



**The Jimmy Reid
Foundation**

Repossessing the Future

**A Common Weal Strategy for Community and
Democratic Ownership of Scotland's Energy Resources**



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September 2013

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Summary of Key Points

Independence and Scotland's potential:

- As the Independence Referendum approaches, there is much debate about the role that Scotland's vast energy reserves (both renewable and non-renewable) might play in the future.
- Whilst there is no doubt that an independent Scotland would have enormous opportunities to develop its energy resources for the benefit of present and future generations, realising this potential requires a radically different set of policies to the status quo.
- Existing energy policy being pursued by the UK Government is characterised by a massive and irresponsible failure of governance: what one energy expert has described as a 'perfect storm' is brewing in the energy sector as a result.
- To realise its potential, an independent Scottish government – or even a future devolved energy policy within the UK – would need a much greater level of state intervention and public participation.
- If Scotland is to achieve its 2050 climate change targets the entire current energy infrastructure from generation, transmission, domestic heating as well as transport will require renewal. This will require a huge investment and potentially enormous benefits. To achieve these benefits, a fresh approach to energy policy is both possible and necessary.

The failings of the existing regime:

- Since 1979 successive UK governments have pursued a strategy around the marketisation and privatisation of the energy sector with potentially disastrous consequences. Short-term profit considerations and private appropriation of Scotland's energy resources have prevailed over the long view and a more general public interest.
- Key public policy objectives, notably providing future energy security, maximising Scotland's renewables potential and tackling fuel poverty are not being achieved. At the same time, electricity prices to consumers are some of the highest in Europe.
- Critical long-term strategic infrastructural issues are not being addressed. Notably, upgrading and modernising the electricity grid to better enable a post-carbon future and securing international connections to other European energy networks – issues that are fundamental to realising Scotland's renewables potential – are not being delivered because of reliance on private investment. At the same time, market failures in other areas are leading to massive government subsidy of private firms to meet the UK and Scotland's renewable obligations.

- Current energy policy outcomes are also producing massive wealth inequalities with the juxtaposition of a handful of wealthy elites (corporate CEOs, large landowners, financial holding companies) reaping large dividends from energy production whilst fuel poverty has increased dramatically in the past decade. Large, privatised energy utilities are making massive profits from monopoly positions arising from failed market solutions.
- Because of wholesale privatisation and the lack of a geo-strategic view of ownership, the energy sector is largely foreign owned (with many of these corporations being state-owned). Moreover these foreign corporations are benefiting twice in income terms from current UK energy policy, first from revenue extraction and second from UK government subsidy.
- Key decisions about long-term energy supply and strategy are therefore beyond the capacity of both the Scottish and UK governments. Indeed, it could plausibly be argued that French, Norwegian and Russian governments – through their state-owned corporations – have collectively far more control over UK (and Scottish) strategic energy interests than any British political actor. Foreign state owned energy firms own 25 per cent of the sector as a whole; but 68 per cent of nuclear and over 50 per cent of offshore wind projects.
- The market for renewable manufacturing is dominated by European firms such as Siemens and Vestas. The UK has failed to develop an industrial strategy to realise the potential in terms of local employment, supply chain dynamics and economic development opportunities with fewer than 4,000 jobs so far created in manufacturing of renewable technologies.

Why an alternative approach is needed:

- UK energy policy has an outmoded faith in globalisation and market-based solutions to the energy sector and is seemingly unconcerned about the critical issue of ownership. Elsewhere, governments are rejecting privatisation at both national and local levels and are rediscovering the importance of state intervention, long-term planning and publicly owned energy utilities.
- At the same time there is growing evidence that the countries that have been most successful in developing renewable energy (notably Denmark and Germany) have done so through renewed forms of public ownership and state intervention rather than market-based solutions.
- The massive levels of investment required to build Scotland's post-carbon infrastructure will be much cheaper if paid for up-front through public bodies (backed by sovereign governments) that can borrow at much lower lending rates than the private sector. This will have important consequences for lowering electricity and gas prices for consumers.
- As part of this project we have modelled the cost difference of developing off-shore wind generation using existing methods and using the method proposed in this report. It shows that the model proposed here is immediately less expensive by six per cent and that this saving would rise to 15.5 per cent and possibly up to 22 per cent in time.

