

The Economic and Social Research Institute

The Irish Energy Market – Putting the Consumer First

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by

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Introduction

Ireland has a long history of promoting the interests of producers instead of the interests of consumers. This emphasis must be understood in the context of our twentieth century history - a dependence on agriculture and a shortage of suitable employment. In their report on Regulatory Reform of the Irish economy the OECD (2001) noted the extent of the “producer focus” in Ireland, and the resulting reduced emphasis on the benefits of competition. The OECD report suggested that if the competitiveness of the Irish economy is to be sustained in the future, action will have to be taken to redress the balance in favour of competition and the consumer. It is from this background that I approach the principles that should inform Irish energy policy. Ultimately the objective of policy makers should be to minimise the cost of energy to Irish consumers in the long run, while ensuring that the supply of energy in its different forms is secure.

In trying to promote a competitive market the state naturally has to focus on the conditions necessary to allow many firms to flourish. Without the active competition of many firms, where many is generally five or more, real competition is unlikely and the consumers’ interests in low prices will not be easily delivered. However, there is a danger for policymakers that the focus on creating conditions for many firms to flourish will distract from the ultimate objective – low prices for consumers. In an otherwise very useful report for the Commission on Electricity Regulation, in which NCB identified the problems facing firms hoping to invest in electricity generation in Ireland, they went on to say:

“It is difficult to justify a situation where the cost of electricity in Ireland will be lower than our larger EU neighbours”. (NCB, 2002, p. 52).

This statement misses the whole point of regulation, which is to ensure that in the long run Irish consumers get the best possible value for their expenditure on energy through keeping prices as low as possible. While Ireland’s peripheral location¹ may make the cost of primary energy, especially the price of gas, higher than for our EU neighbours, the objective of policy should be to make Ireland more efficient than much of the rest of the EU. This would mean that, in spite of our peripheral location, Irish consumers can enjoy the lowest possible prices.

The corollary of the focus on the needs of consumers is that employment creation or employment maintenance should not play a significant role in future energy policy decisions. It also means that the needs of individual companies, public or private, should not drive future policy. They are there to serve the economy by providing secure energy supplies at a minimum long-run cost. Whether they are privately or publicly owned, the profitability of companies operating in the sector should be no more than is necessary to ensure that our energy needs are met. Where competitive markets are possible this will be delivered without further state intervention. However, what makes the energy sector unusual in the modern Irish economy is that the necessary scale of operations makes competition difficult, and in some cases impossible to deliver. It is for this reason that state intervention is essential in regulating the market.

Over the last decade there have been major changes in the institutional framework of the energy market. The EU, in pushing for increased competition, has been a major force driving change. Even without the EU, change was inevitable, reflecting the changing needs of the economy. The prospect of a changing market structure has already resulted in major improvements in existing state energy utilities. The establishment of the Commission for Electricity Regulation, now the Commission for Energy Regulation, reflects this need for a continuing public involvement in managing the sector, whatever the ownership of the companies actually providing services. However, the current market structure is far from perfect and it is not clear what is the best direction for future development. There

¹ Peripheral with respect to the source of future gas supplies.

is a danger that the current market structure, unless modified, could deliver a high price and unreliable services to Irish consumers.

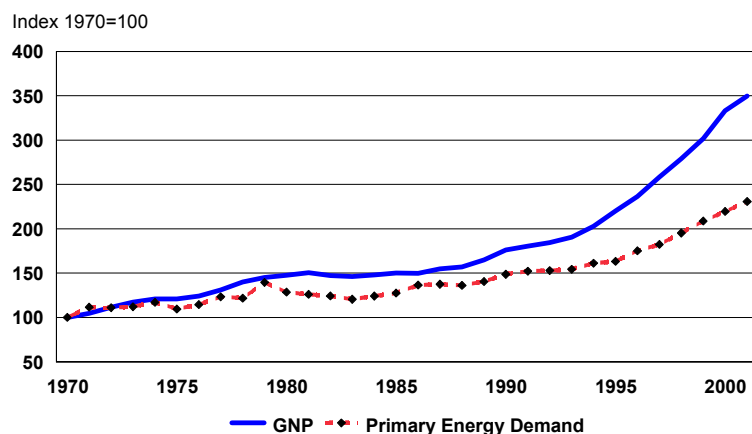
In this paper I first consider some of the key factors driving change in the market. These include, firstly, the pressures arising from the rapid growth of the economy, resulting in significant infrastructure shortages. The second factor that will drive change over the coming decade is the need to prepare the economy to comply with the requirements of the Kyoto protocol on tackling the problem of global warming. Finally I will consider how the market structure needs to change to deliver efficient and cheap energy to consumers over the coming decade.

