

Take-or-pay contracts for Renewables Deployment

January 2007

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Abstract

Renewables require support policies to deliver the European 20% target. We discuss the requirements for least cost development and efficient operation and quantify how different schemes (i) allow for the development of a renewable energy technology portfolio; (ii) reduce rent transfers to infra-marginal technologies or better than marginal resource bases; and (iii) minimise regulatory risk and thus capital costs for new projects.

Long-term take or pay contracts minimise regulatory uncertainty, create appropriate incentives for location and operation, allow for efficient system operation and seem compatible with European state aid. We discuss how property rights legislation protects existing renewables investors, and thus can ensure ongoing investment during a transition towards the new scheme.

Key words: Renewable support policy, Property rights, Transition, Regulatory risk

JEL Classification: L50, L94, O31, P14,

¹ Financial support from the UK Research Council Grant TSEC is gratefully acknowledged.

1. Introduction

The UK target is to produce 15.4% of electricity from renewables by 2015 and has expressed an aspiration to source 20% of its electricity from renewable generation by 2020 (DTI 2003). If the government also aims to achieve the recently announced 30% emission reductions by 2020, a larger share of renewables will be required. Further reductions, e.g. towards the 60% reduction target by 2050 (DTI 2003) will greatly rely on the mixing of different renewable technologies. Yet, experience in the UK and in other European countries suggests that the current UK policy instrument for the promotion of renewables deployment, the Renewables Obligation (RO),² struggles to deliver on deployment effectiveness, cost-efficiency and technological diversity

First, the support is not differentiated for different resource quality and thus the RO either pays too much for deployment at very favourable locations or too little for deployment at slightly less favourable locations or offshore. In theory, the RO scheme could be banded to provide different support levels for different technologies or locations. This would create additional flexibility for the regulator but make the practical prediction of future ROC prices virtually impossible for investors.

Second, investors face significant regulatory risk. (a) It is difficult to anticipate the future value of ROCs as this is subject to future policy decisions like the renewables target, the eligibility of different technologies and co-firing and the possible implementation and subsequent adjustment of banding schemes. (b) While renewable technologies are not directly participating in the European Emission Trading scheme, the scheme effects the marginal generation costs of fossil generation, and new entrant allocation and closure conditions can also influence the scarcity value of generation capacity. As the ongoing evolution of the scheme is uncertain together with future scarcity prices of allowances, it is difficult to anticipate future power prices and thus

² The Renewables Obligation (RO) came into force in April 2002 and it obliges all licensed electricity suppliers in Great Britain to supply a specific proportion of their yearly electricity sales from renewable sources. To prove that they have supplied their UK customers with a MWh of green electricity suppliers have to present Ofgem with a Renewable Obligation Certificate (ROC). If they cant match their requirements with ROCs, suppliers have the choice to “buy out” their obligation at 3p/kWh (rising annually with RPI). The funds raised are redistributed to the suppliers that complied with the obligation using certificates.

revenue. (c) The UK electricity market design is most likely to evolve to allow an efficient operation with increasing penetration of intermittent generation and new flow patterns. This will expose individual actors to the cost of congestion management, locational losses and will improve the system's response to intraday re-scheduling and balancing demands. Renewable technologies are relatively more exposed to these changes. Many renewable technologies exhibit low capacity factors such that grid costs are relatively more important, and the prediction of wave, solar and wind output is less accurate such that they are more exposed to intra-day and balancing costs. Consequently, the regulatory risk from changes to the market design is significantly higher for renewable technologies than for conventional technologies. This makes it difficult for independent project developers to finance renewable projects. Thus, the involvement of utilities is required, either as counter party for long-term contracts to back independent project development or to conduct investment themselves. The risk results in a premium on the capital costs, or rate of return, that is required and thus increases the costs per turbine by 30% (Butler and Neuhoff 2004, updated 2007).

In environments with significant regulatory risk the power sector has a long tradition of power purchasing agreements (PPA). These are long-term contracts between the owner of a power station and the national power sector or the respective government. Most of the investment in the UK power system after liberalisation was financed on the back of such power purchasing agreements between regional electricity suppliers and combined cycle gas plants. In the 1990s the non-fossil fuel obligation (NFFO) also offered long-term contracts to renewable projects. The arrangement was changed, not because of the contract structure, but because of the way the contracts were allocated.

Therefore we suggest that the UK should revisit the idea of long-term contracts for renewable power investment. They need to be evolved in two dimensions, as we will discuss in more detail below. First, the contracts need to be formulated as take-or-pay contracts. This ensures an efficient dispatch of the UK power system without exposing investors to regulatory risk. Second, the timing of selling the contracts has to be adjusted. We suggest that the government or implementing body (e.g. Ofgem) announces on an annual basis a set of take-or-pay contract prices for different technologies and resource sites. Any plant that will be commissioned within 18 months of that day can sign such a contract and then operate under the specifications of the contract for 20 years.

For small-scale projects the volume of contracts that can be signed should not be limited. This allows project developers to focus on gaining the local support and planning consent, secure in the knowledge that they subsequently will be able to sign the take-or-pay contract. If the contracted volume is unexpectedly high in one year, then the specific technology can be made less attractive in subsequent years by reducing the contract prices offered at that time. This allows a smooth targeting of the mid-term deployment objectives for different technologies.

For large-scale projects, like an off-shore wind park, the volume of contracts that would be signed could be limited and market participants would bid in an auction on who is prepared to implement a project at least cost. Under the non fossil fuel obligation auctions (NFFO), used to subsidise renewables in the UK during the 90s, the “winner’s curse” was a dominant feature. Project developers that bid to provide electricity at lowest costs frequently noticed that they could not deliver at this price and thus the projects were never implemented. Thus we think some obligation to deliver a project – probably using some collateral – would be necessary. It will be a challenging decision as to how much collateral project developers have to post: low posting increases the risk of under-delivery, while high posting increases financial risks for project developers and thus overall project costs. Such requirements are a feature of many large construction projects, and the transaction costs involved can be justified if they are low relative to the overall project volume. As only a limited number of participants will propose off-shore wind parks, such auction might involve price ceilings to avoid exercise of market power (similar to price floors in auctions to access to the UK gas network at terminals that are supplied by few producers). The transaction costs, uncertainty and collateral involved in such an auction restrict the application to large scale projects.

We suggest that the counter-party for all the take-or pay contracts will be the grid operator, currently National Grid Transco. The grid operator is in the best position to manage the intermittent supply of energy and determine when to call different renewable generators to produce electricity, provide spinning reserve or remain on standby. The grid-operator would then sell energy produced by renewable energy generators in the wholesale electricity market. This could involve sales in auctions or bilateral sales where the grid operator faces incentive schemes to maximise sales revenue. The remaining difference between sales revenue and costs incurred with the take-or pay contracts is added to network usage charges, preferably on a per MWh basis. Thus, the result for final consumers would be similar to the current support scheme of the RO, where supply companies add the additional costs of providing renewable energy to customer bills.

Take or pay contracts can include differentiated payments according to technology or locally available resource base. As these payments are fixed with the long-term contracts the differentiation does not create regulatory risk. This is in contrast to the current UK debate about banding the renewable obligation. If different technologies, or on- and off-shore wind, receive different amounts of renewable obligation certificates, then this introduces an additional level of flexibility for government to adjust the scheme in the future. Any such adjustments will affect the scarcity level of renewable obligation certificate – this creates regulatory uncertainty about the future revenue today’s renewable investors can expect.

In the energy sector there is a vivid debate about the effect of long-term contracts on competitiveness. First, if dominant incumbents sign long-term contracts with power generators, and then sell power on their behalf, then this increases the market share of these dominant firms, and is thus anticompetitive. Second, long-term access contracts to transmission infrastructure that were frequently grandfathered to incumbents and are often not re-traded or even transparent create an access barrier for new entrants and traders. While these two aspects are of little concern in our case, one might argue that, third, a market where all output is fully covered on long-term contracts might not leave room for short-term trading, or opportunity for entrants to sell output. This was one of the motivations to move towards a system with high levels of spot trading. As investment in power generation has received more attention, it became apparent that investors need to cover about 70% of their expected output with long-term contracts if they want to secure third party financing. This illustrates, that long-term contracts are an established means to hedge price risk, also for conventional power generation. Long-term contracting and liquid spot markets are not substitutes but complements in efficient markets. While long-term contracts remove price risk, short-term trading allows participants to adjust positions and to swap merit order in response to changes of input prices.

2. Integration of renewables in the power system

An ideal market design for electricity systems would ensure efficient decisions on the following three dimensions. First, market participants choose the best suitable technology and quantity for investment and closure decisions. Second, market participants choose the location in the network that minimises the sum of grid expansion costs, system balancing and losses costs, resource access costs and environmental impacts. Third, plants are operated

such that they provide energy and ancillary services that contribute to the least cost operation of the system.

These are rather ambitious objectives, and so most market designs, including that of the UK, fudge some of the challenges along all three dimensions.

First, the emissions trading scheme subsidises investment in fossil generation with free allocation of CO₂ allowances. Institutional barriers, like the right for customers to switch suppliers required to facilitate competition, undermine the ability for generators to hedge their investment with long-term contracts to domestic consumers. This increases the risk premium they have to pay on capital and creates a bias against capital-intensive technologies.

Second, during operation market participants are not directly exposed to the congestion management costs they impose. Instead, the system operator balances the system and socialises these costs; further, grid connection costs carry some locational component. This does not address the widely varying output patterns of different generation technologies, creates additional opportunities to game the system, results in an under-utilisation of grid assets, and creates regulatory risk about the possible future evolution of grid access arrangements.

Third, the short-term energy market is illiquid, perhaps because large generators do not offer all capacity, or at least not at variable cost. As a result, anecdotal evidence suggests that British Nuclear retain coal power stations as back up as it is worried that the costs of buying backup in the market when a nuclear power station goes down could be excessive. If market participants do not rely on the market but retain internal reserve and response capabilities, then costs to the overall reserve and response costs rise. This creates a bias against technologies where individual plants require higher shares of responsiveness of the system. The ROC premium also distorts the system, as renewable plants only receive the premium when they produce electricity, and thus prefer to produce electricity rather than providing spinning reserve or shutting down, even if the marginal costs of doing so exceed the value provided to the system by up to the value of the ROC premium.

Many of these difficulties arise because the UK electricity design evolved without particular attention to intermittent generation or generation with low capacity factor. As a result, Ofgem and DTI opted for a system that focuses on bilateral trade and fudges many of the engineering realities. As we are moving towards a different generation mix, the market design will have to evolve so as better to reflect engineering reality in congestion management. If the system is to be operated more flexibly with increasing shares of

intermittent generation, we also need to find ways that allow thermal power stations (fossil, bio-mass and nuclear) to express part-load, minimum down time and ramping constraints and thus allow for a system-wide rescheduling and optimal balancing. (Both approaches have been successfully implemented in all of the US North East.) Finally, there is uncertainty in markets across Europe as to whether additional measures will be implemented to support investment in new generation capacity or how technology-specific support schemes like free CO₂ allowance allocation to fossil generation or the RO scheme are going to evolve.

Given the widely varying interests of stakeholders that are involved in all these aspects, this evolution is likely to take several years. Renewable generation technologies will be most affected because, with their low capacity factor, they have a higher exposure to grid costs and, with lower predictability, they have higher exposure to balancing costs.

It is thus desirable to create a renewable support scheme that insulates investors from the regulatory uncertainty that arises from the future evolution of grid access, congestion management and balancing. Take-or-pay contracts can create this certainty as they ensure that revenue streams will not change with changes of market design.

We will now discuss how we can ensure that renewable energy projects that sign take-or-pay contracts make an efficient contribution to the operation of the power system.

As with most designs, various options can be envisaged. Our straw-man take-or-pay contract requires the renewable generator to notify the system operator or alternative counter-party about the maximum output that can be delivered. The system operator, or alternative body, then schedules the generator to: (a) remain on stand-by; (b) provide spinning reserve; or (c) produce electricity. The take-or-pay contract specifies a basic price p_b and additional premia that reflect the variable costs of operating in spinning reserve p_s or produce output p_o . The renewable generator would thus receive the prices p_b , p_b+p_s or p_b+p_o .

The contract could specify whether the system operator, the alternative body, or the generator predicts the wind, wave or solar availability. Thus, the generator would either notify the technical availability of the plant, or would notify the technical and resource availability.

This approach ensures that the renewable generator can be integrated efficiently into the overall power system, irrespective of the evolution of future balancing and congestion management arrangements.

The approach also creates strong incentives for the availability of the power station. This is particularly important for new technologies where durability and quality is an important part of technology learning. The tariff can envisage higher base prices p_b during day or winter peaks and thus create incentives for generators to schedule maintenance works during other periods.

This approach also creates revenue certainty to facilitate investment and is thus particularly relevant for non-utility investors that cannot finance the investment on their balance sheet, but require bank loans or bonds.

As the take-or-pay contract insulates generators from future policy evolution, it also facilitates an evolution of market design to address the needs of a flexible system. If generators do not face financial exposure to changes, they are less likely to oppose these changes. Ofgem failed to improve the UK market design by introducing locational specific loss factors – as generators in the North that would receive lower sales revenue for power generated at less suitable grid connections challenged any such proposals in court.

3. Technology and locational choices with take-or pay contracts

In principle, one would desire the market to select the least-cost technologies for the power sector. However, renewable technologies exhibit two characteristics that can justify a differentiated support for different technologies and locations.

Some renewable technologies, like for example wave and tidal stream devices, have only gained very limited market experience. In contrast, many thousands of on-shore wind turbines have been produced and manufacturers have learned how to tackle design challenges and reduce production costs. Contract prices offered for on-shore wind power would thus not suffice to finance renewable energy projects using less 'experienced' technologies. To develop these less experienced technologies, higher support prices are required. This might be justified as it could create the option to use these technologies on a larger scale once sufficient experience reduced their cost. It would be an imprudent use of public resources if the same high contract prices were offered to on-shore wind projects.

Take-or-pay contracts can be offered at different price levels to different technology groups. The price level can be adjusted, for example on an annual basis, for new projects in any one of the technology groups. If the target level of deployment in any one of the technology groups is not achieved, then in the following year the prices offered can be increased and *vice versa*. If the information that is revealed during the increasing use of a renewable technology suggests that this specific technology does not have the potential to make a significant contribution to the power supply, then no further contracts for this technology group will be offered. All these changes can be decided without jeopardising the financing of past investment decisions. Thus, investors in renewable projects face little risk and government retains the flexibility to evolve future technology policy in response to growing learning experience about the different technologies.