- Moving beyond older centralised and top-down models of public ownership, a range of new, decentralised and hybrid forms of public ownership are emerging that enhance local democracy and citizen participation in decision-making around energy issues.
- A particularly compelling model for Scotland to emulate is the Nordic social model of energy production (drawing from the experiences of Norway and Denmark) to emphasise the importance of policies framed around the common good and benefiting the 'whole of society' as opposed to private appropriation.

An energy policy for Scotland's Common Weal:

- Drawing upon best practice from Nordic and other experiences (e.g. Quebec, German Stadwerke) the report develops an alternative set of proposals for Scotland's energy resources that prioritises long-term objectives and the common good (e.g. social justice over private profit). In this regard, the following key principles are at the heart of an energy Common Weal:
 - resources should be commonly owned to benefit the whole of society rather than vested interests;
 - resources should be geared to social need rather than private economic return;
 - respecting the rights of future generations and the planet, resources should be used sustainably and geared towards tackling climate change and developing a post-carbon economy;
 - Scotland's energy system should be planned by public bodies to achieve security of supply as a priority policy concern;
 - public policy should be informed by collective decision-making and public deliberation (rather than faux consultation).
- As far as possible, and recognising the other key strategic priorities outlined above, energy costs to consumers should be kept low with a progressive pricing system that allows subsidisation of poorer social groups and more remote communities.
- To realise these principles a mix of forms of public ownership (both state and community) are advocated that allow strategic planning at higher levels to fuse with the encouragement of local democracy and community participation.
- The future energy network required for a renewables based system offers opportunities for more decentralised forms of organisation that can enhance community participation and control over decision-making. The report further advocates the construction of 'decentred' institutional structures that spread economic decision-making power.

1. Introduction

With the Referendum on Independence approaching, much heat, but very little light, has been generated around Scotland's vast energy wealth. Claims and counter claims about the economic feasibility of an independent Scotland, and the contribution that remaining North Sea oil and gas resources should make, dominate the debate. But both sides have so far ignored the most important issues for Scotland's future. How Scotland's abundance of energy resources will be used and who will reap the benefits from the revenues generated are two of the most important political questions facing Scotland in the twenty first century. How will these resources be owned and managed? What will be the role of government and how do we ensure that the benefits are spread widely throughout the country?

Much of the political establishment in Westminster seems content with the status quo: Scotland's economy and its energy resources will continue to be dominated by foreign corporations and serve private interests rather than society as a whole, or what we refer to as the 'Common Weal'. Yet, existing energy policy is largely failing Scotland. Although important strides have been made, by the Scottish Government in particular, in boosting renewable energy in the past decade, its continued growth looks less secure under the existing policy regime. Alongside this, as we show in the report below, other important policy goals such as ensuring security of energy supply, keeping fuel prices low for consumers or tackling fuel poverty are not being addressed.

Scotland has the opportunity to play a leading role in the twenty first century in both tackling climate change and contributing to Europe's energy needs. However, energy policy remains a reserved matter at the UK level. Because of past privatisation of the sector, existing UK energy policy is heavily reliant upon private and foreign corporations and market solutions for its delivery. Consequently, there is a failure to deliver on both the UK's commitments to tackling climate change, and other vital public policy issues such as fuel poverty and future energy security.

This report argues that if Scotland is to fulfil its potential to contribute to the broader battle against climate change, whilst also ensuring that its energy resources benefit society as a whole, it needs a radically different alternative. Drawing upon examples from across the North Sea in Norway and Denmark, but also from the recent renewable energy revolution in Germany, it argues for new forms of state intervention and innovative new forms of public ownership at local and community levels to manage and plan the energy sector in the twenty first century.