Energy Needs of a Growing Economy

The demand for energy in Ireland is a derived demand, driven by economic growth. However, factors such as changing energy prices and technological progress can have a moderating influence on demand by causing a substitution away from energy products, or by introducing more efficient use of fuels. In addition, with rising incomes, patterns of consumption can change, with food and heating accounting for a diminishing share of additional consumption, while other goods and services increase their share. The demand for primary energy broadly kept pace with the growth in real GNP until the 1980s, as illustrated in Figure 1. Energy demand actually fell in the mid-1980s as the economy struggled. In recent years the growth in GNP has dramatically outpaced the growth in demand for primary energy. This reflects changing tastes, and it is also likely that technical energy efficiency² has increased in recent years as gas has increased its market penetration (Conniffe, 1993).

Total final consumption of energy (TFC) equals the sum of the consumption of each fuel by the principal sectors, excluding energy transformation (electricity production, oil-refining etc.). In Figure 2 we show the breakdown of TFC by fuel in 1980 and 2000 showing the changes in the fuel mix over the last 20 years. It is obvious that oil is the dominant fuel in the Irish market, and has been so for the last twenty years. Its share was around 64 per cent in 2000, broadly unchanged since 1980. Since 1980 the share of final energy accounted for by electricity and gas has risen rapidly, so that in 2000 electricity accounted for 16.5 per cent of final energy demand and gas accounted for 11.5 per cent. The share of consumption met from coal and peat has fallen dramatically since 1980, as both firms and households shift their consumption to cleaner, more efficient fuels. Although electricity has increased its share, natural gas was the main beneficiary of this shift in consumption patterns, increasing its share from just 2 per cent in 1980 to 11.5 per cent in 2000.

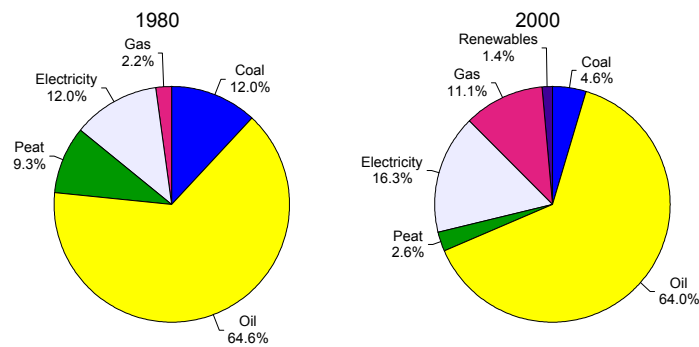
Figure 1: Total Primary Energy Demand and GNP 1970-1999



² By technical efficiency I mean the efficiency with which the calorific value of fuel is converted into useful energy, such as heat.

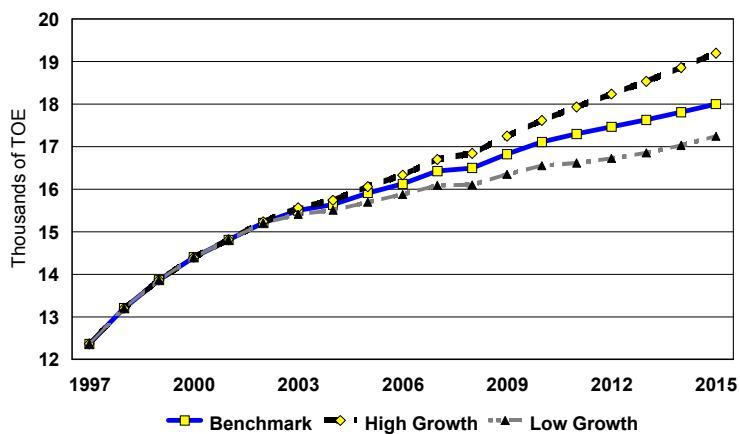
During the first half of the 1990s, final consumption of electricity grew by almost 25 per cent, an identical growth rate to that of GNP over the period. However, between 1995 and 2000, final consumption of electricity grew by around 35 per cent while GNP grew by almost 50 per cent in real terms over the same period. This reflects the fact the rate of growth of demand for electricity (and other energy) is declining relative to the growth in income (GNP). Economists refer to this as a declining elasticity of demand.

Figure 2: Total Final Consumption of Energy by Fuel



In the ESRI *Medium-Term Review: 2001-2007* (Duffy *et al.*, 2001) we published forecasts for the demand for energy over the coming fifteen years. The forecast demand for primary energy under different scenarios is illustrated in Figure 3. The solid line represents the Benchmark forecast. However, because of the uncertainty that surrounds our macro-economic forecasts, a number of alternative scenarios for the growth in potential output were also considered. Here we consider the implications of the scenarios referred to as the High Growth and Low Growth for energy demand.³ In the low growth scenario primary energy demand would be almost 1 million TOE less than the benchmark forecast by 2015. In the case of the high growth scenario the Benchmark would underestimate the primary energy demand by over 1 million TOE per annum by 2015.

Figure 3: Forecast Energy Demand



³ These involve average annual growth rates of around one percentage point above and below the benchmark forecast. Over the last 15 years our medium-term forecasts have underestimated future growth by something over one percentage point a year – hence the margin of error encompassed in the scenarios.