If take-or-pay contracts for new renewable projects are to eliminate the exposure of investors to risks from changing grid access, connection, congestion, losses and balancing designs, then locational signals arising from any of these markets or tariffs need to be represented in the contract price offered as take-or-pay contracts. To find the optimal solution would require rather sophisticated, and thus probably also controversial, modelling of the system impacts. However, the currently provided locational signals also fail to provide this sophistication. Locational losses and congestion costs are not reflected in prices, and the locational differentiated connection charges are calculated based on a simple model that calculates long-term system extension costs. The strongest locational 'signal' that renewable project developers currently receive is the waiting period before they will receive a grid connection: in Scotland, this can reach more than ten years. Developing projects on a first-come-first-served basis implies not only an inefficient prioritisation, but also wastes the scarce resources of project developers and discourages potential future developers from getting involved in similar projects.

This is not to say that locational signals are not important. While a static analysis for the best location of a wind turbine might suggest the use of a location with the highest wind speed, our simulations for the evolution of the UK power system towards high penetrations of wind power suggested significant benefits from distributing these across various regions of the UK. Not only does this reduce congestion and system expansion costs, but it also results in an averaging of the volatile wind output at individual locations. Spreading wind turbines across wider areas also implies a more even distribution of the visual impact across the UK population. If every citizen is exposed to some visual impact from wind turbines in exchange for a climate-

friendly and secure energy supply, then this might increase levels of public acceptance of this form of energy.

Further research and possibly experimentation is required to identify a good means of providing locational signals for renewable energy projects. This result applies equally to approaches like the RO, the banded RO, the feed-in tariff or take-or-pay contracts. Two of the options available for take-or-pay contracts are: first, to offer locationally differentiated contract prices to direct investment towards the preferred regions; or second, to use grid connection delays as a means to distribute projects. The second approach has, as discussed above, the disadvantage of an inefficient selection process and therefore pays on average higher prices.

If, as sometimes discussed, government were to target certain levels of renewable contribution for different regions – e.g. to address planning aspects – then this could also be reflected in the tariff structure. In this context, the requirements of public procurement law could play a role and thus guide the optimal structure.

4. Transition

4.1 Framework

A change from the current support scheme (RO) towards take-or-pay contracts needs to be carefully designed. Revenues of past and ongoing investments have to be sufficient to ensure investors' confidence in government policy and to secure the continuation of ongoing investment until the new scheme has passed all political hurdles and is legally binding. Investors' confidence has been increased by the UK's relatively recent incorporation in national law (under the Human Rights Act 1998) of the European Convention on Human Rights. This guarantees that investors cannot have their property expropriated by a simple change of the legal framework and thus requires the government to give careful consideration to how to secure investors' confidence by showing sufficient respect for their acquired property rights. The possible constraints imposed by these legal provisions will be discussed once the basic transitional proposal has been outlined.

Lets assume the new scheme involving take-or-pay contracts will be implemented from 1 January 2008. Any new renewable projects that desire public support will be covered by take-or-pay contracts. Existing projects will continue to produce ROCs. Rather than requiring electricity supply companies to submit ROCs corresponding to a pre-specified volume of their

electricity sales, we would envisage that all ROCs would be redeemed at a fixed price.

The price at which these ROCs will be redeemed in the future has to be high enough such that ongoing renewable energy projects will be pursued and commissioned during the transition period. As it is currently mainly on-shore wind projects that are newly commissioned, this does not pose a major hurdle. It seems that they are highly beneficial under the current scheme, and technology and locational specific take-or-pay contracts are likely to reduce their revenue.

The price at which ROCs have to be redeemed in the future also has to be high enough so as to create investor confidence in the technology policy of the UK government. Significant doubts as to the credibility of this policy would undermine future attempts to accelerate low-Carbon technology in the UK, and thus would be rather counter-productive for the wider objective of decarbonising the UK economy. In Section 5, we will discuss what level of compensation would derive from: first, the currently signed longer-term contracts for ROCs and energy from renewable energy projects; second, the costs of wind turbine projects; and, third, the projected deployment of renewable energy projects and the implied ROC price.

While it might legally be possible to transfer all existing projects to take-or-pay contracts, this could involve high transaction and renegotiation costs. However, one could offer renewable energy projects the option to decide in the year 2008 as to whether they want to sign a take-or-pay contract under the conditions prevalent in 2008 and for a period corresponding to 20 years minus the age of the project.

Thus, we will continue to need an institution that redeems the ROCs. As we have already identified the system operator as an appropriate counter-party for long-term take-or pay contracts, he would also be well positioned to redeem the ROCs. The remaining long-term contracts from renewables support mechanisms during the 1990s under the NFFO could also be transferred to the system operator, thus bundling all the contracts with one counter-party.

4.2 Legal issues

With an idea of the framework of the transitional regime in mind, we can move to assess the legal position that would apply to this transitional proposal. The three key elements in this assessment are: first, the combined application of fundamental rights law and EC free trade law; second, the

significance of national fundamental rights law under the Human Rights Act 1998 ('HRA 1998'); and, third, the requirements of EC State aid law.

4.2.1 *Fundamental rights and the free movement of goods*

It is clear from the case law³ of the European Court of Justice ('ECJ') that measures such as the current RO and the proposed take-or-pay regime amount, *prima facie*, to a restriction imposed by a Member State upon the free movement of goods (here, electricity). Insofar as such measures favour domestically generated electricity and require a percentage of electricity requirements to be sourced therefrom, they are such as to hinder the importation of renewable power from other Member States. In those circumstances, for such a national measure to be compatible with the EC Treaty, some derogation or justification for the measure must be shown. This justification must be compatible with EC law, both with regard to its purpose and proportionality *and* with regard to the need to respect fundamental rights (which are themselves a part of the EC legal order).⁴ In the case law of the ECJ, the provisions of the European Convention for the Protection of Human Rights and Fundamental Freedoms ('ECHR') has come to occupy a place of particular significance:⁵ for our purposes, we can assume that the relevant provisions of the ECHR would form the yardstick for testing national measures for compliance with EC fundamental rights standards.

Here, the claimed justification would naturally be one of environmental protection, in that the transitional maintenance in force of the RO system (with the option to transfer into the take-or-pay contract system) still seeks to encourage investment in the provision of environmentally sustainable electricity generation.

Meanwhile, the relevant fundamental rights consideration concerns the right to property, enshrined in Article 1 of the First Protocol to the ECHR. The relevant case law concerning the application of this provision is discussed in some detail in the Annex attached to this paper (see Annex I). Essentially, any national measure that sought to expropriate property (under which heading the ROC would fall), to control its use or to disturb the peaceful enjoyment of

³ See, for the clearest illustration, Case C-379/98 *PreussenElektra AG v. Schleswag AG* [2001] ECR I-2099, paras. 69-71.

⁴ See Case 11/70 *Internationale Handelsgesellschaft* [1970] ECR 1125, which established the rule that the EC legal order required general respect for fundamental rights. It was later made clear that this fundamental rights regime also applies to the actions of the Member States when they seek to derogate from EC law: see Case 260/89 *ERT* [1991] ECR I-2925.

⁵ See, e.g., Case 4/73 *Nold Kohlen- und Baustoffgroßhandlung v. Commission* [1974] ECR 491 and Case 44/79 *Hauer v. Land Rheinland-Pfalz* [1979] ECR 3727, para. 15.

possessions would *prima facie* amount to a breach of Article 1 of the First Protocol. Any such breach would require justification on a recognised public interest ground and the interference with property rights would have to be proportionate to that justifying ground. Thus, both under EC free trade law and EC fundamental rights law (as 'borrowed' from the ECHR), there is a question of the proportionality of the transitional regime.

With regard to restrictions upon trade, it might be argued that the RO system would no longer be proportionate to the objective to be achieved, given the arguments deployed in this paper in favour of adopting the take-or-pay contract system as a more effective system. We would suggest, however, that the transitional nature of the scheme, coupled with the significant leeway granted to Member States in such circumstances of regulatory and technological experimentation and development, and allied with the fundamental rights considerations treated above, all militate in favour of the conclusion that the transitional scheme proposed here would satisfy the proportionality test required here, *provided* that the price set was neither excessively high nor unjustifiably low.

Thus, the key question will be whether or not the price set for the redemption of the ROCs is sufficiently high to satisfy the requirements of proportionality: i.e., the price must not be a disproportionate control of the property rights in ROCs already held or expected to be generated by normal plant operation. On the other hand, the level of support provided beyond the competitive price by the price received by ROC-holders must not amount to a disproportionate restriction upon the free movement of goods (here, imported electricity): i.e. the ROC redemption price cannot be too high either. The result of this analysis will be to provide a relatively broad band of prices that will be sufficiently proportionate in both 'directions' to satisfy both EC trade law and fundamental rights law. In section 5 we will present observed long-term contract prices as an upper end for this range and the costs for wind projects, as calculated by the International Energy Agency, as a lower end for this range.

4.2.2 Fundamental rights under UK law – the Human Rights Act 1998

As a result of the discussion in the previous paragraphs, it will be clear that the requirements of EC law with regard to fundamental rights will be appropriate to cover the key issues raised with regard to the right to property. However, it should be noted that it might be of significance in certain circumstances that there is also *national law* protection for fundamental rights in the UK, by virtue of the adoption of the HRA 1998.

In the UK, the RO has its legal basis in the various Renewables Obligation Orders (most recently, S.I. No. 1004 of 2006).⁶ This is not a piece of primary legislation within the meaning of the HRA and thus means that the Secretary of State is required to respect the provisions of the ECHR, as incorporated into UK law by the HRA 1998, when adopting such secondary measures. Any inconsistency would lead to the relevant Order being void for breach of fundamental rights law. Of course, such inconsistency would have to be established by the application of the same basic test discussed above, including proportionality.

Furthermore, as discussed in Annex I, much of the Strasbourg Court's case law under the ECHR has been relatively permissive in its attitude towards State control of the use of property, but it has done so by regular invocation of the so-called 'margin of appreciation' doctrine. It should be noted that, *within* that margin, it remains open to national courts to take a stricter view of the requirements of proportionality when assessing the compatibility of national measures that are restrictive of property rights and their use. Thus, it is possible that under either the EC provisions (discussed above) or under the UK provisions (under the HRA 1998) a national court might scrutinise more closely the level of compensation provided under the transitional scheme with regard to the ongoing generation of ROCs. The likely result of this approach would be to shift the price upwards *within* the band established as appropriate by the analysis under 4.2.1, above: any greater increase would fall foul of the supreme and direct effect of EC law as a disproportionate barrier to the free movement of goods.⁷

4.2.3 EC State aid law

It is possible that it might be alleged that the guarantee of a return on ROCs during the transitional period could be seen as a State subsidy that favours renewable generators over those competitors whose generation activities do not receive ROCs. This issue is covered more fully in the next section with

⁶ See <http://www.opsi.gov.uk/SI/si2006/20061004.htm#note1>.

⁷ This would be so *unless* national fundamental rights law would claim that greater protection would be required for the property right, to the extent that the barrier to trade would be rendered disproportionate. On the basis of practice in the UK to date, this seems highly unlikely – however, it is a point of interest for any other systems where the range of Constitutional provisions that might protect such commercial property interests is wider, and where the extent of that Constitutional protection is greater. (Indeed, this raises the interesting and potentially damaging spectre of national constitutional law conflicting with EC law requirements – the EC law position on such conflicts is that EC law prevails, but national Constitutional courts might take a different view, if such national courts decide that the ECJ and the EC are *systemically* failing to protect fundamental rights to the extent that the national system would require.)

regard to the proposed new scheme, and the structure of the analysis is essentially the same: in short, it may be wise to notify the scheme under the EC State aid rules for safety's sake, although it seems highly unlikely that the transitional regime would amount to aid at all.

It is thus to the legal assessment of the proposed new system of take-or-pay contracts for the promotion of renewable electricity that the analysis must now turn.

5. Legal issues relating to the proposed new scheme

The proposed new approach to encourage renewable electricity generation in the UK must also clear a number of legal hurdles if it is to be a robust scheme going forward.

The new system will arguably meet objections similar to those raised above with regard to the free movement of goods: again, it is highly likely that its contours will satisfy the requirements to justify any restriction upon such free movement. The case of *PreussenElektra*,⁸ which is directly relevant given its fact scenario (a power feed-in law with supported prices for renewable generation), would seem clearly to allow such a national system on environmental grounds, even where it seeks to favour domestic production through a supported price and take-or-pay obligation.

For our purposes, therefore, the potentially trickier issues relate to competition law, broadly conceived: specifically, both EC State aid law and the antitrust provisions of the EC Treaty and UK law. Each of these will be examined in turn.

5.1 EC State aid law

The scheme of the EC Treaty assumes that aid granted by a Member State is prohibited unless some exception or exemption is provided for in or under the Treaty.⁹ The general prohibition against such aid is laid down in Article 87(1) EC:

⁸ See footnote 2, above.

⁹ In the EC Treaty itself, there are both automatic and discretionary exceptions from the prohibition, although both require Commission approval after notification of the aid by the Member State. Under the Treaty, legislation has been adopted to exempt various aids from the prohibition, in the style of the Block Exemptions used to give effect to the exemption in Article 81(3) EC. (See Joined Cases T-447/93 and T-448/93 *AITEC v. Commission* [1995] ECR II-1971.)

Save as otherwise provided in this Treaty, any aid granted by a member State or through State resources in any form whatsoever which distorts or threatens to distort competition by favouring certain undertakings or the production of certain goods shall, in so far as it affects trade between Member States, be incompatible with the common market.

From this provision, and from the case law and decisional practice of the Commission, certain criteria must be met to show that something amounts to 'State aid' for these purposes. It must be established that:

- an 'advantage' has been conferred¹⁰
- which was granted by the State or through State resources¹¹
- which distorts or threatens to distort competition¹²
- by favouring certain undertakings or the production of certain goods or services (i.e. a 'selectivity' criterion)¹³
- and which affects or may affect trade between EC Member States.¹⁴

Under our proposed system, it would not be difficult to show the conferral of an advantage, the distortion of competition (between electricity generators) through selective benefit and an effect upon inter-Member State trade. However, the question of whether or not the advantage was granted by the State or through State resources is more difficult.

5.1.1 'State resources'

¹⁰ Case C-256/97 *Déménagements-Manutention Transport SA (DMT)* [1999] ECR I-3913: has 'the recipient undertaking receive[d] an economic advantage which would not have obtained under normal market conditions'?

¹¹ See, e.g., Joined Cases 67, 69 and 70/85 *Kwekerij Gebroeders Van der Kooy BV v. Commission* [1988] ECR 219.

¹² See, e.g., Case 730/79 *Philip Morris Holland BV v. Commission* [1980] ECR 2671 and Cases 296 and 381/82 *Netherlands and Leeuwarder Papierwarenfabriek v. Commission* [1985] ECR 809.