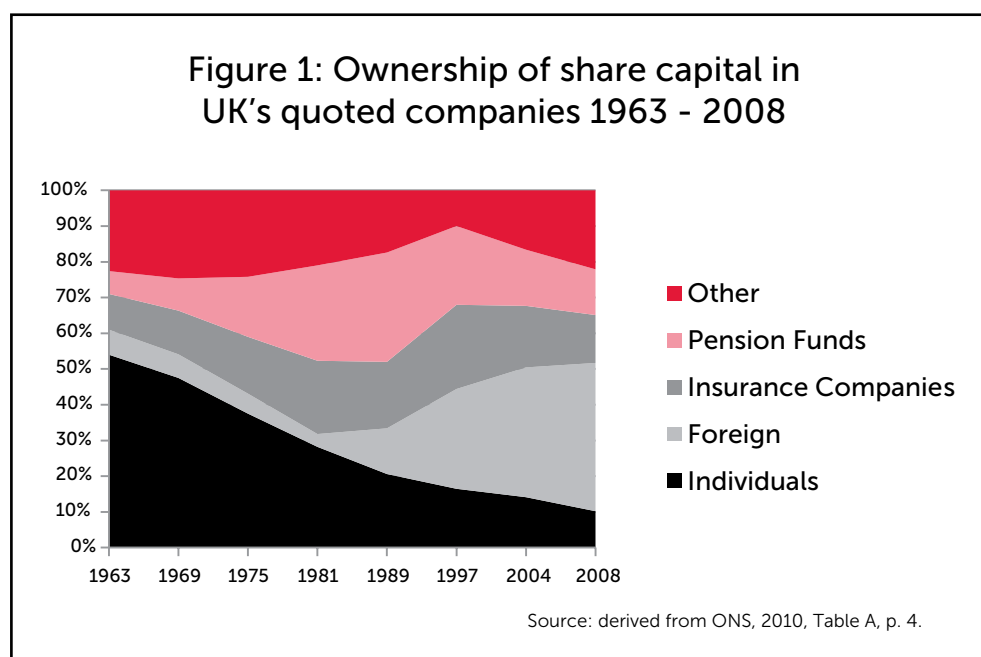
The report is structured into four parts. The first section details the failings of the past three decades of UK-based energy policy, particularly the problems stemming from privatisation and market based solutions. The second section focuses upon current policy in Scotland and the limitations posed by the existing devolution settlement and UK policy framework. The third section highlights international alternatives to the UK market-based approach, emphasising both the shift back towards strategic planning and public ownership and also the potential of a Nordic social model of energy for an independent Scotland. The fourth section then sets out an alternative strategy for energy, organised around new forms of public and community ownership. It fuses national strategic planning with a more localised and decentred set of ownership arrangements

that develop wider community engagement and economic democracy. We conclude by re-emphasising the urgent need for a policy shift in the energy sector and the opportunities for achieving this in an independent Scotland.

2. Three decades of privatisation and market-led energy policy in the UK

Since 1980 there has been a global shift in approaches to energy policy and management. The trend between 1945 to 1980 was for countries to take energy sectors into public ownership, more often than not in the form of nationalisation, typically in monolithic vertically organised state enterprises. The key drivers behind policy during this period were national security of supply and the development of large centralised energy supplies capable of servicing modern industrial economies. After 1980 this changed with the election of Margaret Thatcher and Ronald Reagan as two cheerleaders for a brand of capitalism based around private enterprise and free markets: a policy regime often referred to as neoliberalism. One of the cornerstones of this new regime was privatisation of public enterprises – under the guise of ridding the economy of what were regarded as stifling and inefficient bureaucracies, unleashing entrepreneurialism, competition and innovation.

Such policies have been applied on a global scale with the UK in the vanguard. Between 1980 and 1996 the country was responsible for 40 per cent of the total assets privatised by OECD countries (HM Treasury 2002: 4), over twice that of the second-largest privatiser, France. State-owned enterprises went from accounting for more than 10 per cent of GDP in 1979 to virtually nothing by 1997 (Megginson and Netter 2001: 324). The increased dominance of foreign ownership of UK companies is the single most significant effect of privatisation, helping to shift the shareholding of Britain's largest companies away from individuals to corporate interests (see Figure 1). Originally heralded as popular capitalism and a shareholder democracy, the UK's privatisation programme has proved to be the very opposite in the longer term.



2.1 The foreign ownership of the UK energy sector

The privatisation of oil, gas and electricity sectors has been a critical component of energy policy in the last three decades. In the North Sea, the fledgling state oil company BNOC was one of the first privatisations in 1983 while British Gas's substantial oil and gas interests were also one of the earliest selloffs. Subsequently, domestic energy, gas supply and electricity have all been transferred into the private sector with the odd exception.

British influence under both the Conservative and Labour governments in the 1990s and 2000s was important in shaping European Union energy policy with various directives aimed at deregulating European energy markets, encouraging privatisation and competition. By the year 2000, the European Union had in theory opened up three quarters of its energy sector to market based competition but a report in the *Financial Times* at the time concluded that "real competition remains thin on the ground" (*Financial Times*, Energy Utilities Review, December 13th 2000, p. 2).