As a result of overinvestment in the early 1980s Ireland had more than adequate supplies of electricity over the 1990s. The transmission infrastructure was also adequate to the country's needs. In the case of gas, major investment was undertaken to extend natural gas supplies to the major urban areas. However, the spare capacity that was there in electricity is now used up. Given the forecast for electricity demand shown in Duffy *et al.*, 2001, there will have to be up to 2000 MW of new generation capacity put in place over the coming fifteen years. Putting in place a market structure that will deliver this investment at minimum cost to consumers will require significant further thought.

The electricity transmission infrastructure is also inadequate to the needs of a rapidly growing economy. This inadequacy has already been recognised as hampering regional development in the West and north-west of Ireland. Unless the planned major further investment (Transmission System Operator Ireland, 2002) is delivered on time it could have a wider impact on growth.⁴

In a recent paper on problems with the EU electricity market Newbery, 2002 says:

“The best short-run method of supporting electricity liberalisation is to rapidly increase transmission capacity.” Newbery, 2002, p. 926.

In the longer term the integration of the two electricity markets on this island and possibly the eventual integration of the Irish system with that in Britain may be very important in promoting competition. For this to happen transmission capacity will have to be expanded in advance of demand. If transmission capacity is only just adequate for demand, or can not handle demand, then it will allow generators in each jurisdiction to charge monopoly prices. It was for this reason it was important that gas transmission infrastructure was expanded ahead of demand and the same applies to electricity. Obviously it is possible to overinvest in transmission infrastructure, but the EU experience to date has been one of underinvestment.

The Imperatives of Kyoto

The forecasts described above for energy demand have significant environmental implications, particularly in the area of global warming. The burning of fossil fuels releases carbon dioxide, which is the most significant contributor to greenhouse gas emissions into the atmosphere. The exact magnitude of the problem of global warming remains uncertain, but over the last decade the reality that a problem exists and requires attention has been accepted. A deal was struck at the United Nations Framework Convention on Climate Change held in Kyoto, Japan, in December 1997 whereby the world's most developed countries agreed to reduce greenhouse gas emissions by an aggregate 5.2 per cent from 1990 levels between 2008 and 2012. The validity of the deal was brought into question by the refusal of the US to ratify the Protocol, but in July 2001 in Bonn 178 countries, excluding the US, signed up to the agreement. Ireland is committed to restricting its greenhouse gas emissions to 13 per cent above their 1990 levels between 2008 and 2012.

In order to forecast carbon dioxide (CO₂) emissions, consumption of each fuel must be multiplied by an appropriate “emission factor”, since each different fuel will release a different amount of CO₂ when burned. Coal and peat have the highest emission factors, and these “dirtier” fuels have a much higher share of emissions than of total final consumption of energy. Gas has an emission factor less than half that of peat, while oil lies somewhere in between. Emissions from electricity generation tend to be disproportionately high (relative to calorific value), as much of the energy of the individual fuels is lost in generation. The emissions due to electricity depend on the fuel-mix and the efficiency of generation, and to account for this we convert a given final consumption of electricity into a primary demand for coal, oil, peat and gas. We do not include renewable sources, as they do not emit carbon dioxide.

⁴ The major obstacle to implementation is in the physical planning procedures. There are no engineering or financial obstacles to implementation.

Emissions of carbon dioxide are likely to increase significantly over the forecast horizon. Total emissions of CO₂ amounted to just over 30 million tonnes in 1990 (the Kyoto base year). By 2010 this is likely to have increased to almost 45 million tonnes, representing a 48 per cent increase on the base year. The residential, transport and industrial sectors are the main culprits, and these three will account for over 80 per cent of total CO₂ emissions by 2010. The fastest growing sector in terms of carbon emissions is the transport sector, which will have taken over from the residential sector as the dominant source of CO₂ by 2005, and is likely to experience growth of 190 per cent between 1990 and 2010. The commercial and public sector is also forecast to experience strong growth in carbon emissions, which will be almost 65 per cent above 1990 levels by 2010.

The Kyoto Protocol permits a 13 per cent increase in total emissions from the 1990 base. Along with carbon dioxide, methane and nitrous oxide are the other gases that Ireland emits to a significant extent. A significant proportion of this is attributable to the agricultural sector; the cattle herd produce methane as part of their digestive process, while fertiliser usage is responsible for the majority of nitrous oxide emissions. Using data from a number of sources we have forecast emissions of the different gases below. In the case of methane, we have relied on Teagasc's forecast, using their FAPRI model, of the number of cattle consistent with the agricultural figures underlying the Benchmark projection.