¹³ Favourable treatment granted to a given sector within the scope of general taxation will normally be regarded as an aid (Case 70/72 *Commission v. Germany* [1973] ECR 813) but may also be sometimes objectively justified as a response to market forces (Case 67/85 *Van der Kooy* [1988] ECR 219, although that justification was not established in the case itself).

¹⁴ See, e.g., Case 102/87 *France v. Commission (Brewery loan)* [1988] ECR 4067. This criterion is generally very easily found to be satisfied – indeed, such an effect is often assumed if the other criteria are met.

Because the proposed system provides a supported price to renewable power generators, which could be said to be in competition with generators of electricity which do not receive such price support. Again, the situation and analysis in *PreussenElektra* case are highly relevant to our proposed scheme. In that case, the cost of supporting the subsidy for renewable power generation was borne by the distribution and/or transmission system operators, which in turn passed these costs on to final consumers in their access (etc) pricing. The ECJ held, contrary to the submissions of the Commission, that this meant that any resources transferred to the renewable electricity producers ultimately came from consumers and, crucially, not from *State* resources, nor directly by the State. Thus, those transfers did not amount to illegal State aid under EC law.¹⁵ Similarly, under our proposed system, the TSO will be the counterparty under the take-or-pay contract and thus will be required to pay the supported price and then to incorporate that cost into the prices that it charges for network access. This means that the final subsidy would be paid by consumers and would not come from State resources. Therefore, on the authority of *PreussenElektra*, this does not amount to State aid under EC law and should not, strictly, require notification for clearance by the Commission.

5.1.2 Notification and justification

It should be noted that alternative support systems where funds come more directly from the State may well raise such State aid concerns and would then require notification to the Commission and thus the pleading of a justification for the grant of any such aid.¹⁶ Note, further, that all indications are that the Commission remains unhappy with the ECJ's judgment in *PreussenElektra* on the State aid issue and may seek to argue again that, since the only reason that consumers must pay is because the State exercises its legislative/regulatory authority to create a system that *forces* the consumer to pay, this is basically the use of the State's power to make someone else pay the costs *on the State's behalf*. (I.e. it is to all intents and purposes granted 'by the State', even if it amounts to the State requiring someone else actually to pay.) If there were

¹⁵ We should point out that, alongside the alternative analysis presented by the Commission in the case, the ECJ's judgment in *PreussenElektra* has been subjected to criticism by a number of commentators, on the ground that the ECJ took far too narrow an approach to the interpretation of the notion of the benefit being conferred from 'State resources'. See, e.g., Bronckers and van der Vlies (2001), esp. 460-465 for strong criticism, and Baquero Cruz and Castillo de la Torre (2001), esp. 490-494 for a balanced but somewhat critical discussion.

¹⁶ See, most recently, the Commission's Decision to accept the feed-in tariff to support green electricity in Austria (N317a/2006, 7 July 2006, accepted without objections: [2006] OJ C221/8). This Decision has been discussed in more detail by Renner-Loquenz: 'State aid in feed-in tariffs for green electricity' *EC Commission Competition Policy Newsletter*, Number 3 – Autumn (2006), 61-65.

any change in the ECJ's case law, then it is clear that such a system as that proposed would require notification and justification on environmental grounds, and the aid could only go so far as was proportionate to the environmental goals to be achieved (see Johnston (2006) and the references cited therein, for discussion of this point).

This point may not, if the ECJ's stance in *PreussenElektra* survives, be of great significance to our proposed scheme, but it is of relevance to any Member State intending to adopt a promotion scheme involving the *State* as the counter-party: such schemes are likely to require notification and justification under the State aid rules. It may also be prudent to notify our proposed scheme to the Commission, if only to reassure market participants that no nasty surprises might be sprung upon them by disgruntled competitors further down the line: the EC State aid rules are directly effective and may entitle private parties to seek to require a Member State to recover any unlawfully paid aid from its recipient, so this uncertainty is an investment risk worth removing if at all possible.

To the extent that the purpose of the subsidy is to achieve the environmental objective, it seems highly likely that the Commission would conclude that the subsidy is proportionate to achieving that objective (see, again, Johnston (2006) and the references cited therein).¹⁷ The EC's Renewables Directive (Commission 2001) (2001/77/EC, [2001] OJ L283/33) provides the policy context within which any proposed aid to be granted in this area must be assessed: while its targets for Member States are indicative, it is likely that the Commission's Guidelines on State Aid for Environmental Protection (Commission 2001a) ([2001] OJ C37/3) will, in combination with the goals of the Renewables Directive, see the Commission's discretion to grant an exemption exercised in favour of a scheme such as that which we propose. Indeed, para. 32 of the Guidelines suggests that investment to promote sources of renewable energy may receive at least 40% of eligible costs in aid (rising to 100% in cases 'where it can be shown to be necessary'). Given that the scheme proposed here does not extend to such levels of support, it seems safe to assume that a notified scheme would not have great difficulty in passing the State aids check with a clean bill of health, provided that the notification were properly presented and justified.

¹⁷ This would, it seems, also be true if part of the environmental objective were to advance renewable energy generation technology: true, it might require a separate argument to be pursued regarding research & development aid generally, or within the environmental field, but there seems no reason why the result should not be the same. Again, if our analysis is correct – that there is in fact no State aid, on the basis of the *PreussenElektra* case – then the goals sought by the system do not need justification on State aid grounds in any case.

Thus, we conclude that State aid notification to the EC Commission of our proposed scheme would probably be desirable to ensure maximum security for investors, although we do not anticipate that the scheme does in fact create difficulties under EC State aid law.

5.2 Antitrust law

5.2.1 Restrictions upon a Member State's activities

It could be argued that the State's adoption of a system requiring entry into long-term take-or-pay contracts at a price not determined by the market restricts competition among renewable power generators. Under EC law, the norm of Articles 3(g), 10 and 81 EC requires that EC Member States must not act so as to undermine the system under the EC Treaty that seeks to ensure that competition is not distorted within the common market.¹⁸ It seems clear here that the EC law principle would be engaged, given the potential cross-border trade in renewable electricity. However, the specific application of this norm by the ECJ has, thus far, not extended to the control of such price regulatory activities. Instead, the ECJ has limited the case law to three specific situations: (i) the imposition of cartels; (ii) the encouragement of collusive practices or the reinforcement of their effects; and (iii) the delegation of rule-making competences by the State to private entities (Slot & Johnston (2006), para. 7.3 and the references cited therein). None of these applies to the situation under our proposed scheme. Thus, it seems that enshrining this system in legislative or regulatory State measures should not, *per se*, prove problematic.

Note, however, that it is then required that companies operating under such a (price) regulated system must still compete so far as they are able.¹⁹ This is clearly a key feature of the incentive system proposed here, as it intends to encourage investment in renewable power generation and leaves scope for competition on technological development, innovation and efficiency savings, and so on. Indeed, the primary market in this context is, in many respects, that for Photovoltaic panels, wind turbines and other renewable technologies:

¹⁸ Similarly, Article 86 EC makes clear that where an undertaking is of a public character and/or has been charged with the performance of special tasks (or have been granted exclusive or special rights in a particular field) then there is *prima facie* a duty upon the State to ensure that their operation does not distort competition (or, indeed, infringe other EC Treaty rules). At the same time, Article 86 EC provides for a possible derogation from the application of the EC competition rules insofar as the performance of those tasks so requires. For discussion, see Slot and Johnston (2006), 256-271.

¹⁹ See Cases 240-242, 261, 262, 268 and 269/82 *Stichting SSI v. Commission* [1985] ECR 3860.

that market remains very much open to international competition under the proposed scheme (and current evidence suggests strong and growing competition in this field). Further, the secondary market for project developers to establish installations in the UK also remains open to international investment and competition.

5.2.2 Behaviour of undertakings under the scheme and under antitrust law

Requiring the conclusion of long-term contracts between renewable power generators and the TSO may create potential problems with the rules on vertical restraints of competition under EC and/or UK competition law, due in particular to the *duration* of the purchasing obligations under those contracts. While these area designed to ensure investment security, so as to encourage the development of an increased number of renewable electricity generating facilities, the long-term nature of the contractual arrangement has been found to foreclose possible market entry (here, this would be most likeliest to come from imports into the UK from other Member States).

The applicability of Article 81(1) EC or Chapter I prohibition under s. 2 of the Competition Act 1998 ('CA 1998') depends upon the existence of:

- an agreement or concerted practice;
- which has as its object or effect the restriction or distortion of competition within the EC (for Article 81 EC) or the UK (for the Chapter I prohibition) and
- which has an effect upon trade between Member States (for Article 81 EC) or in the UK (for the Chapter I prohibition).

Once a given agreement or practice is caught by Article 81(1) EC/s. 2(1) CA 1998, then the infringing provisions will be rendered void by Article 81(2) EC/s. 2(1) CA 1998, *unless* they can be exempted, either under a relevant EC block exemption regulation or individually by the application of the criteria under Article 81(3) EC or s. 9 CA 1998. Here, the relevant EC block exemption is laid down in Regulation 2790/1999/EC ([1999] OJ L336/21) on the application of Article 81(3) EC to categories of vertical agreements and concerted practices.

The substantive rules under EC and UK regimes on these points are effectively identical, as the UK uses the EC vertical agreements block exemption Regulation as a parallel exemption under national law as well (discussed in Slot and Johnston (2006), Ch. 3). The criterion that determines

which of the two applies is whether or not there is merely likely to be an effect on trade within the UK (in which case only UK competition law applies) or whether there is also likely to be an effect upon trade between EC Member States (when EC competition law would be activated). Here, however, given the potential for cross-border trade (in the form of the importation of electricity generated from renewable sources), it seems likely that as a formal matter it will be the EC competition rules that apply.

A number of key preliminary questions must be answered to establish the applicability of competition law to the scheme proposed here, although most are *prima facie* straightforward to address.²⁰ One more problematic issue is the establishment of the relevant market(s) for the purposes of assessing whether or not any restriction of competition can be said to exist. This is particularly difficult when proposing a new scheme that is intended to have an impact upon those very market structures. It will be assumed here that, as a result of the scheme, a separate and very specific market will come into being for the supply of electricity generated from renewable sources to the TSO (and not for the supply of renewable power downstream). This market is open to everyone to enter, subject to spatial planning requirements and at the regulated price.

Assuming that there is this specific market for the supply of renewable electricity to the TSO, then it seems that our proposed system does raise competition concerns, since its requirement that the TSO purchase or pay for such generation under the take-or-pay contract has the result of restricting access to the UK market for such electricity to non-UK-based renewable generators or suppliers, in that those latter suppliers will not be able to sell to the TSO at all (or at least not on the same price-supported terms). *Prima facie*, this has the potential to restrict competition and thus requires exemption or justification if it is not to be held void under the competition rules.

The question thus arises: how can we deal with this issue under EC and/or UK law? Three particular approaches appear particularly significant here: first, it may be argued that competition law actually does not apply to the situation under our proposed scheme; second, it may be argued that the block exemption Regulation for vertical agreements may apply so as to address any competition concerns; and, third, it is possible to argue that an individual

²⁰ E.g. those involved must be 'undertakings' under Article 81(1) EC/s. 2(1) CA 1998: clearly, the parties here will be engaged in an economic activity and will thus satisfy this test. Further, some 'agreement' must be shown – again, the contract required under our proposed scheme would satisfy this requirement (although see the discussion under section 5.2.2(i), below, on how to characterise that agreement).

exemption from the competition rules may be available under Article 81(3) EC to deal with any competition concerns that may arise. We will now examine each of these approaches in more detail.

5.2.2(i) Competition law does not actually apply at all

One possible argument to deploy against the applicability of the antitrust rules on vertical agreements in this context is that the regulatory regime proposed would be adopted by State action and thus leaves no room for any genuine exercise of independent will on the part of renewable electricity generators and, in particular, the TSO. In such circumstances, the conclusion of the contract is *de facto* mandated by the regulatory regime chosen by the State and thus cannot be ascribed to a voluntary agreement on the part of the generator and the TSO. Thus, the analysis from the preceding paragraphs on the State's freedom to choose regulatory goals and design systems would apply, so as to exempt the agreements thus concluded from scrutiny under the competition rules (subject to the caveat, also discussed above, that competition must continue where it is possible under that system).

Although it is true to say that no investor is forced to spend its money by developing renewable energy projects, it must also be conceded that the practical operation of the take-or-pay contract scheme proposed here is functionally identical to a scheme in which the State *requires as a matter of law* that the TSO must take all renewable electricity generated by the producer in its area and at a supported price determined each year by the regulatory authorities. If that would count as a legitimate State regulatory choice, then there is clearly a strong argument that, *as a matter of substance*, the scheme proposed here should be treated in a functionally similar manner and thus the contracts should not be subjected to scrutiny and the need to be justified under EC and/or UK competition law.

However, it is possible that this argument would not find favour with the courts or the national or EC competition authorities, were the point to be raised before them, so it is necessary also to consider whether or not a justification for the contract duration may be sought within competition law.

5.2.2(ii) Application of the EC block exemption Regulation on Vertical Agreements

A second approach would be to rely upon the block exemption Regulation for vertical agreements (Regulation 2790/1999/EC) to exempt these take-or-pay contracts from EC and/or national competition law. However, the duration of these contracts exceeds the normal maximum permitted by the Regulation

(specifically Article 5(a) on non-compete obligations)²¹ of 5 years. As a result, such clauses would not be exempted by the Regulation from the prohibition of Article 81 EC and would thus require individual justification under Article 81(3) EC (or the analogous provisions of s. 9 CA 1998 under UK law).

5.2.2(iii) Application of the Article 81(3) EC/s. 9 CA 1998 exemption

Thus, if the block exemption Regulation cannot apply so as to exempt the contracts under the proposed scheme from the prohibition of Article 81 EC/Ch. I CA 1998, then the final possibility is to fall back upon the now directly effective provisions of Article 81(3) EC, which can be invoked before a national court or national competition authority (in the UK, the OFT) against any argument that the relevant contract is anti-competitive (after Regulation 1/2003/EC [2003] OJ L1/1). The basic criteria which must be satisfied under Article 81(3) EC (which are identical to those under s. 9 CA 1998) are as follows:²²

Condition I: the arrangement must contribute to the improvement of production or distribution or to the promotion of technical or economic progress;

Condition II: a fair share of the resulting benefit must be enjoyed by consumers;

Condition III: the arrangement must not impose any restrictions upon the undertakings concerned that are not indispensable to the achievement of these goals;

Condition IV: the arrangement must not give the undertakings concerned the possibility of eliminating competition in respect of a substantial part of the goods or services in question.

