with a considerable margin for the SO.

Market regulation

Incentives concerning the production and trading of energy have tended to be more ad hoc but, nonetheless, have had a significant impact on the development of the market. During the 1990s the dash for gas was undoubtedly facilitated by a regulatory desire to promote new entrants and aided by permitting long-term contracts with Public Electricity Supply (PES) companies that enjoyed a franchise of the sub-100kW and residential markets up until 1998. The growth of gas generation and the subsequent generating surplus it created led to the collapse of wholesale prices. The legacy is a reluctance by companies to contemplate new investment in generating capacity now that demand growth has all but eroded the surplus, even if prices were to rise to a level in the short-term that justified new investment.

Such regulatory intervention has been compounded by the governance arrangements that surrounded the introduction of NETA. In these, the regulator has adopted a role of adjudicating all changes that are advanced to the functioning of the gas and electricity markets, and access to the networks. This has tended to lead it into a role of micro-managing the industry and inevitably using this position to influence the adoption of changes that facilitate some of its wider objectives for market design. For the regulatory process to function in this manner inevitably raises the perceived level of regulatory risk and thus increases the cost of capital needed for investment.

An alternative model would be for the regulator to adopt a more distant position to the day-to-day management of the market and leave this to its participants. The regulator might then act as the guardian of wider public policy matters and provide a body to which participants could appeal in the event of dispute.

Environmental issues

The uncertainties introduced by the regulatory framework are compounded by the fragmented nature of UK government energy policy. Perhaps inevitably, there is no direct linkage between the incentives provided by the specific schemes for energy efficiency and the growth of renewable generation and the EU Emissions Trading Scheme (ETS) targets. Dealing with market uncertainty is an integral part of investment in long-lived assets. However, the lack of coherence in the incentives associated with the various UK initiatives that flow either directly or indirectly from EU environmental policy creates a potential instability for new investment and risk management that is counter-productive.

The UK government, along with other EU Member States, has concluded that the promotion of renewable generation should play an important part in encouraging a move towards a low carbon energy economy. To promote the development of wind and other renewable generation technologies it has introduced a Renewables Obligation (RO) that requires suppliers to purchase a proportion of their sales from renewable sources or, alternatively, buy out the obligation at a pre-determined price. The scheme has encouraged a surge in wind generation schemes but with little thought for the impact that these schemes will have on network investment or system security in operational time-scales.

The Government has also implemented schemes that encourage energy efficiency. All electricity consumption by non-residential customers is subject to a Climate Change Levy (CCL) applied as a kWh tax. This can be avoided in some measure if the customer is part of an energy efficiency programme or if the electricity is purchased from a CHP source. For residential customers, suppliers have an obligation, the Energy Efficiency Commitment (EEC), to incur a prescribed level of expenditure that encourages energy efficiency in the home, especially amongst the fuel poor.

More recently the Government has started to implement the ETS. In theory the cap and trade basis of the ETS should work well but in practice it has generated a bureaucracy that threatens to undermine the investment signals the scheme should produce. Issues that have had to be resolved include whether allocation should be based on past or future performance, how new entrants are to be treated, the consideration that needs to be given to new technologies, whether allocations should be free or a percentage based on auctions, and so on. Whilst these issues have been resolved for Phase 1 the same arguments will re-emerge for Phase 2. At a national level the UK government remains in dispute with the Commission over whether the Phase 1 allocation should include an additional 20 million tonnes of carbon over the three-year period. From an administrative point of view, not all national registries are yet established and the allocations for 3 of the 25 Member States for Phase 1 have yet to be agreed by the Commission.

As a consequence in the UK, only provisional targets and allocations exist for Phase 1 of the scheme until the end of 2007 and allocations for Phase 2, which covers the subsequent 5 years to end of 2012, will not be known until June 2006. Accordingly, the market has been unable to establish a forward curve beyond the end of 2007, which would be the earliest any new investment in generating capacity that was started today would become available. The uncertainties in the forward curve that has been established have discounted the spark spread to a level that will not currently sustain investment in new generation other than that favoured with the support of one of the incentive arrangements.

Some conclusions

To create an environment that provides appropriate and durable signals for investment when required, and a framework that will assist in minimising the regulatory risks, I would promote the following five tenets of good regulatory practice from the perspective of UK experience:

- Regulatory incentives for networks need to become more focussed on the requirements placed on those networks;
- Sliding scale regulation for the operation of systems needs to be dismantled and replaced by market arrangements that can be an adjunct to the traded energy market. The SO should not be permitted to participate in the traded market;
- Regulators must stand back from the day-to-day management of the energy markets and instead become custodians of public policy issues and provide a route for appeal;
- The regulatory framework needs to become integrated with wider government policies concerning environmental protection. The fragmentation of the current arrangements needs to be joined in a single holistic framework. Social objectives, such as the protection of the poor and employment aspects, should not be supported through distortion of the market arrangements but by welfare provision; and
- The cap and trade system, embodied in the ETS, should be a pragmatic way of reflecting environmental costs but it requires a long-term framework in which market participants have confidence.