Table 1: Forecast Greenhouse Gas Emissions, kT of CO₂ equivalent

	1990	1995	2000	2005	2010
CO ₂	32,159	34,501	43,359	47,130	48,914
Methane	12,836	13,311	1,666	11,590	11,081
Nitrous Oxide	9,086	9,505	9,629	9,673	9,719
Sinks	0	-893	-2,013	-3,008	-4,143
Total	54,081	56,423	63,642	65,387	65,571
Change on 1990 (%)	0.0	4.3	17.7	20.9	21.2

Figure 4: Forecast Greenhouse Gas Emissions

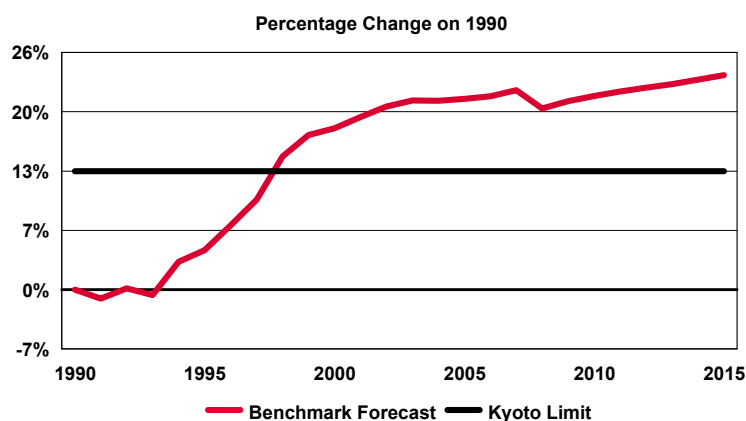


Table 1 describes the Benchmark forecast from the *Medium-Term Review* for greenhouse gas emissions based on the above energy demand forecasts and certain other assumptions. It is assumed that, Moneypoint is operated on half power from 2008.⁵ The existing peat stations are assumed to be replaced from 2006 with new peat stations. Also, methane emissions are assumed to fall in line with our forecast for agricultural output. Finally, by 2010 some 10 per cent of electricity generated is assumed to come from renewable sources. Emissions increased by 18 per cent between 1990 and 2000. The pace of increase is likely to decline over the forecast horizon as the assumptions made begin to take effect. Carbon sinks will increase in magnitude. Our forecast assumes a fall in livestock

⁵ Latest research suggests that this may not be an optimal economic strategy for meeting the Kyoto requirement to reduce emissions.

numbers in the agricultural sector. Nevertheless, by 2010 it is likely that emissions will be over 21 per cent above 1990 levels, eight percentage points above the Kyoto target (see Figure 4).

These forecasts suggest that Ireland will have a significant problem complying with the requirements of the Kyoto protocol. Research suggests that changing emissions patterns can be a slow business. Price increases in energy due to tax increases (or other controls raising emissions costs) are slow to have an impact on consumption patterns. This is particularly true where emissions reductions require significant new investment. As a result, policy measures will have to be implemented reasonably soon if the emissions are to be brought under control by the end of the decade.

It is not clear how the necessary reduction in emissions is to be achieved.⁶ While it will involve a combination of different policies, the precise mix has yet to be determined. Whatever policies are pursued it is likely to raise costs for energy producers and users. If the strategy is to minimise the cost to Ireland of implementing Kyoto then the policy changes are likely to change the relative attractiveness of different fuels for electricity generation. Unless there is a co-ordinated EU response, differences in the strategies adopted in the UK and Ireland could create artificial incentives for trade in electricity.

To reduce uncertainty facing investors it will not be enough to merely announce a set of policies aimed at curbing emissions. Unless the policy mix is shown to have a reasonable prospect of achieving the necessary reductions, it leaves open the possibility that Ireland will fail in its obligations and will suffer fines in the future. Because such fines would probably eventually have to be carried by energy users, a failure by the state to meet its Kyoto obligations could have repercussions for individual companies in the energy sector.

The continuing uncertainty about the appropriate or the likely strategy to be adopted by Ireland to implement Kyoto greatly increases the uncertainty facing new investors in the energy sector. This is especially important in the case of electricity, where new generation plant involves very large sums of money.

Market Structure

The electricity and gas sectors in Ireland are characterised by a small number of firms that have monopoly or near monopoly positions. To some extent their monopoly position arises from the nature of certain parts of the business - transmission of gas and electricity are natural monopolies. In these types of activity, because of economies of scale, competing infrastructures would be hugely wasteful and inefficient. Other aspects of their business are more amenable to competition, where scale economies are smaller and it is realistic to envisage competition among quite a number of players.

Monopolies carry certain inherent defects compared to a market where there are many competing firms. Monopolies will tend to charge higher prices than will be possible where competition reigns and is actively pursued. The result will be lower levels of output and the ultimate sufferers will be consumers - paying more for less.

The counterpart to higher prices charged by monopoly producers will be one of three outcomes:

- The shareholders can benefit from the higher prices arising from monopoly power through higher profits.
- The employees of the monopoly firm may benefit through some combination of higher wage rates and higher employment (staffing ratios).

⁶ See Department of the Environment and Local Government, 2000, *National Climate Change Strategy*, Dublin.

- Suppliers of goods and services may benefit through higher prices for their inputs or otherwise favourable supply conditions.

Finally, without the disciplines of competition, the monopoly may be run in an inefficient manner involving waste and badly planned investment.