²¹ A 'non-compete obligation' is defined in Article 1(b) of the Regulation as 'any direct or indirect obligation causing the buyer not to manufacture, purchase, sell or resell goods or services which compete with the contract goods or services, or any direct or indirect obligation on the buyer to purchase from the supplier or from another undertaking designated by the supplier more than 80% of the buyer's total purchases of the contract goods or services and their substitutes on the relevant market, calculated on the basis of the value of its purchases in the preceding calendar year'. This would clearly seem to cover the situation under our envisaged take-or-pay contract scheme, in that it may cause the purchaser (the TSO) not to purchase competing goods (electricity generated from renewable sources) from suppliers in other Member States.

²² For discussion, see Commission Notice, 'Guidelines on the Application of Article 81(3) of the Treaty' [2004] OJ C101/97, Whish (2003), Chs. 4 and 16 (esp. pp. 641-642), and Slot & Johnston (2006), Ch. 3 (esp. para. 3.5).

It seems tolerably clear that conditions I, III and IV are comfortably satisfied by our proposed take-or-pay contract scheme:

- as discussed in the preceding legal analysis, the key focus is the goals in condition I (environmentally sustainable electricity generation, while encouraging technological innovation in the field);
- the proportionality analysis employed above (when examining the free trade rules) seems equally apposite here to satisfy the requirements of condition III as to indispensability (particularly when the results of the RO scheme to date – in achieving an increasing share of the market for renewable electricity generation – are examined); and
- the points made (in section 5.2.1, above) concerning the competition that remains in the relevant markets dispose nicely of condition IV.

However, condition II (concerning consumer benefit) may cause somewhat greater difficulty. It should be noted at the outset that in its exemption decisions under Article 81(3) EC the Commission has rarely devoted extensive analysis to the question of consumer benefit, provided that the other three conditions have been met by the arrangement in issue (although there are indications of more rigorous treatment in recent years).²³ The recently issued Commission Notice on the application of Article 81(3) EC provides greater detail on how to show consumer benefit when seeking to justify a particular arrangement. In summary, the Commission's approach is to establish the extent of pass-on to consumers of any efficiency gains that result from the arrangement: such efficiency gains cover both cost efficiencies and 'qualitative efficiencies' (which include new or improved products). Any attempt to assess the likely outcome of our proposed scheme with regard to these criteria is of necessity somewhat speculative, but a few general observations may be made here:

- the notion of 'consumer' is a broad one, which includes 'all direct or indirect users of products covered by the agreement' (Commission Notice, para. 84) – this includes wholesalers, retailers and final consumers;
- what must be transferred is a 'fair share' of the resulting benefits, not *all* benefits – this formulation clearly provides some margin of

²³ See, e.g., Albors-Llorens (2006), esp. pp. 266-269 and the references cited therein.

appreciation for the competition authorities and national courts in assessing how much is 'fair' in the relevant context;

- the greater the intensity of competition in the relevant market, the likelier it will be that any benefits generated by the arrangement will be transferred to the consumer;
- collective environmental benefits to society generally were considered by the Commission in its *CECED* Decision to be relevant to the assessment of consumer benefits under Article 81(3) EC.²⁴ In particular, the benefits to be gained from the rectification of environmental damage at source (a principle specifically laid down in Article 174 EC) were quantified and found to be more than seven times higher than the increased purchase costs to consumers (here, of the more energy efficient washing machines that would result from the agreement). The Commission explicitly ruled that: 'such environmental results for society would adequately allow consumers a fair share of the benefits even if no benefits accrued to individual purchasers of machines'. Clearly, such considerations are also of great relevance to the justification of our proposed scheme;
- we should also note the acceptance by the Commission of long-term contracts in earlier energy cases where there was a clear need to secure infrastructure investment:²⁵ in both Decisions, a 15-year exclusive off-take clause in long-term power purchase agreements was found to meet the requirements of Article 81(3) EC. This is reinforced by a judgment of the Court of First Instance²⁶ ('CFI') on the question of long-term contracts for rail services. In this judgment, the CFI held (in annulling a Commission Decision that attempted to limit a rail services agreement to a duration of 8 years) that 'the length of time required to ensure a proper return on ... investment is necessarily a factor to be taken into account when determining the duration of an exemption'. This implies that the considerations of investment security and return that are major motivating factors behind the design of our proposed

²⁴ Commission Decision 2000/475/EC, *CECED* (Case IV.F.1/36.718) [2000] OJ L187/47 (available at http://eur-lex.europa.eu/LexUriServ/site/en/oj/2000/l_187/l_18720000726en00470054.pdf), paras. 55-57.

²⁵ See, e.g., the cases considered by the Commission, such as *Pégo* [1993] OJ C265/3 and the Decision in *Scottish Nuclear* (Decision 91/329/EEC, Case IV./33.473) [1991] OJ L178/31: both of these Decisions concerned long-term power purchase agreements, in Portugal and Scotland respectively.

²⁶ Joined Cases T-374, 375, 384 and 388/94 *European Night Services v. Commission* [1998] ECR II-3141.

scheme will be of critical importance in the assessment of the justifiability of the arrangement under Article 81(3) EC.

Thus, it seems strongly arguable that, if any restriction of competition is found in our proposed scheme, it may be exempted from the prohibition of Article 81(1) EC by virtue of the application of the conditions laid down in Article 81(3) EC. (An identical conclusion should follow under the purely UK law analysis under the CA 1998, since the substantive criteria in these circumstances are the same.)

5.3 Legal analysis of the proposed scheme – conclusions

As a result of the foregoing analysis, it is tolerably clear that the proposed scheme satisfies the criteria imposed by the multifarious legal provisions that apply to the interests and issues raised in this sector. So long as the justifiable level of remuneration is met for both pre-existing expectations as to ROC generation and for the price for renewable generation under the proposed take-or-pay contract scheme is met, it seems that problems with regard to fundamental rights protection, EC trade law, EC State aid law and competition law (whether at EC or national level) can be met satisfactorily. The following section seeks to clarify this beyond doubt by assessing the quantification of the economic impacts of the proposed new renewables promotion scheme.

6. First attempt at quantification

6.1 Framework

Figure 1 illustrates the different revenue requirements for a project as a function of the risks the investor has to carry.

Where the entry into a long-term take-or-pay contract with a credible counterparty is concerned, the main risk with which an investor is left is the risk of the project or technology failing or being exposed to higher than expected maintenance costs. The investor or his agent is in the best position to manage that risk (e.g. by diligent maintenance or choice of technology), therefore this risk should remain entirely with the investor (other than possibly for early stage technologies). Under a take-or-pay contract, the investor only faces the risk of foregone revenues when the generator is down. Experience from other markets suggests that this is sufficient to ensure efforts to achieve high availability levels. This assumption will need to be revisited once large shares of UK electricity are provided from generation technologies that have

correlated technological failure rates, while renewable resource-related availability is treated separately.

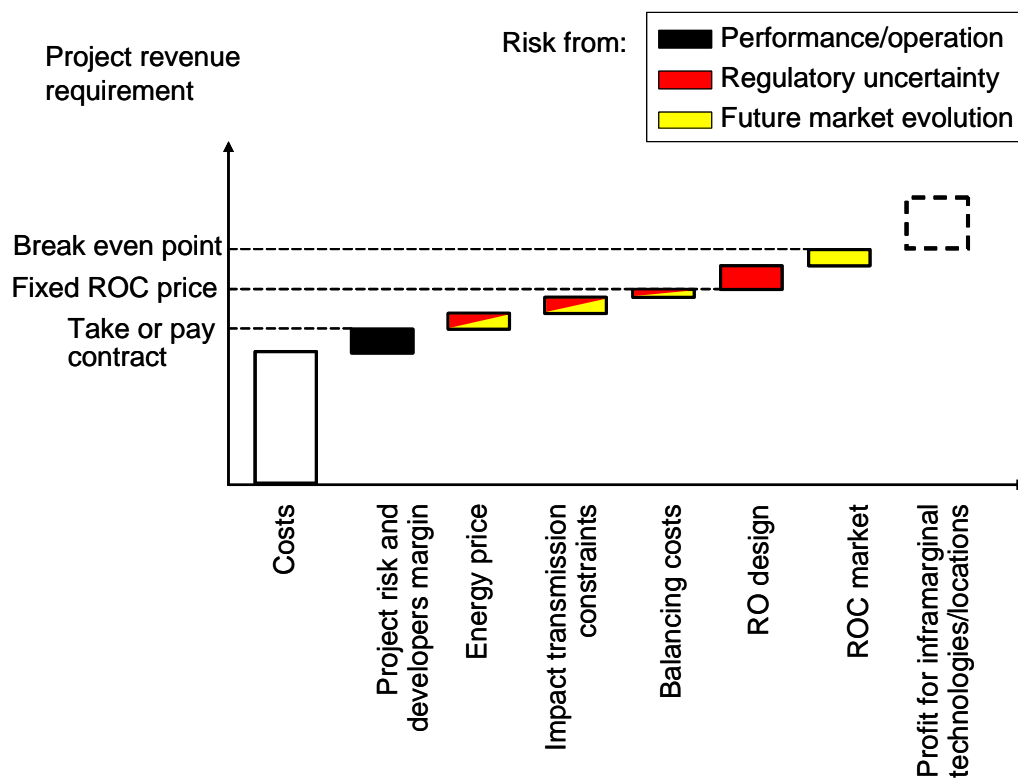


Figure 1 Illustration of revenue requirement as function of risk carried by investor

Investors would face a higher level of project risk if they were to receive a fixed ROC price for the duration of their project. In this case, they would remain exposed to uncertainty about future energy prices. Due to some regulatory restrictions for domestic consumers to sign long-term contracts for project-relevant durations, this risk can be assumed to be partially regulatorily induced. As discussed in section two, investors face the further risk that future market design will implement a different congestion management scheme or a balancing market that could affect congestion costs. The changes in costs or forgone energy and ROC revenues are both a function of the regulatory choice of such a future market design and of the generation mix at this future time. Uncertainty about future energy prices and congestion and balancing costs justifies a risk premium for higher revenues for investors that are rewarded with a fixed ROC price rather than being offered long term take-or-pay contracts.

In the current environment, the future ROC price is a function of the future regulatory decisions on the renewables quota, qualification of different technologies, the buy out price and potential banding. But the future ROC

price also depends upon the response of other investors to the regulatory framework: e.g. the penetration of the market by different renewable energy technologies. This creates both regulatory and market uncertainty, which justifies an additional risk premium for investors.

The current RO scheme provides an undifferentiated payment to all technologies and locations. Projects that use a less expensive technology (co-firing) or a good resource location (e.g. high wind speed), can make more revenues than would be required for the project to break even. The ongoing discussion relating to the banding of the ROC aims to introduce some differentiation in the revenues that projects can receive from the RO scheme. The additional regulatory flexibility introduced by this approach can allow future regulators to discriminate against past investors, and might thus increase the risk premia required to compensate for the regulatory uncertainty.

Here, we have attempted to provide a first quantification of the different revenue levels currently observed in the UK context. Our analysis focuses upon the impact of risk and uncertainty. The Carbon Trust, (2006) provides a detailed quantification of additional revenues (or savings) if technologies/resources basis receive differential treatment.

We will first look at project costs, then contract prices that approximate the level of fixed ROC prices and finally projected revenue streams under the current scheme as indication of the break even point.

6.2 Cost of wind generation

The IEA study “Projected costs of generating electricity”, generation costs projected wind power generation costs (IEA 2005). Figure 2 illustrates the distribution of costs calculated across different countries and projects. Assuming a real discount rate of 5% the median generation costs are 33 £/MWh, increasing to 45 £/MWh if 10% real discount rate is assumed (exchange rate USD/GBP 0.601468 on 1/7/03). As most costs are incurred up-front, the interest payments increase with higher discount rates, and therefore higher revenues are required for break-even.

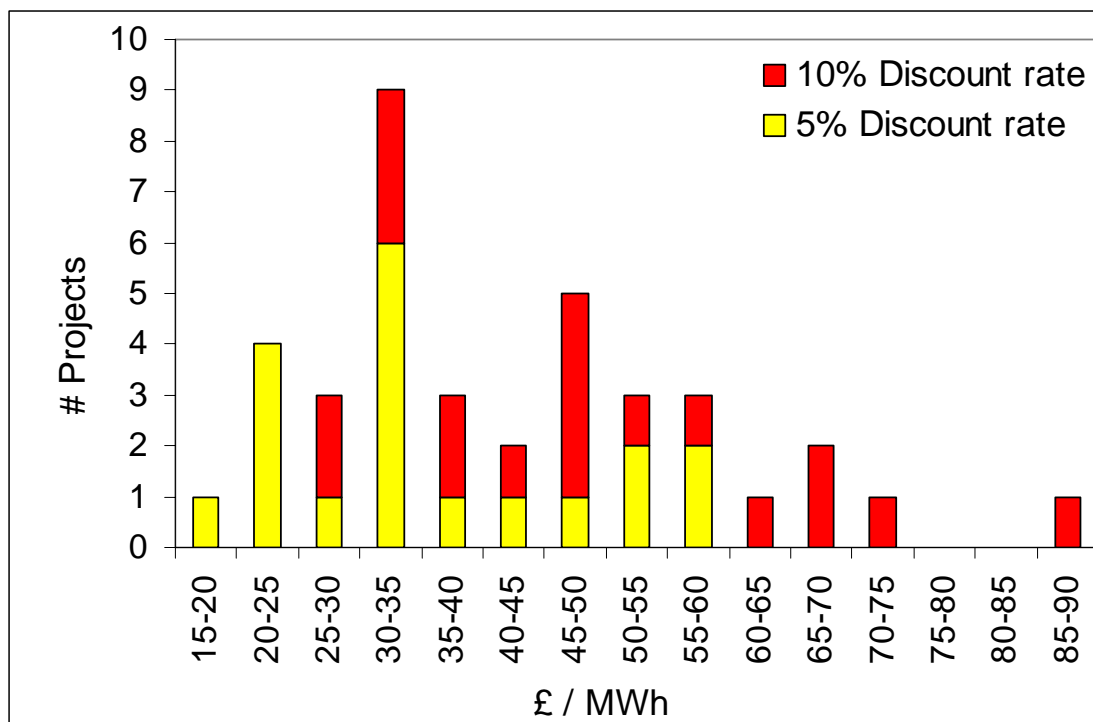


Figure 2 Electricity generation costs from wind power for 19 projects in 11 countries (based on IEA 2005)

To illustrate the sensitivity of generation costs, Table 1 gives the costs calculated at locations with different wind speeds, as predicted by Enviro (2005).