While many countries did embark upon privatisation programmes, the extent of this varied: in some countries models of part-privatisation were developed where the state retained a controlling share in energy companies. Denmark – up until the year 2000 – developed a very different set of policies, which, as we will see later, created a hugely successful renewable energy sector. The major effect of market liberalisation within the energy sector seems to have been to stimulate cross-border alliances and the concentration of ownership at the European level. Formerly nationally oriented utility groups such as Electricite de France (EDF) are using dominant national market positions (and the stable operating income associated) as a springboard for international expansion. Rather than liberalisation leading to greater competition, innovation and improvement in customer services in domestic markets, it is leading to the redeployment of what were formerly public assets into speculative and often highly risky foreign ventures as European national energy champions become fully fledged multinational corporations.

For the UK this means that much of the formerly nationalised utility sector is owned and managed by foreign corporations, many of which are state owned. Although there is not the space in this report to fully elaborate upon the complex structure of the UK's electricity generation, distribution and supply system, it is important to differentiate between the following key actors:

- The National Grid – owns and manages the electricity transmission system in England and Wales and oversees the operation of the system as a whole throughout the UK, tasked with the job of ensuring 'the lights stay on'. It also owns high pressure gas infrastructure across the UK.
- Power Generation companies – which generate electricity and produce gas through ownership of power stations, wind turbines and in some cases oil and gas platforms.
- Fourteen regional electricity distribution companies owned by seven groups – own and operate the physical infrastructure of the Grid such as the towers and cables. In Scotland, the two distribution companies: Scottish Power and SSE also own and manage the grid.
- Supply companies – theoretically the most competitive part of the system, where different privatised companies 'compete' to supply customers with electricity and gas. However, as we see below, there is little evidence of consumer benefit from the exercise of this apparent choice.
- The lower pressure gas network to homes and businesses is divided into twelve distribution zones and eight networks, which are owned and operated by four companies, one of which is National Grid (which owns four networks).

Although there are around twenty electricity and gas supply companies in the UK, the market is dominated by the 'Big Six' (Table 1) who are also vertically integrated companies because of their ownership of power generation and distribution companies (in the case of SSE and Scottish Power). The leading four companies (Npower, EDF, Eon, SSE) account for over 96 per cent of the residential electricity generating market (although only around 65 per cent of electricity supply) and they also own 71 per cent of total generating capacity (Rutledge 2012). National Grid is a monopoly provider of electricity transmission and distribution in England and Wales, and the gas infrastructure for all of the UK. Other foreign companies that have become important players in the UK energy market in recent years include the Danish and Norwegian state owned energy companies, DONG and Statoil, the Russian gas company, Gazprom, which is part privatised but with the state holding a controlling share, and the French oil and gas multinational, Total (also partly state owned).

As Table 1 illustrates, the Big Six have made considerable profits in recent years and come under suspicion of profiteering through illicit means, such as through under-reporting of profits in UK based operations. SSE was also fined a record £10.5 million by the regulator Ofgem this year for mis-selling to customers. Despite this, it recorded a 28 per cent rise in its domestic energy business for the last financial year (2012-3).

It should also be noted that these company profits are made after paying banks interest for borrowings for capital expenditure. As they are charged higher interest rates than public bodies would be, the real cost of energy is inflated as these additional costs are passed onto the consumer.

Firm	Nationality	Employees globally	2011-12 pre-tax profits (£million)
Npower	German (owned by RWE)	70,860	526
Eon	German	85,105	1,152
EDF	French	158,760	1,659
Scottish & Southern Energy (SSE)	UK	20,177	1,336
Scottish Power	Spanish (Iberdrola)	31,340	1,002
British Gas/Centrica	UK	20,177	2,103

Source: various company reports, www.consumerfocus.org.uk website

The regional distribution companies effectively operate as monopolies and generate massive returns for their investors, who are predominantly overseas corporations, many with links to financial and asset management operations (Table 2). According to one source, these companies have average pre-tax profit margins of around 30 per cent and have been allowed to impose year-on-year price rises of about 5 per cent (well above inflation) by the energy regulator Ofgem up until 2015 (see Zero Carbonista blog, December 2012, <http://serocarbonista.com/2012/12/04/monopoly-money/#more-3561>).