These are the disadvantages for consumers of monopoly power on the part of existing firms and these are the ways that the revenue raised by higher prices paid by consumers may flow back to the key stakeholders. These disadvantages must be considered against any benefits that accrue from the increased scale of operation. In the case of natural monopolies, such as electricity transmission, the benefits from having only one transmission system are likely to exceed any potential savings from competition between competing infrastructures. However, for many other aspects of the electricity and gas sectors, such economies of scale don't exist, or are much less obvious than in the case of transmission.

In the case of state owned monopolies, such as the ESB and BGE, it is clear that any higher prices charged arising from the use of monopoly power do not accrue to the taxpayer as owner of the monopoly.⁷ The level of profitability in these monopolies has been broadly adequate to fund the growing capital needs of these enterprises. The major area where the higher prices have allowed "inefficiency" in the past has been through over-staffing, and possibly through facilitating wage rates to remain above market levels. While much has been done to reduce the level of overstaffing over the past decade, it is clear that significant further reductions in costs are possible.

The second use of the revenue arising from the higher prices charged for energy (as a result of monopoly power) has been to pay the costs of peat-fired electricity and to extend the gas transmission network into regions that would otherwise have been considered uneconomic. In the past it has been much more costly to produce electricity using peat rather than coal or gas. While the new peat station at Edenderry is much more efficient than the retiring plants, it is clear that in a competitive market, without further regulation, new peat plants would not be built. While there is an undoubted argument that peat-fired generating stations provide security through diversifying fuel supplies, it must be questioned whether this is the most appropriate means of meeting the security of supply objective. Whether or not this use of resources is wise, it is clear that current public policy would still insist on maintaining these plants in operation in a more competitive environment.

Thus the major area where efficiency gains could be realised in the energy sector in Ireland through a change in market structure is in the area of labour costs. Such a reduction would benefit consumers in the long run by allowing enhanced energy supply at lower prices. Any reform of the market structure for the energy utility sector must tackle this problem, while ensuring that efficiency gains that are realised are passed on to consumers as lower prices, rather than to shareholders as higher profits. This is the appropriate yardstick against which to judge any market reform.

All of these potential excess costs would automatically be competed away if it were possible to introduce competition into the electricity and gas sectors, just as there is competition in markets for Pizza or for haircuts. However, the nature of the sector is such that competition is not easy to introduce. As discussed earlier, the transmission systems are natural monopolies and the small scale of the electricity system means that the number of independent generators in the system are likely to be limited.

The limited interconnection of the Northern Ireland and the Republic of Ireland electricity systems is a major obstacle to promoting a competitive market. As noted above, the weakness of the domestic transmission systems provides further obstacles. In the long run, if technical change reduces the cost,

⁷ The ESB has not paid major dividends to the government over the last decade.

extensive interconnection with the British electricity system⁸, this could see Ireland becoming part of a much wider competitive market. With the availability of adequate transmission for gas between Britain and Ireland the Irish gas market has, for competition purposes, become a part of the wider British and EU gas markets.

The worst option for reform of the market would be to privatise the existing monopoly players. A swapping of a public monopoly for a private monopoly, while realising efficiency gains, would see these gains accruing to shareholders rather than to the consumer. This was the option pursued in Northern Ireland, with disastrous consequences for Northern consumers (McGurnaghan, 1995). The prospect of privatisation has itself had a negative effect on the behaviour of a number of existing state monopolies. In the case of Aer Rianta, and to a lesser extent in the case of the energy utilities, the possibility of privatisation has encouraged the state monopolist to increase profitability at the expense of the consumer. It is important that the prospect of privatisation of state monopolies be ruled out so that the management of the existing firms know that their objective is to minimise the price to consumers in the long run⁹, not to maximise profitability.

Instead of privatising existing monopolies, what is needed is a reform that will tackle the problems of the existing market structure. Where competition is possible under new market structures it would be appropriate to end state involvement, through selling off relevant parts of existing firms or through new entry by private sector operators. However, the natural monopoly elements, such as transmission, should remain in state ownership.

The experience of liberalisation in the UK and economic theory both suggest that to achieve a competitive market in electricity generation it is necessary to have quite a number of players. At a minimum, 5 separate generating companies, each with pricing power in the relevant range of the merit order, would be needed to ensure proper competition. This is clearly not an easy objective for Irish policy makers and the issue facing the authorities responsible for implementing the liberalisation of the market is how best the market can be regulated to ensure that consumers experience the benefits which perfect competition might produce.

In the absence of a suitable competitive environment, very heavy regulation will be needed if there is to be any chance of competition. As a result, it seems likely that whatever model we choose, there is unlikely to be a spontaneous outbreak of cut-throat competition! Instead what is likely to happen is that new entrants will appear (as has happened in the case of Huntstown), building a CCGT (combined cycle gas turbine) plant. Even if there were no liberalisation the outcome in terms of technology and plant would be almost certainly identical. The current state of technology and the relative price of the different fuels mean that throughout much of the EU, especially in the UK, CCGT provides the best value in generating technology.