Table 1 Generation cost by wind speed, estimated by Enviro (2005)²⁷

Windspeed (m/s)	Cost Of Generation 2005 (£/MWh)		
	Maximum (£/MWh)	Average (£/MWh)	Minimum (£/MWh)
5.5	85.4	76.3	71.5
6	69.8	62.1	58.5
6.5	68.3	61.2	57.2
7	59.5	53.0	49.8
7.5	52.7	47.3	44.1

Generation costs are a function of multiple components of up front investment costs and later costs for maintenance, operation and grid connection (Figure 3). The overall costs for producing wind energy calculated at about 55£/MWh based on Enviro assumptions are a bit higher than most IEA projections. This is mainly driven by Enviro's assumption of annual maintenance and management costs at 5% of total capital expenditure, or £15.73/MWh. This is significantly higher than in most country projections. In

²⁷ Enviro estimated generation costs for UK windfarms for a range of 5m/s to 9m/s. We only replicate the data for the range 5.5- 7.5m/s.

IEA (2005) only 3 of 17 projections assumed costs above £10/MWh with median costs of £5.82/MWh.

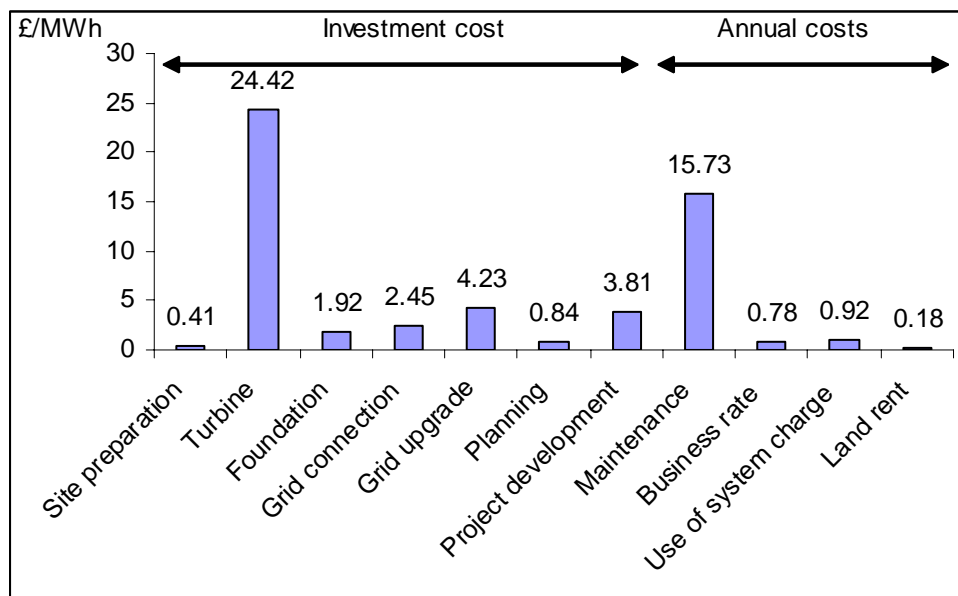


Figure 3 Costs components – as assumed by Enviro²⁸

6.3 Observed contract prices for output of wind generators

While contract terms are commercially sensitive and not made public, the rumours as to those prices and the length of RO contracts seem to converge. Figure 4 summarises the results from our review.

Short-term contracts typically refer to yearly contracts, but could cover up to three years (Scottish Renewables Briefing 2003; Toke 2005). Their prices seem to range between from £70 to £90/MWh.

Long-term contracting has been limited in the UK (Steen 2002; Mitchell 2006; REFOCUS (March/April 2003)). It is understood that most “long-term contracts” under the RO are of a five-year span, although there are rumours that some ten and even fifteen year contracts have been concluded. The longer the term of the contract, the greater the ROC price uncertainty and the more

²⁸ We use assumptions of the Enviro study (Enviro 2005) to illustrate the different cost components of a wind project. Assuming 5 turbines of 2MW are set up in England at 7 m/w average wind speed (capacity factor 31%), discount rate 7.5%, depreciation over 15 years.

heavily suppliers discount the contracted price.²⁹ Overall, it seems that most long-term contract prices range between £40 and £60/MWh.³⁰

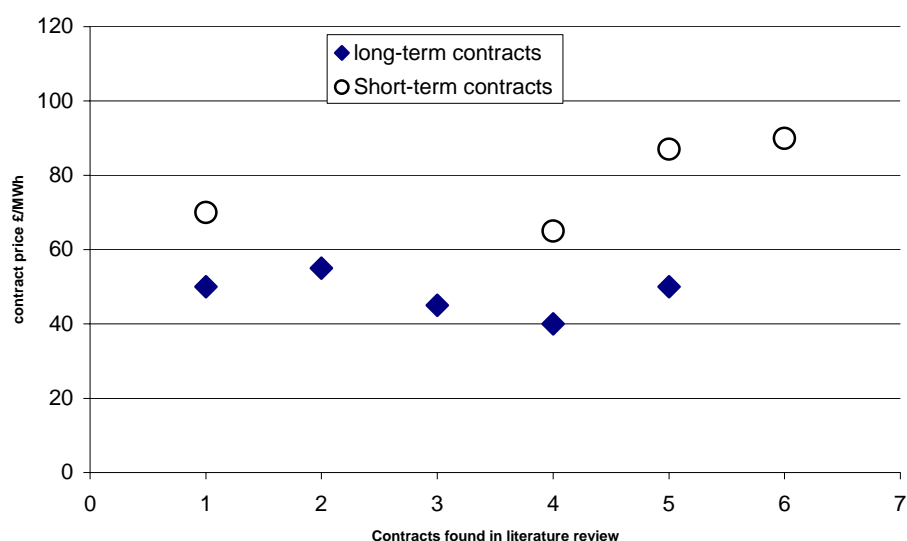


Figure 4 Contract prices for short-term (<1 year) and long-term contracts (~5-15 years) delivered under the RO. Source: (Scottish Renewables Briefing 2003; Oxera 2005; Toke 2005; Van der Linden 2005; SmartestEnergy (Tim Foster) 2006; Tradelink Solutions (Bob Middleton) 2006)

6.4 Projected revenue streams for wind output

Under the current UK promotional scheme, renewable generators receive three types of revenue streams (Mitchell 2004; Mitchell 2006). First, revenue from energy sales; second, revenue from the levy exemption certificate; and, third, revenue from the ROC sales, including the recycling premium.

Following Butler and Neuhoff (2004), we have projected two scenarios for future revenue streams of a wind project. We assume rather low energy prices, which are increased by the opportunity costs of CO₂ allowances trading.

In the first scenario (Figure 5) we assume high build rates, such that renewable targets are achieved and the recycling premium falls to zero. The scarcity value of the ROC declines gradually over time.

²⁹ "In general, the shorter the contract that the developers were able to accept, or the more flexible the terms, the higher would be the amounts of money they would receive." (Toke 2007) pg 282.

³⁰ While past evidence suggested that some requested contracts were at such discounted prices that projects were no longer commercially viable (House of Lords 2004), this might have been addressed by the extension of the duration of the ROC.

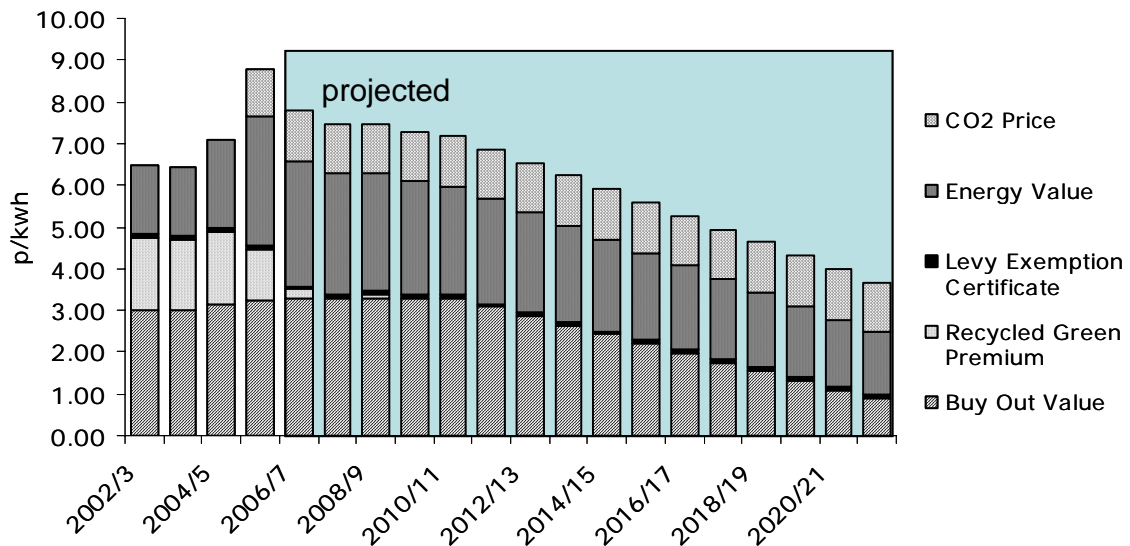


Figure 5 Projected energy revenue for wind project, with gradually declining ROC buy-out value

In the second scenario (Figure 6) we assume that only 70% of the target is achieved at 2015. After 2015/16, following some studies we assume a cliff edge: i.e. the target will be reached 100% and lack of scarcity drives the ROC price to zero. However, there is the possibility of conversion to UK ETS allowances at 0.43 tonnes per MWh. Applying the current allowance price under the UK ETS, this corresponds to about £1/MWh.

The sudden shift post-2015 does not seem very plausible as: (a) it will take some time to build the remaining 30% of renewables relative to the target level; and (b) risk averse investors, decommissioning of some projects and the exercise of market power might imply that some scarcity level will remain post-2015. Hence this second scenario can be seen as a lower bound for the energy revenue.

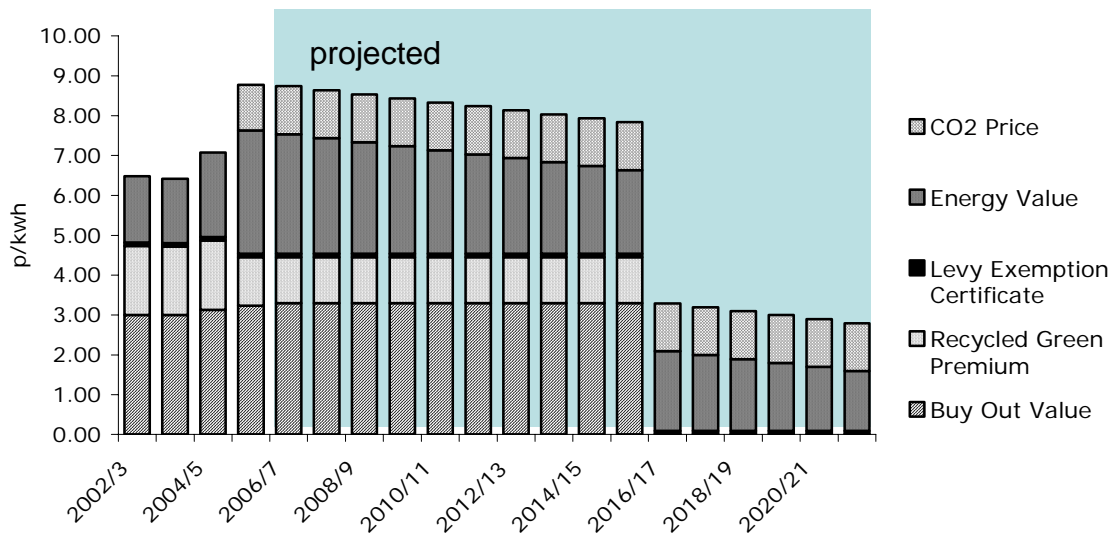


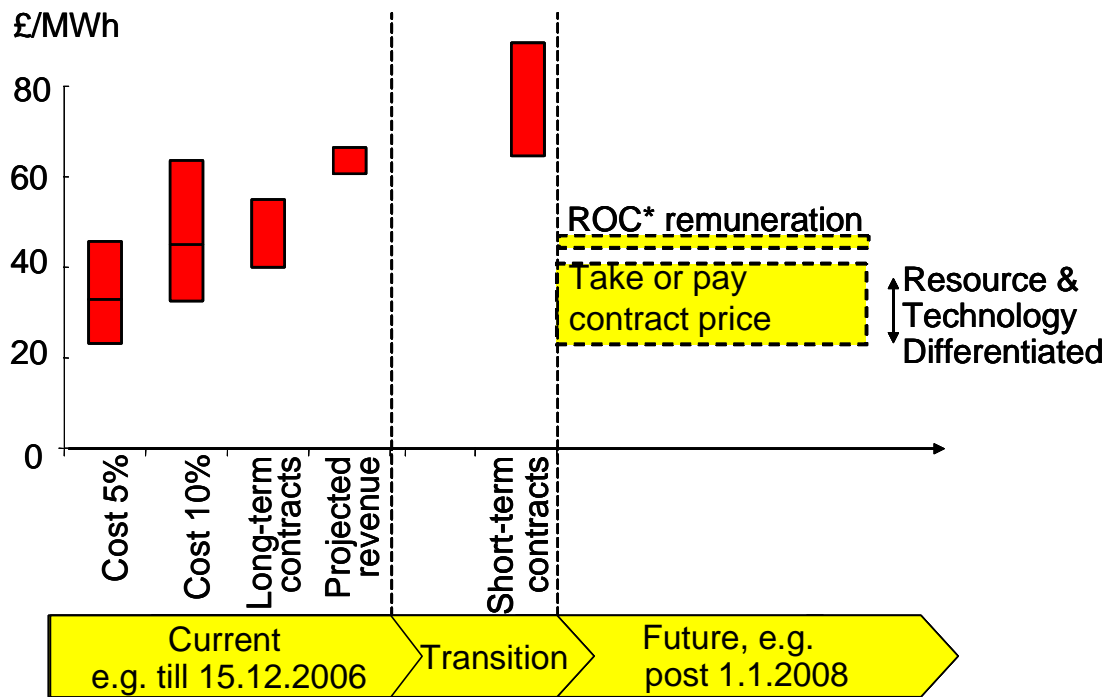
Figure 6 Projected energy revenue for wind project, cliff edge post 2016

To compare both scenarios, we calculated an equivalent revenue per MWh, which delivers the same net present value of revenues if received constantly over 20 years.

With gradually declining ROC prices the equivalent revenues for a project built in 2006 are £60.70/MWh, while revenues with 70% of the target level reached by 2015 and assumed cliff edge post-2015 are £66.50/MWh.

6.5 How does it all add up?

Figure 7 compares for the current scheme the IEA projected costs of wind projects with long-term contract prices and projected revenues under the RO scheme. Given the good wind resource of the UK, the costs per MWh should be at the lower end of the IEA projections, and therefore the expected ranking of costs below long-term contract prices (certain) below expected revenues (risky) is satisfied.