	Owner	Geographical Area	Comments
Southern Electric	SSE	Southern England (greater Hampshire area)	
Scottish Hydro	SSE	North Scotland (north of central belt)	
SP Energy Networks	Iberdrola	South Scotland (including Edinburgh & Glasgow)	
Electricity North West	North West Electricity Networks	North west England	Jersey registered company advised by JP Morgan & Global Asset Management
Northern Power Grid	Mid-American Energy Holdings (MAEH)	North east of England and Yorkshire area	MAEH is a holding company controlled by Berkshire Hathaway associated with Warren Buffett
UK Power Networks	Hong Kong based consortium	London, South East England and East Anglia	EDF brought 3 networks together and sold on for £5.5 bn in 2010
Western Power	PPL	South West England, South Wales, East Midlands, West Midland	US (Pennsylvania) private energy company

2.2 Unequal shares: energy inequalities in the UK and Scotland

Perhaps none of this would matter if energy privatisation had delivered its promises of greater innovation, efficiencies and lower costs to the consumer. However, the evidence suggests the contrary; large corporations are using monopolistic and oligopolistic positions to engage in massive levels of profiteering and the extraction of economic rents at the expense of consumers.

By the late 1990s it was already evident that the main impact of energy privatisation was one of "considerable redistribution between different groups" (Waddams Price and Hancock 1998: 68). One study found clear evidence that privatisation was allowing utility companies to operate strategies of "monopoly exploitation" (ibid.: 68) rather than competition driving down prices to all consumers. In the simplest terms, companies were changing their pricing structures, shifting away from charging on an average-cost price basis, which allowed cross-subsidisation of lower-income groups, to one that gave price reductions based around quantity used, thus favouring higher-income groups or larger companies. The restructuring of the pricing regime has allowed firms to increase profits at the expense of the most vulnerable groups. One authoritative recent study for example found that poorer customers who use pre-payment meters can pay up to 40 per cent higher in some parts of the UK, compared to those on direct debit (Thomas 2008). One important effect in the gas and electricity sectors is that prices can rise during periods of peak demand – during wintertime – precisely when the poorest and most vulnerable groups need heating supplies the most.

Over the longer term, research undertaken by the Public Services International Research Unit at the University of Greenwich (www.psir.org) has confirmed the poor performance of the UK's privatised energy utilities. With regard to the electricity sector, their research has revealed that, although prices to consumers fell up until 2002, this was during an era of relatively benign prices in energy markets, which cast doubt upon whether consumers were benefiting from a 'privatisation effect', particularly since consumer prices had fallen similarly in France, where the sector remained nationalised (Hall et al. 2009). From 2000 onwards, this situation has changed with rising fuel prices having a knock-on effect on consumers' electricity bills. In this regard the UK continues to perform poorly in an international comparative context against supposedly more over-regulated state owned sectors.

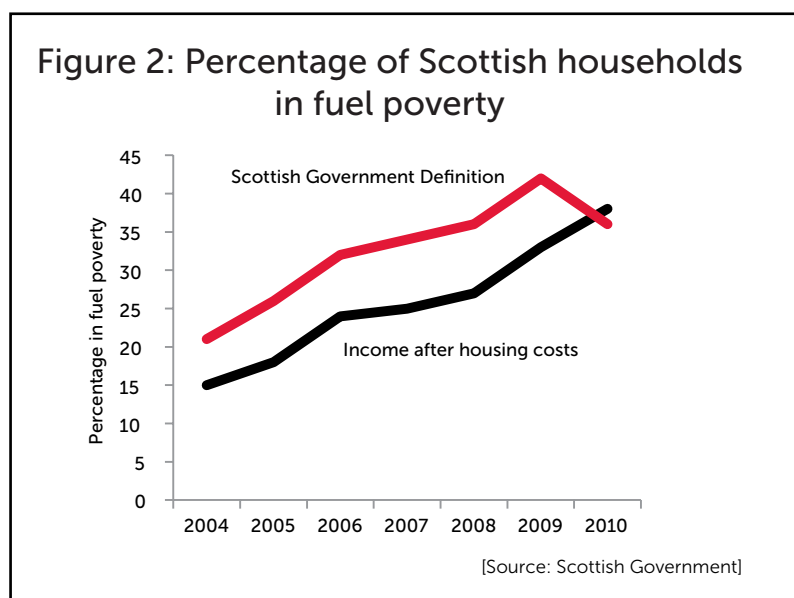
The most recent figures for domestic electricity prices show that, once taxes are removed, and despite its wealth of natural energy resources, the UK has the fourth highest prices in the European Union 15 group (excluding new East and Central European accession states) (DECC 2013a, 56). Prices before tax are significantly higher than in Germany, Denmark, France, Sweden, Belgium, Austria and Italy, suggesting that the privatised electricity and gas companies are collecting disproportionate economic rent from their customers. The UK Department of Energy and Climate Change's (DECC) own analysis of energy prices and bills (March 2013) uses prices that "include taxes". This allows it to claim that UK electricity prices are among the lowest in the EU 15. However, DECC fails to add the important caveat that VAT on fuel is only five per cent; the lowest in the EU. In other words, the claims are based on completely artificial comparisons.