Where will the difference lie in the new arrangements?

It is likely that the advent of new entrants, or the threat of more new entrants, will ensure that the staffing of new plants will be fairly similar whoever runs them, well below the staffing of equivalent plants in the current ESB system. This threat of new entry should help put pressure for further cost savings in the existing ESB plants. While the advent of new firms in the generating industry has lent credibility to the calls for efficiency gains, as discussed below, there are major problems with the market model currently in place.

⁸ There is already an interconnector between Northern Ireland and Scotland but the limited size of the interconnector and the weakness of the transmission network on the island of Ireland means that it does not make the Irish electricity system part of the British system for purposes of competition.

⁹ The long run means that the firms must cover the full cost of necessary investment through making adequate profits.

Because of the importance of new investment in Ireland, developing a market structure to minimise the cost of capital is especially important. For example, a two percentage point premium on the cost of capital, due to the increased uncertainty of the current market structure, would be the equivalent of around 15 per cent onto the non-fuel operating costs of a new gas fired plant.¹⁰ Thus a market structure that successfully put downward pressure on operating costs at the expense of greater uncertainty, and hence higher capital costs, could raise the long-run cost of electricity supply.

There are three possible options or models for structural reform of the electricity market:

- "Find yourself a customer" – the currently favoured model.
- A single buyer model
- Planned parenthood

Find yourself a Customer

Currently the first of these models is the one favoured by the EU and the Irish Commission for Energy Regulation (CER). In principle, any private sector firm can build a new generation station and find customers for their output. While only 40% of customers are currently free to choose different electricity suppliers, this will change by 2005. However, this model suffers from a number of disadvantages.

Even with the business sector there is considerable inertia among customers. Even if electricity is on offer at lower cost from an alternative supplier customers may be slow to shift allegiance. In the case of electricity the ESB "brand" is very strong – they have a track record in reliable supply. This makes it difficult and expensive to build up a customer base.

Significant uncertainty is added because of the behaviour of the government as a player in the electricity market. The most obvious cause of uncertainty arises from government interference in pricing decisions by the dominant player, the ESB. As shareholder, by requiring the ESB in 2000 to charge prices below the long-run market price, this raised the prospect that new entrants would face unfair competition in the future due to similar government requirements on pricing. While this was only a temporary measure, it showed up a loophole in the current regulatory regime. For the future new entrants should be protected from such behaviour by handing over responsibility for minimum as well as maximum prices to the CER.

A third major concern for new entrants is the fact that the ESB controls the vast bulk of generating capacity. By manipulating availability such a dominant player could potentially exert huge market power. Under government ownership the ESB has not acted to use its market power to maximise its profits. Instead it has generally continued to act as public sector utility with a broad remit to act in the "public good". However, the prospect that the ESB might be privatised in its present form raises the prospect of major future dangers for new entrants. This is an additional reason for making a clear commitment not to privatise the ESB in its present form.

For all eligible customers (eligible to buy from any supplier) they will be willing to pay the current long run marginal cost for generation, plus whatever charges are set for use of transmission and distribution systems, together with any other charges to cover public service obligations, such as security etc. Even if a new entrant can only supply some of the eligible customers, the ESB will have to react by matching that price for all categories of eligible customers; otherwise all eligible customers would move to new entrants, possibly resulting in substantial stranded capacity. This change in prices

¹⁰ These calculations are based on the estimates provided by the CER for "Best New Entrant".

will result, *de facto*, in a rebalancing of electricity prices, rather similar to that which occurred in the telecommunications area a number of years ago.

However, this change will have major implications for the whole electricity system. It will first of all identify potential stranded assets.¹¹ Depending on the handling of the issue of charges for “use of the system”, it could see a significant increase in the price of electricity for existing consumers who are not yet eligible to change supplier.¹² For example, high price electricity produced from peat stations could not compete against new entrants using CCGT. If such stations were to continue in operation, either the ESB would have to be allowed recover the additional costs through “use of system charges” or, alternatively, all of the additional costs would have to be borne by those consumers who are locked into the ESB, in particular the household sector.

Given the scale economies in generation, new power plants involve major additions of capacity. However, as it takes time to build a customer base it potentially makes it difficult for new entrants to match supply with demand when a new plant opens. To deal with this the CER has arranged sales of “virtual power” to potential new entrants. This means that they can build a customer base in advance of opening. However, this remains a rather unsatisfactory mechanism for reducing uncertainty for investors.

Probably the most serious problem with the current market is that new customers are not prepared to sign contracts for power supply with new entrants for periods longer than two or three years. This means that new entrants can not guarantee themselves a market in advance of investing. As the capital costs in building generating stations are very large, this makes investment very risky, increasing the cost of capital. The normal way to finance a new power plant is to borrow, with long-term contracts for sales of electricity providing security. This is not possible in the Irish case because of the impossibility of obtaining matching long-term contracts for sales.