* Includes expected energy revenue. Higher price compensates risk & balancing costs

Figure 7 Quantification of the transition

A future take-or-pay contract that would cover all regulatory risk for market participants and would last for, e.g., 20 years could be priced close to project costs. Differentiation across renewable resource bases and technologies allows a further reduction of the take-or-pay contracts, e.g. for good on-shore wind resources.

How would current projects be treated in such a future scheme? Their first option is to continue to produce ROCs and ask NGT for remuneration at a fixed price, e.g. until 2025. The fixed remuneration will reduce revenue uncertainty for current projects. Therefore, the price of the ROC remuneration can be set at the value of the certainty equivalent of current uncertain future revenue streams, e.g. below the projected revenue streams. Investors will continue to face uncertainty about the corresponding energy revenue streams, balancing market arrangements, and connection and system use costs; therefore, the ROC price together with the expected energy revenue should be set above the contract price for take-or-pay contracts. Investors also have the option, perhaps with a cut-off date, to swap over to a take-or-pay contract. If the price levels of the take-or-pay contract and of the ROC remuneration price are set appropriately, investors are likely to be indifferent between the two approaches; this will hold unless their contractual and financing arrangements influence their preferred choice.

How will the arrangement affect investment during the transitional period (e.g., from the period when discussions about a change to take-or pay contracts starts until they can be offered following a change of the regulatory arrangement, how will the proposed scheme operate)? Any investment that is commissioned during the transitional period can produce ROCs during that transitional period. The current ROC value is comfortably high (e.g. £45/MWh) as the renewable deployment volume is low relative to the renewable target. This gap between current volume and the renewable target is unlikely to be closed significantly in the next two years, therefore there is a high certainty that ROC values will remain high during the transitional period. This can be seen in the extremely high price levels of short-term contracts in this field. This creates a strong incentive to accelerate projects. They can first harvest the high ROC values and then be covered by the comfortable provisions of long-term take-or-pay contracts. This does, however, require that these provisions be spelt out clearly and credibly, and as quickly as possible. So long as certainty about future take-or-pay contract provisions does not exist, investment can still go forward as investors will rely upon the property rights protection of the RO scheme. As the continuation of the RO scheme with a significant positive RO value is required, investors can continue to make projections based upon the assumption of future revenue streams from their ROCs.

7. Conclusion

The Renewables Obligation scheme in the UK is currently under review. The first concern is that an undifferentiated payment through the ROC to all renewable technologies does not support a portfolio of technologies and locations. If the ROC price were to increase sufficiently to support offshore wind and a portfolio of technologies, then on-shore wind and other inframarginal renewable technologies could receive unnecessarily high support payments that would be at the cost of consumers. A second concern is that, even for marginal technologies, the support payments have to be unnecessarily high to compensate investors for regulatory uncertainty relating to the shape of the future RO scheme, balancing arrangements and the congestion management mechanism.

It has been proposed to band the RO such that different technologies or locations can receive different support levels. In simple models, the proponents of this approach illustrate how it can reduce inframarginal payments and support a portfolio of renewable technologies. We are concerned, however, that the additional flexibility for the regulator in designing and evolving this banding will further increase regulatory

uncertainty, such that the risk premium required by investors and paid by consumers could increase even further.

In this paper we therefore propose to move from the RO to long-term take-or-pay contracts for renewable technologies. In our straw man scenario, we would assume that the regulator defines on an annual basis the terms of the long-term contracts that are signed to cover projects during the following year. The contract duration would be about 20 years to facilitate project financing and the contract would guarantee a payment whenever the renewable energy provider (wind, marine, solar) is technically available and has the renewable resource available to produce electricity. We propose that the grid operator, National Grid or DNO, is the designated counter-party and offers to sign such contracts with any renewable energy project (with a potentially quantity restricted auction for large-scale off-shore projects). The grid operator would pass on any extra costs (or, at times of high fuel prices, benefits) that these long-term contracts might offer to electricity consumers as part of the network usage charges. Alternatively a separate institution, perhaps similarly structured to the Non-Fossil Purchasing Agency Ltd, could serve as the counter-party for long-term contracts if the government provides the necessary credit guarantees to ensure the credibility of these long-term contracts.

The proposed long-term take-or-pay contracts insulate projects from the regulatory risk caused by future changes to renewable support levels and policies, balancing and congestion management market designs. These contracts also insulate renewable projects from uncertainty about future energy prices that could be induced by changing fuel or carbon prices. Consumers benefit from these long-term contracts – the removal of regulatory risk reduces overall costs while covering the situation where, for example, gas prices or generation scarcity operate to push up electricity wholesale prices. In such circumstances, the grid operator will sell renewable energy from the take-or-pay contracts at a profit. This profit will be passed on to consumers in the form of reduced network usage charges.

Any projects that are commissioned before the new arrangement is in place have the option to sign long-term take-or-pay contracts for 20 years minus the number of years for which they have already been in operation.

To satisfy the legal requirements implied by property rights protection, existing projects can choose to continue to produce ROCs. These ROCs will be remunerated at a price that will be announced for the entire duration of the RO scheme. This fixed revenue stream again facilitates the financing and refinancing of existing assets. It also ensures that existing projects will receive

sufficient remuneration, and thus satisfy legal requirements and the need for government to foster its credibility in an emerging market. The remuneration of the ROCs can be performed by the same agency that is counter-party of the long-term take-or-pay contracts. The agency could also take over the responsibilities currently covered by the Non-Fossil Purchasing Agency Ltd. Thus, a proliferation of institutions responsible for renewable support can be avoided.

Any projects that are commissioned in the transition period (e.g. before the proposed take-or-pay contracts are available), will first benefit from the currently rather high ROC prices and can then either select to use long-term take-or-pay contracts or a long-term guaranteed remuneration of the ROC. This makes early investment for any inframarginal projects (like on-shore wind power) attractive, and therefore ensures continued investment during the transitional period.

We are also mindful of the relevant legal considerations that would have to be satisfied by any proposed new renewable electricity promotion scheme. In this paper, we also provide a preliminary analysis of the constraints imposed by the fundamental right to protect acquired property rights, alongside the issues raised by EC law rules on the free movement of goods (here, electricity). Both of these issues respond to a proportionality test, which will establish an acceptable range within which existing rights to exercise and generate ROCs should receive compensation during the transitional period. Further, there are legal issues relating to the possible State aid embodied in any transitional regime that compensates for such acquired property rights, but also with regard to the level of price support for the generation of electricity from renewable sources under the proposed take-or-pay contract scheme. It is suggested that the proposed scheme does not amount to State aid under EC law and, even if it is argued that State aid is involved, that it would clearly be justifiable State aid provided that it is notified as such. Finally, it is not impossible that the proposed scheme may be subject to challenge under antitrust law as a restrictive practice: this issue is also analysed under EC and UK law, with the conclusion that it is likely that such competition law problems do not in fact arise (due to the fact that the system is effectively mandated by justifiable State regulation) and that, even if competition law is an issue, that the proposed scheme is justifiable under derogations from the EC and/or UK competition rules.

ANNEX I

1. European Convention on Human Rights and Fundamental Freedoms (1950)

Protocol 1, Article 1 – Protection of Property

Every natural or legal person is entitled to the peaceful enjoyment of his possessions. No one shall be deprived of his possessions except in the public interest and subject to the conditions provided for by law and by the general principles of international law.

The preceding provisions shall not, however, in any way impair the right of a State to enforce such laws as it deems necessary to control the use of property in accordance with the general interest or to secure the payment of taxes or other contributions or penalties.

1(a) Introduction

In the U.K., the Human Rights Act 1998 ('the Act') was enacted 'to give further effect to the rights and freedoms granted under the European Convention on Human Rights'.³¹ Among the 'Convention Rights' that it covers, the Act includes Article 1 of the First Protocol.³² Furthermore, it is clear from the wording of Article 1 of the First Protocol that legal persons may also rely upon its provisions (indeed, it is the only right in the Convention which is expressly conferred upon legal persons), provided that the company owning the property falls within the definition of a 'victim' of a breach of

³¹ It should be remembered that the Human Rights Act 1998 has carefully preserved Parliamentary sovereignty (see s. 4). This means that any national primary legislation can only be declared by a U.K. court to be 'incompatible' with the Convention Rights; this will *not* have the effect of making the legislation somehow void or unenforceable. However, it is also the case that the promoter of any legislation will have to make a declaration in the House of Commons that the legislation proposed is in conformity with the Convention, or (if not) to say where and why not. This forms an important part of the lobbying process in the negotiation, debate and eventual adoption of legislation by Parliament. So, despite the fact that the Human Rights law arguments which follow in this short paper will not enable a challenge to primary legislation, they may prove a powerful force in shaping the legislation before it reaches the statute book. Furthermore, the courts will be reluctant to make a declaration of incompatibility and will instead strive to interpret legislation (wherever possible) to be in compliance with Convention Rights.

³² See s. 1(1)(b) HRA 1998.

Human Rights.³³ However, to establish whether the facts in a ‘stranded costs’ scenario do fall within Article 1 of the First Protocol, certain other elements must be considered.

1(b) ‘Possessions’

This concept has a meaning autonomous to the Convention³⁴ and has generally been construed broadly by the Court. It is clear that immovable and movable property are covered by Article 1, so, in the stranded costs situation,³⁵ any investments in new plant (such as extraction or treatment facilities, or pipelines) will be protected by the Convention. Any issues of long-term contractual arrangements may prove slightly more difficult. In principle, an established interest with economic value is necessary, so that a legal right to receive a certain benefit may be sufficient, even if certain conditions must be satisfied; however, ‘mere expectations’ will not be sufficiently certain to qualify as ‘possessions’ under Article 1.³⁶ An accrued claim for negligence, which was later removed by retrospective legislation, was held to be a ‘possession’ under Article 1³⁷ and given that contractual rights have been held to fall within ‘possessions’,³⁸ I would submit that such

³³ See s. 7(1) HRA 1998; in s. 7(7), ‘victim’ is defined as being a victim for the purposes of Article 34 ECHR, which requires the applicant to be ‘directly affected’ by the action of the public body in question. It is also worth noting that s. 7(1) allows an application to be made in anticipation that a certain course of action will make the applicant a ‘victim’ at a later date (*viz*: ‘if he is (or would be) a victim of the unlawful act’). I am assuming here that there is no question of a shareholder trying to show victim status: in any case, it seems that the jurisprudence of the European Court of Human Rights in Strasbourg is generally not in favour of such a possibility – only in ‘exceptional circumstances’ will the Court countenance the ‘piercing of the corporate veil’ in this manner, such as where the company’s articles of association (or similar) would prevent the company from bringing an action in its own name). See, further, *Agrotexim v. Greece* (1996) 21 EHRR 250 (esp. at para. 66 of the judgment).

³⁴ See, e.g., *Gasus Döşer-und Fördertechnik v. Netherlands* (1995) 20 EHRR 403, para. 53. Thus, just because domestic law does not see a particular right as ‘property’ does not exclude the possibility that Article of the First Protocol may be applicable.

³⁵ Examples are taken here from the analysis and Decisions of the Commission of the European Communities in relation to stranded costs in the electricity sector, pursuant to Article 24 of Directive 96/92/EC [1997] OJ L27/20: see Commission Communication relating to the methodology for analysing State aid linked to stranded costs (26 July 2001), which document is available on the internet at: http://www.europa.eu.int/comm/competition/state_aid/legislation/stranded_costs/en.pdf (last visited 4 October 2005). See further the brief article by Allibert in the Commission’s Competition Policy Newsletter, Number 3, October 2001, pp. 25-27, discussing the Decisions taken by the Commission on the applications by Austria, Spain and the Netherlands.

³⁶ See *Batelaan and Huiges v. Netherlands* (1984) 41 DR 170 (ECommHR).

³⁷ See *Pressos Compañía Naviera v. Belgium* (1995) 21 EHRR 301, at para. 31.

³⁸ *A, B and Company v. Germany* (1978) 14 DR 146, at 168 (ECommHR).

long-term contractual arrangements should also be so treated. Thus, it would appear that the likely subject matter of any stranded costs claim would count as a 'possession' under Article 1 of the First Protocol.³⁹

1(c) Which type of infringement?

It is important to identify precisely which type of infringement of the right to peaceful enjoyment of one's possessions is in issue, because the analysis of how any such infringement may be justified is dependent upon the nature and extent of the infringement involved. Typically, the Strasbourg Court has begun by analysing whether the alleged infringement amounts to a deprivation or a control of the use of possessions; only if neither of these is satisfied does it go on to examine the more general rule concerning freedom from interference.

1(c)(i) Deprivation

The main test for 'deprivation' of property is the extinction of the owner's rights in the property, usually by means of a legal transfer of those rights to another by operation of law or the exercise of a legal power to do so. It seems unlikely that such a situation would arise in the context of stranded costs cases, unless the view were taken that the only way to promote competition would be to force current incumbents to transfer certain companies or assets to new market entrants. Such a move would be a state act and would no doubt be laid down in the relevant legal framework (thus satisfying the basic conditions for such a deprivation).⁴⁰ However, even in this hypothetical situation, the typical method would be to force the *sale* of such assets, thus ensuring some form of compensation for the incumbent operator. The adequacy of the compensation that such a method might provide falls to be considered below, under the proportionality and compensation headings.

³⁹ Of course, without fuller factual details of any precise stranded costs claim, this conclusion must remain a provisional one.

⁴⁰ It should be noted that the reference to 'the general principles of international law' as a condition for such deprivation of property has been held by the European Court to be relevant *only* in the situation where the party claiming interference with his possessions is *not* a national of the expropriating state: see *James v. U.K.* (1986) 8 EHRR 123, confirmed in *Lithgow v. U.K.* (1986) 8 EHRR 329, at (*inter alia*) para. 115. However, given the approach of the Court to compensation in deprivation cases (considered briefly below, see section 1(d)(iii), *infra*), the inapplicability of the public international law principle (requiring compensation to be given to non-nationals for deprivation of their property) is unlikely to make much difference in practice.

The Court has been prepared to countenance the possibility of a *de facto* deprivation: the substance of the matter will be examined to ascertain whether, in spite of formal legal ownership or possession remaining with the applicant, the practical consequence of the interference has been one of deprivation. However, the Court has been extremely wary of finding *de facto* deprivation in the cases: only in exceptional circumstances will it be made out, such as where coins had been confiscated and held by police, without bringing charges against their owner. When courts and government recognised the unlawfulness of the police action and that the original owners had remained owners throughout the confiscation period, and yet attempts to recover the coins failed in the national courts, the Strasbourg Court did find there to have been a *de facto* expropriation.⁴¹

1(c)(ii) Control of use

The distinction between 'deprivation' and 'control of use' infringements can often be an untidy one, but is important due to the different approaches taken to the issues of proportionality and compensation under these two headings. Use of property may be controlled either by imposing positive requirements upon individuals to act in a particular way with regard to their property (such as requiring the planting of trees to promote environmental protection)⁴² or by restricting the activities of individuals (such as planning controls and environmental orders).