Other studies over a number of years have consistently concluded that electricity prices are between 10 and 20 per cent higher than they would have been without privatisation (Hall et al 2009). The reasons for this are fairly simple. Privatised companies are driven first and foremost by shareholder value and the need to provide high financial returns over wider social and environmental concerns. Short-term profits also trump longer term strategic planning in the management of resources and therefore important investments in modernising infrastructure and improving long-term efficiencies. Moreover, in many cases recent transfers of ownership have brought in foreign financial interests with an even greater emphasis on 'sweating assets' in the interests of shareholder value.

Another group benefiting from privatisation has been the tier of elite managers that have emerged with vastly inflated salaries – compared to the norm. For example, directors' salaries at British Gas increased by 68 per cent in the two years following privatisation in 1986 (Cumbers 2012, p. 53). More recently, there has been considerable public disquiet about the inflated salaries being earned by the leaders of the UK's privatised utilities. To take one of the most relevant cases for us here, Ian Marchant, chief executive of Scottish and Southern Energy (which also owns Scottish Hydro) earned a total package of £2.63 million in 2012 while his deputy earned £1.84 million (BBC News, reported on 13th June 2013). In August 2012, *The Herald* newspaper reported that the outgoing CEO of Scottish Power, Nick Horler, was paid £1.3 million, including a £840,000 'golden goodbye' despite a fall in the company's profits. A large proportion of these packages is accounted for by share-related bonuses, more than £1 million in Marchant's case, meaning that managers' incentive structure is linked directly to short-term shareholder dividends rather than longer term goals such as infrastructure modernisation and renewal.

Juxtaposed against this, the UK and Scotland have some of the worst figures for fuel poverty in Europe. Particularly shocking are the number of pensioners that die from extreme cold every winter, a figure of over 2,000 per year (Scottish Government 2012) with rates for the UK as a whole double that of Finland, with its much colder winter climate, and far higher also than countries with similarly severe winter weather such as Sweden and Germany (ibid). While the high incidence of winter deaths reflects the poor condition of Scotland's housing stock and inefficient insulation – issues which themselves require new and more radical housing policies – rising fuel prices in the 2000s have also played an important part.

Whether taking the Scottish Government definition as individuals who have to spend more than 10 per cent of their household income on domestic heating bills, or the definition that takes income after housing costs (Figure 2), the longer term trend since the early 2000s has been a growing number of Scots living in fuel poverty (Figure 2). Following the sharp fuel price increases in autumn 2011, fuel poverty increased to 684,000 (29 per cent) in October 2011. It is believed that, if the current trends have continued in recent months, the median household will have been pushed into fuel poverty from 2012 (Scottish House Condition Survey and Research Team 2012: 2). Within Scotland, pensioner households are most at risk with over half (56 per cent in 2011) in fuel poverty, compared with only 20 per cent of pensioner households in England (SHCS 2011).



2.3 Energy security and foreign dependence

Beyond the ignominy of private wealth appropriation alongside growing fuel poverty, the UK's energy policy is failing to deliver the important policy goals of energy security or delivering on the UK's renewable energy commitments to help combat global warming.

The UK is already a net importer of electricity, with two per cent of supplies currently coming from interconnectors to Netherlands and France (DECC 2012) whilst having a growing dependence on imported gas, through pipelines and through LNG imports. The foreign ownership of the sector is also raising increasing concerns about future security of supply, drawing criticism from the most unlikely of sources: the Financial Editor of the *Daily Mail*, Alex Brummer has recently written a cautionary book on the subject (Brummer 2012).