The result of these uncertainties is to greatly increase the cost of capital for new plant and to reduce the incentive to invest. This is a common problem to all electricity systems (Castro-Rodriguez, Marin, and Siotis, 2001). This market structure makes it safer, and therefore more profitable, for individual players in the generation market to underprovide rather than to overprovide capacity. The result of pursuing this model could be significant shortages of generation capacity over the next decade. With a very low price elasticity of demand for electricity, this would translate into a major increase in prices and much bigger profits for incumbents. Clearly from the point of view of the consumer, this is not a satisfactory prospect.

Single Buyer

In a market structured round a single buyer, some of the problems with the existing model could be overcome. In a single buyer model all electricity would be bought at the minimum possible price by a single buyer who would then sell it on to suppliers at that price. In the Irish case such a buyer could be the transmission system operator, EIRGRID. The buyer would have to set transparent rules for the despatch of generating stations. Existing players and new entrants, who would know their own cost structure and those of their competitors, could predict reasonably accurately their likely sales.

Such a model would get over the problem for new firms breaking into the market as they would not have to market themselves to a disparate consumer base. Instead they would know that if their product comes in cheapest it will all be sold. This would reduce one element of the uncertainty facing new entrants. At the point where investment decisions are made it should be possible to predict reasonably accurately sales in the first few years of production.

¹¹ e.g. generating stations that are still working but can not produce electricity at a price competitive with new stations, even assuming that all the capital costs of the old stations are written off.

¹² This has been a problem for household consumers in Northern Ireland.

However, as described here, there would be no long term contracts for sale so that there would always be the possibility of another competitor with a different cost structure undercutting them at some future date. This uncertainty would maximise the pressures on existing participants to reduce their cost base, but it would still make the cost of capital for new investors, due to the uncertainty, quite high.

By preventing direct sales to consumers it would also prevent possible innovations through new products or methods. For example, the sale of electricity from renewable sources at a premium price might not be possible under this model. Also there would be less incentive to offer flexible or interruptible contracts to consumers to reflect the variations in cost of production by time of day. New products, exploiting profitable opportunities in such areas, could find themselves ruled out.

Finally, it would reduce the possibility for competition in electricity supply as all suppliers would pay the same price for the electricity that they purchase. However, the evidence from elsewhere suggests that the scope for major savings from enhanced competition in supply is much less than the scope for savings in generation.

A variant on the single buyer model would be to allow ESB as the supplier of the franchise market – the bulk of electricity consumers – to buy electricity from all producers, including new entrants. Newbery, 2002 argues that the EU electricity market risks two unattractive alternatives:

Without a new Directive, distribution companies retaining a domestic franchise and subject to yardstick regulation of their power contracts could provide countervailing power against generating companies. ... However, opaque markets ... may lead to an old German-style equilibrium ... - safe but rather expensive.

With the new Directive, the end of the franchise by 2005 is likely to encourage generators to integrate forward into supply, and risks removing the counter-parties to longer-term contracts that would facilitate entry. then it will be profitable for companies to reduce the spare capacity margin, with possibly Californian consequences (worse if the regulators lack the legislative powers to intervene).

The first problem – opaque markets, would certainly require the separation of ESB electricity supply from generation. As Newbery says, this would be safe but could be expensive. The alternative, which is the route we are currently pursuing, risks undersupply for the reasons already discussed.

Planned Parenthood

One of the key problems with the existing market model is that it is in danger of producing a serious shortage of investment in generating capacity in the medium to long term. While eliminating some of the uncertainty facing investors, the Single Buyer model would produce some improvements. However, it would still leave significant uncertainty for any new investors, militating against adequate provision in the medium term.

While long-term contracts would greatly reduce uncertainty for investors they could also greatly reduce competitive forces in the market (Newbery, 2002). In the case of Northern Ireland, the long-term contracts granted at the time of privatisation have meant that the price of electricity for consumers in Northern Ireland has been among the highest in the EU for the past decade. Clearly this has been a disaster for the consumer interest.

What is required is a model that will significantly reduce investment risk, while still ensuring that competitive pressures reduce costs, and that the resulting savings are passed on to consumers as lower prices. One possibility would be to leave responsibility for ensuring that there is adequate capacity in the long-term to the transmission system operator (Eirgrid) as planner of the system.

Where the current market model is not delivering adequate investment the planner (possibly Eirgrid) would have the task of commissioning new plant to be built. However, the operation of the plant would be subject to a separate contract determined in a tendering process. Private sector companies would compete for the right to manage the new plant. This would minimise the capital costs for new operators of power stations, while still keeping downward pressure on operating costs. The sales of electricity would still be undertaken on a competitive basis with producers seeking customers. However, the market would probably work much better if the supplier of the franchise market was also required to buy its supplies of electricity on the market, rather than taking it from its own generators. A separation of ESB electricity supply from generation would be desirable and this would be met if all plant was managed on contract by private sector firms.