An example is that of the economic regulation of the professions, which was found by the European Commission on Human Rights to be a control of the use of possessions.⁴³ Similarly, the revocation of licences which affect business interests⁴⁴ may also amount to a sufficient interference by control of use: e.g., the revocation of a licence to sell alcoholic beverages in a restaurant⁴⁵ or the revocation of a licence to extract gravel.⁴⁶ It may be argued that these situations are analogous (or at least sufficiently similar in nature and outcome) to be applied to the stranded costs scenario, where (for example) the use of plant in which investments had been made under different regulatory assumptions is now rendered highly uneconomic, because of levels of price and/or conduct regulation that will be introduced. I would tentatively submit, therefore, that the stranded costs fact scenario

⁴¹ *Vasilescu v. Romania* (1998) 28 EHRR 241, esp. para. 53.

⁴² *Denev v. Sweden* (1989) 59 DR 127 (ECommHR).

⁴³ See, e.g., *Karni v. Sweden* (1988) 55 DR 157 (ECommHR).

⁴⁴ Provided that the licence-holder had a reasonable and legitimate expectation as to its lasting nature: see *Gudmunsson v. Iceland* (1996) 21 EHRR CD 89.

⁴⁵ *Tre Traktörer v. Sweden* (1989) 13 EHRR 309, para. 53.

⁴⁶ *Fredin v. Sweden (No. 1)* (1991) 13 EHRR 784, para. 53.

would be most likely to amount to an interference with possessions in the form of a control of their use, imposed by the state in the form of legal provisions.

1(c)(iii) Interference with peaceful enjoyment

However, even if the foregoing analysis is not persuasive (and thus the stranded costs scenario would amount neither to a deprivation of possessions nor to a control of their use), it is still possible that the act in question may be held to be an interference with the peaceful enjoyment of possessions. This is often seen as 'a kind of 'catch-all' category for any kind of interference which is hard to pin down'.⁴⁷ The leading case⁴⁸ here concerns the subjection of properties to expropriation permits for many years. These permits permitted proceedings for expropriation at a later date, without depriving the owners of their property or their use thereof. The property was never in fact expropriated and the Court held there to have been no deprivation, nor control of the use of the property; nevertheless, the existence of the permits 'in practice significantly reduced the possibility of [the] exercise' of their property rights and amounted to an interference with the substance of their ownership of their land.⁴⁹ While some of the cases which have been decided under this heading of interference could arguably have been held to fall within the deprivation or control of use categories, it is likely that the fact scenarios raised by a stranded costs situation would be caught by this residual provision (even if the above analysis on control of use proves unpersuasive).

1(c)(iv) Tentative conclusion

Thus, it seems that such actions require justification if they are to be lawful under the Convention and, therefore, U.K. law as embodied in the Human Rights Act 1998. It is to the question of justification to which we must now turn.

1(d) Justifiability of infringement and questions of compensation

In all situations where an infringement by means of some interference with possessions has been shown, the state must show that this interference was justifiable to escape a finding that its conduct has been unlawful. There are

⁴⁷ (Sermet L. 1998), p. 29.

⁴⁸ *Sporrong and Lönnroth v. Sweden* (1982) 5 EHRR 35.

⁴⁹ *Ibid.*, at para. 60.

separate elements⁵⁰ to be considered here, but it should not be forgotten that there is an essential link between how the public interest is defined and the shape of the proportionality argument that follows. Indeed, the question of compensation is definitely a part of that proportionality analysis, but given its centrality to the stranded costs scenario, it will be highlighted separately in what follows.

1(d)(i) Public interest/General interest

Any justification for an infringement upon the right to the peaceful enjoyment of possessions must state the grounds upon which that interference is to be made. While it is unclear whether or not the different wording⁵¹ used in Article 1 of the First Protocol is intended to produce different consequences for the different grounds of claim, and given that the Court has not yet ruled on whether the difference in wording has any substantive consequences, it is submitted that this is unlikely to be of any practical significance, given the Court's rather permissive attitude towards claimed grounds of public/general interest justification. The Court has tended to be deferential to the Member States' definitions and explanations of why a certain restriction was necessary: for example, leasehold enfranchisement legislation in the U.K. was held to be a policy calculated to enhance social justice within the community and therefore was 'properly described as being "in the public interest"'.⁵²

On the case law as it stands, therefore, it seems highly likely that the type of public/general interest ground that would be relied upon by the state in a stranded costs scenario (such as improving the environmental sustainability of electricity generation, while encouraging investment in technology development and competition in innovation) would be difficult and perhaps impossible to characterise as not being acceptable under the

⁵⁰ I have assumed throughout that any interference will be laid down by statute or secondary legislation and will thus meet the criterion of being 'conditions provided by law' which is necessary for any justifiable infringement of Convention Rights. This basis in law must be accessible, sufficiently certain and must provide protection against arbitrary abuses. Thus, it is not only a requirement to be able to point to a positive legal provision empowering the body in question to take the action of which the applicant complains; there is also an element of the 'Rule of Law' about this requirement.

⁵¹ I.e. 'public interest' with regard to deprivation and 'general interest' with regard to control of use. While there is no specific language concerning this issue in relation to the more general ground of interference with peaceful enjoyment of possessions, the Court has required a 'legitimate aim' to be shown in its operation of the 'fair balance' test (see the text, *infra*, at section 1(d)(ii) ff.): here, too, the Court has shown great deference to the Member States' public interest choices (see, e.g., *Fredin v. Sweden (No. 1)* (1991) 13 EHRR 784, at para. 51).

⁵² *James v. U.K.* (1986) 8 EHRR 123, at para. 49.

Convention. However, the ground of public interest may be legitimate, but it must still be analysed whether or not the means chosen to fulfil that ground were proportionate to the benefit to be gained.

1(d)(ii) Proportionality

Although there is no express reference to a proportionality test in the wording of Article 1 of the First Protocol, it is clear from the Strasbourg Court's jurisprudence that such a requirement is inherent in that Article. Proportionality is a general principle of the Convention and requires there to be a 'reasonable relationship of proportionality between the means employed and the aim sought to be realised'.⁵³ In the context of Article 1 of the First Protocol, the Court has developed a requirement that a 'fair balance' must be struck 'between the demands of the general interest of the community and the requirements of the protection of the individual's fundamental rights'.⁵⁴ This approach is followed by the Court in all cases of infringement of Article 1 of the First Protocol, whether concerning deprivation, control of use or more general interference with the enjoyment of possessions.

It is important to note that the intensity of the proportionality test applied will vary according to the severity of the infringement in question. 'Deprivation of property is inherently more serious than a control of its use',⁵⁵ thus suggesting that it will be more difficult to argue that the action of a public body in depriving a company of its property is a proportionate way to achieve the public interest goal at issue. In any application of the idea of fair balance, however, it is clear that two elements will be key: first, is there any entitlement for the property owner to compensation for the interference suffered? Second, is there any procedure open to the applicant to challenge the measure that has caused the interference with his possessions? (In the stranded costs situation, a good example of the procedural element is provided by Article 24 of Directive 96/92/EC,⁵⁶ under which Member States were allowed to develop plans to compensate incumbent companies for stranded costs. These plans were then to be submitted to the Commission of the European Communities within a certain period of time for their examination in accordance with the EC's State aid rules.) Equally, the absence of any such procedure may well lead to a finding that the interference is a disproportionate one that fails to respect the balance to be struck between the

⁵³ *James v. U.K.* (1986) 8 EHRR 123, at para. 50.

⁵⁴ *Sporrong and Lönnroth v. Sweden* (1982) 5 EHRR 35, para. 69.

⁵⁵ See *Gillow v. U.K.* (1989) 11 EHRR 335 for a clear recognition of this point.

⁵⁶ See n. 5, *supra*.

competing interests at stake.⁵⁷ Given that the key element in the stranded costs scenario will be a company's claim to be entitled to compensation, this element will now be examined in more detail.

1(d)(iii) Compensation

It would appear that there is no absolute right under the Convention to receive compensation in return for an interference with the right to the peaceful enjoyment of one's possessions. Rather, the availability and extent of any compensation falls to be considered as part of the overall analysis of the proportionality of the interfering measure. However, it is also accurate to state that the more serious the infringement of the right to peaceful enjoyment of one's possessions, the stronger the presumption that at least some compensation must be paid for the 'fair balance' of interests to be respected.

- deprivation of possessions:

Only in 'exceptional circumstances' will the taking of property without justification be justifiable; otherwise, the protection afforded by Article 1 of the First Protocol 'would be largely illusory and ineffective'.⁵⁸ However, while compensation should normally be an amount 'reasonably related to [the] value' of the property taken, there is no 'guarantee [of] a right of full compensation in all circumstances, since legitimate objectives of public interest, such as pursued in measures of economic reform ..., may call for less than reimbursement of the full market value ...'.⁵⁹ This seems to imply that there is a proportional relationship between the nature and extent of the public interest, on the one hand, and the individual burden to be borne, on the other. That is to say that 'the greater the public gain to be achieved by the legitimate aim, the greater the financial burden the property owner can be expected to bear. To this extent the state enjoys a wide margin of appreciation in calculating compensation terms'.⁶⁰

Overall, the defendant States have not been successful in arguing that their case falls within the 'exceptional circumstances' needed to escape the

⁵⁷ See *Sporrong and Lönnroth*, n. 18, *supra* for a good example, although here it was the combination of the failure to provide any means of compensation *with* the lack of any opportunity to challenge the measures which seemed to tip the balance overall. This illustrates the interlinked nature of the proportionality analysis in such cases, covering many different and yet connected issues.

⁵⁸ *Lithgow v. U.K.*, n. 10, *supra*; see esp. paras. 80-83.

⁵⁹ *Ibid.*

⁶⁰ (Rook 2001), p. 72.

need to provide compensation.⁶¹ However, there are examples where the Court has been rather deferential to the terms upon which compensation has been calculated.⁶²

- control of use:

By contrast, States have been far more successful in justifying a failure to pay compensation in cases involving the control of the use of the applicant's property.⁶³ The European Commission on Human Rights has gone so far as to say that, as a rule, control of use does not contain a right to compensation. However, as has been discussed briefly above, the dividing line between deprivation and control of use cases is a fine one and the Court's characterisation of various State measures has been uncertain enough to suggest that this statement is perhaps both too bold in nature and too broad in scope. The flip side of this leniency is that where some compensation has been paid in control of use cases, the Commission often seemed to treat this as conclusive proof that there has been no violation of Article 1 of the First Protocol.⁶⁴ There has been a reluctance on the part of the Court to countenance compensation where the applicant was involved in a commercial venture containing an element of risk, especially where the applicant was aware of the general factual circumstances that led to the eventual control on its use of the property.⁶⁵

- general observations:

However, given the existence of case law both under the control of use heading and the more general category of 'interference', I would submit that

⁶¹ (O'Boyle H and Warbrick 1995), p. 532 suggest that a possible example might be seizure of property during times of war, while (Rook 2001), p. 71, n. 2 suggests that a local authority landlord exercising the remedy of distress for rent might be another.

⁶² See *Lithgow v. U.K.*, n. 10, *supra*, where the calculation of the compensation paid to a company which was to be nationalised was made on the basis of the value of its shares at a point before the announcement of the nationalisation plan, rather than on the basis of company assets held at the date of nationalisation. The Court acknowledged that such a broad public interest issue as nationalisation legislation involved the consideration of a very wide range of competing interests, which the Member State and its national authorities were best placed to assess. Overall, the Court found that adequate reasons did exist for the compensation criteria chosen and, as a result, held the U.K. to be within its margin of appreciation and thus found no violation of the Convention.

⁶³ E.g., *James v. U.K.*, n. 10, *supra*, saw the Court find no breach of the Convention by the U.K.'s leasehold reforms which allowed some tenants to purchase the property which they were renting, with its consequent impact upon the value of the property owned by the applicant

⁶⁴ See, e.g., *Banér v. Sweden* (1989) 60 DR 128 (ECommHR) and, more recently, in *Pinnacle Meat Processors v. U.K.* Application 33298/96, 21 Oct 1998 (ECommHR) (Decision on Admissibility).

⁶⁵ See *Pine Valley Developments v. Ireland* (1991) 14 EHRR 319, at para. 59.

it would be inaccurate to conclude that this apparently more permissive approach means that there is no prospect of raising a human rights argument in support of a claim for compensation for stranded costs as a result of legislation designed to increase competition in a particular sector. Nevertheless, it should be stressed that full, market-value compensation is not even necessarily required in relation to deprivation cases, so it would be foolish to expect anything but a similar (if not, indeed, even more lenient) assessment under the other categories of interference.

A particularly apposite example for the purposes of stranded costs scenarios is provided by the case of *Stran Greek Refineries*,⁶⁶ which concerned measures taken by the new democratic government of Greece to overturn a contract made for the construction of a crude oil refinery by the applicants. The government argued that the termination of the contract was necessary to avoid prejudice to the national economy and the applicant claimed that he should be compensated for expenditure incurred in preparing to carry out the contract. The national courts later held that an arbitral award (which had declared that the applicants were entitled to some compensation for the termination of the contract) was rendered void by the legislation that had terminated the contract. While the national court's preliminary judgment favoured the applicant, the Strasbourg Court held that this amounted to a mere hope that they would receive confirmation of their claim once the full investigation had been carried out. However, the arbitral award was final and binding and established the State's liability up to a maximum amount, thus amounting to a 'possession' within Article 1 of the First Protocol. The Court then ruled that the effect of the legislation nullifying the arbitral award was to interfere with⁶⁷ the applicant's property right and accepted that the ground relied upon by the Greek State was a valid one in the public interest. However, its failure to provide (or indeed to accept that the arbitrators had obliged it to provide) compensation for the termination of the contract 'upset, to the detriment of the applicants, the balance that must be struck between the protection of the right of property and the requirements of public interest.'

However, this outcome should be carefully contrasted with the result of the *Lithgow* case in the Strasbourg Court,⁶⁸ which illustrates clearly the need to examine the facts of each individual case very carefully on its own merits. Drawing general conclusions on the assessment of the proportionality and

⁶⁶ *Stran Greek Refineries v. Greece* (1995) 19 EHRR 293.

⁶⁷ Rather than to deprive the applicants of their property, although it is of course highly arguable that deprivation was in fact precisely what the effect of the legislation had been (see, e.g., (Clayton R. and Tomlinson H 2000), p. 1310, n. 152.

⁶⁸ See the summary in n. 32, *supra*.

compensation criteria may well prove a dangerous exercise, so caution should be exercised.