Both the UK and Scottish governments to date have been somewhat naïve and complacent in this regard, seeming to believe that it does not matter who owns the UK's energy sector. Indeed there is no official record of the nature of ownership (in terms of parent companies) of the sector. A recent survey of the power generation companies estimated that about three quarters of the energy generating capacity is now foreign owned (Rutledge 2012). While UK companies constitute around 37 per cent of onshore wind capacity, it should be noted that two private equity firms, Terra Firma Capital and HG Capital, are an important component of this figure (ibid). UK ownership is decidedly lower in offshore wind, with 12.3 per cent of the total and well behind the proportions of Danish and German firms, which lead the sector (ibid).

Perhaps the most striking figures however relate to the proportion of energy generation that is accounted for by foreign state or publicly owned corporations, which is around one fifth for the sector as a whole but decidedly higher in the case of nuclear (68 per cent) and the 'new build' sector of offshore wind (50.4 per cent) (ibid). In other words, half of all investment into the most critical renewable growth area is coming from the non-UK public sector. With about one quarter of the existing power station capacity due to be closed by 2025, it has been estimated that at least £110 billion infrastructure investment is required to achieve both security of supply and the UK's environmental objectives of meeting 30 per cent of its generation from renewables by 2020 (DECC 2013b). In order to achieve an 80 per cent reduction of 1990 level greenhouse gas emissions by 2050 very much more will be required. The House of Commons Environmental Audit Committee (March 2011) has estimated a range between £200 billion and £1 trillion will be required over the next 10 to 20 years.

Given the low level of national ownership and also skill levels (Rutledge 2012), the UK is completely dependent on foreign companies to deliver this vast investment. Under these conditions, future UK governments will have to set massive incentives, including the restructuring of 'markets' to create the level of return that will attract foreign investors. This also has considerable implications for further increases in electricity prices to consumers, which are at present already 20 per cent higher in real terms than they were in 2007 (DECC March 2013 p12).

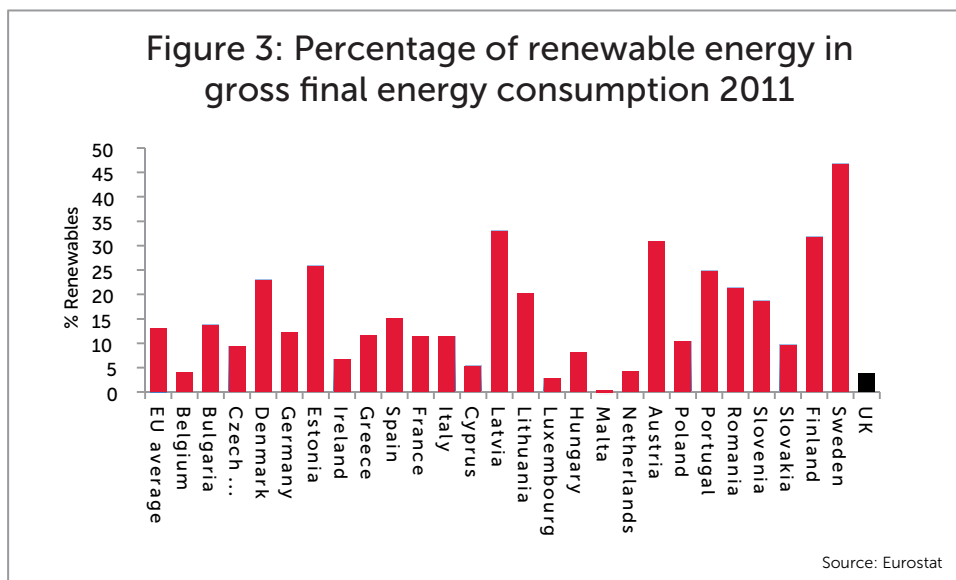
In summary, under existing arrangements, the UK government has very little capacity to go it alone but is heavily dependent on other countries and their state-owned corporations – particularly Norway, Denmark and France and possibly China in the future – for its electricity generation. At the same time, and despite all the hype, the growth in renewables has done little to re-inject life into the UK's industrial base or provide job opportunities. Most of the equipment and materials for onshore wind production is manufactured elsewhere, and without significant government intervention to stimulate local public procurement, the signs are that imported products will also dominate offshore wind production. The most recent figures suggest that more than 50 per cent of the offshore turbines erected in British waters have been built by Siemens or Vestas with only 3,200 manufacturing jobs so far generated in the UK (Clark 2012). The second most expensive components of offshore wind are the AC/DC convertors. Despite universities like Strathclyde being centres of expertise for their design, no UK companies make these. In Europe only Siemens, ABB and Alstom Grid currently make them and China is investing heavily in this area (ENTSO-E 2011 P7).