In addition to planning new plant it would be desirable to take the ownership of the sites of all existing ESB generation stations into the ownership of the planning authority (Eirgrid). The recent NCB report (2002) identifies problems in obtaining planning permission for new sites as a major obstacle to new entry. By putting the ownership of the sites of generation plants under independent management, incumbents would not be allowed to prevent new entrants from gaining easy access to suitable sites. Obviously payment for the sites would be made in relation to normal market prices, but the special advantage of access to planning permission for generation would not be built in to the price.

This model could be extended to all existing generation stations, with the existing stations either being sold off or run by independent companies under management contracts. In subjecting the management of stations to contracts awarded on a competitive basis this would also enhance the information available to the CER, facilitating the job of regulating the system.

Conclusions

The characteristics of the Irish electricity market are very different from those of electricity markets elsewhere in the EU. Firstly, the small size of the Irish market and its lack of integration into the wider EU market makes it unique. Secondly, while the rest of the EU has adequate, arguably surplus, generation capacity (Newbery, 2002), in Ireland's case there will be a continuing need for new capacity over the coming decade. Ensuring that the necessary capacity is built at minimum cost will require some change to the existing market structure.

In reforming energy markets one of the lessons to be drawn from the wider European experience is that it is better to do nothing and wait rather than to take decisions in haste that can not be reversed. In particular, where utilities are privatised as monopolies, conferring legal rights on new owners, it is exceptionally difficult to recover the situation at a later date. One of the best examples of a market reform made in haste in the early 1990s, that will continue to be regretted up to 2010, was the Northern Ireland privatisation. Fortunately we did not go down the same road in the Republic and we still have the option of getting it "right".

Experience elsewhere indicates that privatising monopolies will always prove damaging to the interests of the consumer. On the other hand, if a competitive market exists, or can be created, then the state should step back from direct involvement in that market, while maintaining the role of regulator. In this paper we have identified ways in which activities, currently undertaken by the state, might more efficiently be provided through a competitive market. The way forward should involve a pragmatic approach that takes each activity and considers from the consumers' point of view, how best it can be provided. Further work is still needed before we can feel our way to a market reform that will deliver best value to Irish consumers.

The current market structure is not proving very successful at delivering competitive pressure on operating costs and, unless the market is further reformed, there is a serious danger of either underinvestment, or an excessive premium being paid for necessary new investment. In this paper we

have considered some options for reform but, as yet, it is not clear which option, or combination of options, would be the best from the point of view of the consumer.

Approaching the question of market reform from the point of view of the consumer, the problems with the current situation are:

- the cost base of the existing electricity system is too high and
- either there will be inadequate investment in new infrastructure, leading to future electricity shortages, or else the infrastructure will be built but at a very high price.

The elements of any reform must include measures to reduce uncertainty for investors, whoever they may be, and to minimise the cost of capital, and measures to put continuing downward pressure on the existing cost base.

In the case of the cost of capital the NCB (2002) report considered a range of possible measures that could help reduce uncertainty for investors. Some other possible measures have been discussed here. It is not clear at this stage which of the different options would deliver the best value for consumers. As described above, one possible solution would be to have central planning of the electricity system with the risk involved in investment in plant being carried by the central planner (possibly the Transmission System Operator) – the “planned parenthood” option. Another possible option would involve ensuring a more liquid market for new entrants by requiring the ESB to source its supplies of electricity from all generators on a transparent cost basis. Ultimately the criterion to be used in choosing an investment regime will be which one is likely to deliver the lowest cost of capital.

In the case of operating costs, there is a need for further reform to increase pressures for efficiency gains. The model of Bord Gáis Éireann (BGE) can offer lessons for the electricity sector. Beginning in the late 1980s they began to implement a strategy where they bought in on a competitive basis as much as possible of the goods and services that they needed. For example, pipes are laid and maintained by outside contractors and household services are provided by independent contractors. In each case competitive market forces encourage efficient provision of services.

In the case of generation, ultimately the existing ESB plants should be sold to independent operators or should be run by independent companies competing for the management contracts. This would increase transparency and put further pressure on costs.¹³ In the case of the installation and maintenance of the transmission and distribution system, the BGE model should probably also be followed – moving towards a situation where the necessary services are bought in from independent contractors.

While current EU legislation may constrain choices of market model, this should not be considered a permanent obstacle if it can be shown that the favoured alternative model is markedly superior from the point of view of consumers’ interests. If EU regulations can be shown to prevent or inhibit the development of a competitive market in the interests of consumers then it is likely that the EU can be persuaded to change their regulations. As things stand today, it may well be possible to develop a more satisfactory market model, that meets the needs of consumers, and still conforms to EU requirements.

Ultimately technical change may see increased interconnection between the electricity system on this island and that in the UK. Once the capacity of any interconnector reaches a threshold level it would result in the Irish electricity market becoming part of the British market. Under these circumstances the Irish electricity market would “inherit” the degree of competition that exists in the UK market.

¹³ However, the basis on which electricity was bought – the merit order of generation stations – would still have to be determined.

However, until this happens, the pricing structure faced by Irish consumers will be a product of how we reform the domestic electricity market.

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