Two final points should be made in this brief survey of the possible availability of compensation for interference with property rights in stranded costs situations. First, it should be noted that the position under the wording of Article 1 of the First Protocol differs from that which obtains in many Commonwealth constitutions and in the U.S.A., where the constitutional provisions themselves provide for the possibility of expropriation only if full compensation is paid. Issues of control of use of property are more complicated: originally, the U.S. courts considered that 'regulatory control' of property attracted only the protection of the due process clause of the Constitution and not that of the 'takings' clause (which required the payment of full compensation). However, the *Mahon* case⁶⁹ acknowledged that some statutes that regulate land use can amount to a taking of land within the U.S. Constitution and it seems that the Privy Council has decided appeals from Commonwealth Constitutions on similar issues in a similar manner. While providing some leeway within which to find that measures short of deprivation may entitle an applicant to compensation, it appears that the practical results of all these cases may well be rather similar and show a tendency on the part of the courts not to overturn the assessment of public authorities as to the necessity of certain actions in the public interest, even if they impinge to some extent upon private property rights.

The second point to note is the nature of the 'margin of appreciation' doctrine in the law of the ECHR. Many of the cases discussed above turn on the amount of scope given to the Member State by the Strasbourg Court under the doctrine of the margin of appreciation. This doctrine is predicated upon the idea that a supranational court such as the European Court of Human Rights is not best placed to make complex analyses and balances of multiple competing interests that are at stake at a national level. Thus, in assessing whether or not a Member State has breached the Convention (and thus its international law obligations), it may often defer to that State's own assessment of the proper balance to be struck within that State's own territory. However, under the Human Rights Act 1998, our national courts are now charged with the responsibility of hearing cases on whether or not public bodies in the U.K. have complied with their obligations under the Convention. It has been argued⁷⁰ that the application of the margin of appreciation doctrine by the national courts would be a far less appropriate tool for ensuring the application of Convention Rights in the U.K.: after all,

⁶⁹ *Pennsylvania Coal v. Mahon* (1922) 260 US 393, *per* Holmes J..

⁷⁰ See, e.g., (Fenwick 2002), pp. 184-185 and the references cited therein.

national courts cannot argue so easily that they are unaware of the social situation which obtains in their own society. It is thus possible that national courts may look less deferentially upon decisions taken by public authorities in the U.K. with regard to compensation for interference with property rights and may, indeed, require compensation to be made more frequently and to a greater extent. However, this argument should be treated with some caution, given the record of the Privy Council to date in deciding cases on appeal from the various Commonwealth Constitutions in the area of property rights: it appears that the Privy Council has taken an approach relatively favourable to government interference with property rights in the public interest.⁷¹

Nevertheless, even by making this argument in favour of compensation, the Human Rights angle can often put significant pressure on those involved in developing legislation, given the often negative overtones of coverage of the issue if the government is seen to be ignoring the very Human Rights which it did so much to incorporate within our legal system.

2. Charter of Fundamental Rights of the European Union [2000] O.J. C364/1 (18 December 2000)

Article 17 – Right to Property

1. Everyone has the right to own, use, dispose of and bequeath his or her lawfully acquired possessions. No one may be deprived of his or her possessions, except in the public interest and in the cases and under the conditions provided for by law, subject to fair compensation being paid in good time for their loss. The use of property may be regulated by law in so far as is necessary for the general interest.

... .'

While it should be noted that this Charter was expressly excluded from having legal force when it was adopted, it is also important to recognise that its position and possible legal status was a key point in discussions in the Convention led by Valéry Giscard-D'Estaing on the Future of the European Union and was included as Part II of the text of the Treaty Establishing a Constitution for Europe. It is possible, therefore, that the provisions of the Charter may yet become binding European Union law in the relatively near future. With that in mind, it is valuable to note the great similarity of Article 17 of the Charter with the provisions discussed above in the European

⁷¹ See (Roberts 2000), pp. 173-176; and see further, generally, (Allen 2000).

Convention on Human Rights. Equally, one important difference is the Charter's explicit reference to the need for 'fair compensation being paid in good time for their loss', with regard to 'deprivation' of property. However, no such reference is made in relation to the regulation of the 'use of property' in the third sentence of Article 17. Whether or not this difference is significant is difficult to say at this stage, although a number of reasons could be suggested for the different wording.⁷² In the light of the case law of the Strasbourg Court discussed above, it is likely that this wording was intended to reflect the flexibility of that case law with regard to questions of proportionality and compensation, although this is perhaps a somewhat speculative suggestion.

⁷² One possible explanation is the desire to retain the established EC case law concerning the 'abusive' use of intellectual property rights. Article 17(2) of the Charter provides that IP rights shall be protected (and, indeed, the current Article 295 EC provides that '[t]his Treaty shall in no way prejudice the rules in Member States governing the system of property ownership'); however, the Court of Justice in Luxembourg has developed a doctrine which distinguishes between the *existence* of an IP right and its *exercise*. Thus, for example, a dominant company cannot rely upon national IP rights to act in a manner 'abusive' under Article 82 EC (see, e.g., Case 102/77 *Hoffmann-La Roche & Co. AG v. Centrafarm Vertriebsgesellschaft Pharmazeutischer Erzeugnisse mbH* [1978] ECR 1139, at para. 16). If compensation were to be required for control of use in the Charter, it is possible that this case law (which, while often challenged by various critics, has been an important tool in the opening up of the single market) would be difficult to sustain.

References:

Cases:

European Court of Justice:

- Case 11/70 *Internationale Handelsgesellschaft* [1970] ECR 1125.
Case 70/72 *Commission v. Germany* [1973] ECR 813.
Case 4/73 *Nold Kohlen- und Baustoffgroßhandlung v. Commission* [1974] ECR 491
Case 102/77 *Hoffmann-La Roche & Co. AG v. Centrafarm Vertriebsgesellschaft Pharmazeutischer Erzeugnisse mbH* [1978] ECR 1139.
Case 44/79 *Hauer v. Land Rheinland-Pfalz* [1979] ECR 3727.
Case 730/79 *Philip Morris Holland BV v. Commission* [1980] ECR 2671.
Cases 240-242, 261, 262, 268 and 269/82 *Stichting SSI v. Commission* [1985] ECR 3860.
Cases 296 and 381/82 *Netherlands and Leeuwarder Papierwarenfabriek v. Commission* [1985] ECR 809.
Cases 67, 69 and 70/85 *Kwekerij Gebroeders Van der Kooy BV v. Commission* [1988] ECR 219.
Case 102/87 *France v. Commission (Brewery loan)* [1988] ECR 4067.
Case 260/89 *ERT* [1991] ECR I-2925.
Case C-256/97 *Déménagements-Manutention Transport SA (DMT)* [1999] ECR I-3913.
Case C-379/98 *PreussenElektra AG v. Schlesweg AG* [2001] ECR I-2099, paras. 69-71.

Court of First Instance:

- Case T-447/93 *AITEC v. Commission* [1995] ECR II-1971.
Cases T-374, 375, 384 and 388/94 *European Night Services v. Commission* [1998] ECR II-3141.

European Court of Human Rights:

- Sporrong and Lönnroth v. Sweden* (1982) 5 EHRR 35.
James v. U.K. (1986) 8 EHRR 123.
Lithgow v. U.K. (1986) 8 EHRR 329.
Gillow v. U.K. (1989) 11 EHRR 335.
Tre Traktörer v. Sweden (1989) 13 EHRR 309.
Fredin v. Sweden (No. 1) (1991) 13 EHRR 784.
Pine Valley Developments v. Ireland (1991) 14 EHRR 319.
Stran Greek Refineries v. Greece (1995) 19 EHRR 293.
Gasus Dösier-und Fördertechnik v. Netherlands (1995) 20 EHRR 403.
Pressos Compañia Naviera v. Belgium (1995) 21 EHRR 301.

Gudmunsson v. Iceland (1996) 21 EHRR CD 89.
Agrotexim v. Greece (1996) 21 EHRR 250.
Vasilescu v. Romania (1998) 28 EHRR 241.

European Commission for Human Rights:

A, B and Company v. Germany (1978) 14 DR 146, at 168 (ECommHR).
Batelaan and Huiges v. Netherlands (1984) 41 DR 170 (ECommHR).
Karni v. Sweden (1988) 55 DR 157 (ECommHR).
Denev v. Sweden (1989) 59 DR 127 (ECommHR).
Banér v. Sweden (1989) 60 DR 128 (ECommHR).
Pinnacle Meat Processors v. U.K. Application 33298/96, 21 Oct 1998 (ECommHR)

USA:

Pennsylvania Coal v. Mahon (1922) 260 US 393.

Decisions of the EC Commission:

Pégo [1993] OJ C265/3
Decision in *Scottish Nuclear* (Decision 91/329/EEC, Case IV/33.473) [1991] OJ L178/31
Austrian green electricity feed-in tariff (N317a/2006) [2006] OJ C221/8

Legislation and other official acts:

Commission, EC (1999). Regulation 2790/1999/EC on the application of Article 81(3) EC to categories of vertical agreements and concerted practices [1999] L336/21.
Commission, EC (2001). Guidelines on State Aid for Environmental Protection [2001] OJ C37/3.
Commission, EC (2003). Regulation 1/2003/EC on the implementation of the rules on competition laid down in Articles 81 and 82 of the Treaty [2003] OJ L1/1.
Commission, EC (2004). Notice, 'Guidelines on the Application of Article 81(3) of the Treaty' [2004] OJ C101/97.
Competition Act 1998 (UK), ss. 2 and 9.
Council of the EC and European Parliament (2001). Directive on the promotion of electricity produced from renewable energy sources in the internal electricity market. Directive 2001/77/EC.
EC Treaty, Articles 3(g), 10, 28, 81, 87, 88 and 295 EC.

Human Rights Act 1998 (UK).
Renewables Obligation Order, S.I. No. 1004 of 2006.

Articles and Books:

- Albors-Llorens, A. (2006). "Consumer Law, Competition Law and Europeanization of Private Law" (Collected Courses of the Academy of European Law). *The Institutional Framework of European Private Law* F. Cafaggi. Oxford, New York; Oxford University Press.
- Allen, T. (2000). *The Right to Property in Commonwealth Constitutions*. Cambridge, Cambridge University Press.
- Baquero Cruz, J. and Castillo de la Torre, F., (2001). 'A Note on *PreussenElektra*' (2001) 26 *ELRev* 489
- Bronckers, M. and van der Vlies, R. (2001). 'The European Court's *PreussenElektra* judgment: tensions between EU principles and national renewable energy initiatives' [2001] *ECLR* 458.
- Butler, L. and Neuhoff, K. (2004, updated 2006). Comparison of Feed in Tariff, Quota and Auction Mechanisms to Support Wind Power Development. *Cambridge Working Papers in Economics* CWPE 503.
- Carbon Trust (2006). Policy Framework for Renewables: Analysis on policy frameworks to drive future investment in near and long-term renewable power in the UK. Available via: <http://www.carbontrust.co.uk/Publications/publicationdetail.htm?productid=CTC610>.
- Clayton, R. and Tomlinson, H. (2000). *The Law of Human Rights*. Oxford, Oxford University Press.
- DTI (2003). Our Energy Future- Creating a low carbon economy. *White Paper*.
- Enviros (2005) The Costs Of Supplying Renewable Energy. Available via: <http://www.dti.gov.uk/files/file21118.pdf>.
- Fenwick, H. (2002). *Civil Liberties and Human Rights*. London, Cavendish Publishing.
- House of Lords (2004). Science and Technology - Fourth Report. <http://www.publications.parliament.uk/pa/ld200304/ldselect/ldsctech/126/12602.htm>.
- IEA (2005). Projected Costs of Generating Electricity. *International Energy Agency - Energy Publications*.
- Johnston, A. (2006). Free allocation of allowances under the EU emissions trading scheme: legal issues. *Climate Policy* 6(1): P.115–136.
- Mitchell, C., Bauknecht, D. and Connor, P.M. (2006) Effectiveness through Risk Reduction: A Comparison of the Renewable Obligation in England and Wales and the Feed-In System in Germany. *Energy Policy* 34(3): P.297-305.

- Mitchell, C. and Connor, P. (2004). Renewable Energy Policy in the UK 1990-2003. *Energy Policy* 32(17): P.1935-1947.
- O'Boyle, H. and Warbrick, C. (1995). *Law of the European Convention on Human Rights*. London, Butterworths.
- Oxera (2005). What is the impact of limiting ROC eligibility for low-cost renewable generation technologies? *Report prepared for Department of Trade and Industry*.
- REFOCUS ((March/April 2003)). "The UK Renewables Obligation: What's Holding Back the ROC Market in the UK Power Sector?"
- Renner-Loquenz, B. (2006). "State aid in feed-in tariffs for green electricity". *EC Commission Competition Policy Newsletter*, Number 3 - Autumn 2006: P.61-65.
- Roberts, N. (2000). The Law Lords and Human Rights: The Experience of the Privy Council in Interpreting Bills of Rights. *EHRLR pp 147*
- Rook, D. (2001). *Property Law and Human Rights*. London, Blackstone Press.
- Scottish Renewables Briefing (2003) Financing Renewable Projects. *available via:*
www.scottishrenewables.com/data/reports/Financing%20renewables%20-%20BRIEFING%20SHEETv2.pdf.
- Sermet L. (1998). *The European Convention on Human Rights and Property Rights*. Strasbourg, Council of Europe.
- Slot, P.J. and Johnston, A. (2006). *An Introduction to Competition Law*. Oxford, Hart Publishing.
- SmartestEnergy (Tim Foster) (2006). Join the green power revolution! . *Available via:* http://www.smartestenergy.com/files/eelID_388.pdf.
- Steen, N. (2002). ROCs Market Rockets. *Environmental Finance*. March: 26-27.
- Toke, D. (2005). Are green electricity certificates the way forward for renewable energy? An evaluation of the UK's Renewables Obligation in the context of international comparisons. *Environment and Planning C* 23(3): P.361-374.
- Toke, D. (2007). Renewable financial support systems and cost-effectiveness. *Journal of Cleaner Production* 15 P.280-287.
- Tradelink Solutions (Bob Middleton) (2006). Commercialisation and Energy Trading for Small Independent Hydro Plant in the UK. *Hidroenergia* 2006. Scotland.
http://www.esha.be/fileadmin/esha_files/documents/workshops/hidroenergia/PNO_2_Middleton.pdf.
- Van der Linden, N.H., Uytterlinde, M.A., Vrolijk, C., Nilsson, L.J., Khan, J., Åstrand, K., Ericsson, K. and Wiser, R. (2005). Review of International Experience With Renewable Energy Obligation Support Mechanisms. *Energieonderzoek Centrum Nederland (ECN) project: ECN-C--05-025*.