2.4 Europe's renewables laggard

Perhaps the most damning indictment of all facing the UK's privatised energy sector relates to the record in combatting climate change and generating renewable energy. At the beginning of the new millennium, the UK had by far the worst record across Western Europe in shifting towards renewable energy for electricity generation. Although the situation has changed, this has only been achieved through massive government legislation and state subsidies, principally through

the Renewables Obligation that forces companies to supply a certain proportion of electricity from renewables – estimated at £1.99 billion in 2012-13 (OFGEM 2013).

Despite these subsidies, the UK continues to lag behind many of its European neighbours in its renewables production (Figure 3) – a figure of less than four per cent of total energy consumption showing how difficult it will be to meet the UK’s own climate change targets by 2020.



What is clear from this record is that large established power utilities have had little incentive thus far to switch from conventional sources of power, such as existing oil, gas, coal and nuclear power stations, towards renewables, because they can make vast profits from the status quo whereas they would have to make massive investments to put in place the infrastructure necessary for renewables.

Another structural obstacle to the development of renewable electricity in Scotland and particularly the highlands and islands of Scotland has been grid connection charges. For decades, incentives to build new power stations have been heavily biased to building them in Southern England. Grid connection charges for connecting a new power source in the Western Isles are £110/kw, in the Highlands around £100/kw whereas in southern England you are paid around £10/kw (Davies 2013). Although this regime appears about to change it is symptomatic of the distortions that are endemic in the so-called free electricity market.

In Germany, it has been estimated that it would require £20 billion in investment in the grid, storage facilities and new renewables technologies to achieve its own climate change objectives and phase out nuclear power, which is now a stated national policy objective (Hall 2012). Because of these realities German cities and regions have begun to develop their own strategies around publicly owned and planned forms of intervention in response (see below).

In the UK the response has been to offer massive incentives and subsidies as we have seen. One of the perverse effects has been the growth of renewable related subsidies for foreign state-owned corporations. As Rutledge reports, the Danish state energy company, DONG, and Sweden’s Vattenfall were the largest beneficiaries of UK government subsidies in 2011 with £156 million and £128 million respectively in wind farm subsidies (Rutledge 2012).

2.5 Coming to terms with market failure: recent shifts in UK policy

There is growing recognition – even in government circles – of the failures of existing energy policy to deliver on both its renewables targets and growing concerns about a shortage of future electricity capacity. In the words of a recent *Financial Times* article “With a fifth of existing power generating capacity due to be replaced by 2020, there are real concerns about how the country will keep the lights on” (Financial Times, July 23rd 2012). These culminated in a new Energy Act in 2012 allied to an Electricity Market Reform package announced in June of this year. Recognising that the UK needs around £110 billion of investment to ‘keep the lights on’ over the next decade, and given existing commitments to decarbonise electricity by 2050, the government has provided massive incentives for companies to invest both in renewables and in new nuclear. The main instrument for this has been guaranteed prices – known as ‘strike prices’ – and by underwriting these contracts through a new government owned company.

Effectively, this is an odd form of nationalisation, whose effects will be similar to the now widely derided PFI contracts, where government ‘owns’ most of the risk, provides massive subsidies to companies through the strike prices but the actual assets that yield profit are owned by private (and predominantly foreign) companies. Estimates at present suggest that strike rates – the guaranteed returns for private investors from renewable energy – will be between six and seven per cent per annum. Ultimately, it is British domestic electricity customers who will pick up the bill through higher prices. Energy Minister Ed Davey’s suggestion that it will add £100 per year to the average cost per household, has been challenged by many industry experts, including Malcolm Keay of the Oxford Institute for Energy Studies, who says the actual figure could be closer to £300 per year (Keay 2012).

Ultimately, what these recent proposals reflect is a grudging recognition of the complete failure of the market-based approach to energy policy pursued by UK governments of all political hues since 1979. The massive government support that is now being rolled-out with great haste and little critical reflection to deliver on key energy goals is riding roughshod over equity considerations and the broader public interest. Private corporations once again look set to pocket billions at the expense of households and communities. Meanwhile, UK citizens will still be completely marginalised from some of the most important decisions that impact on their livelihoods and well-being.

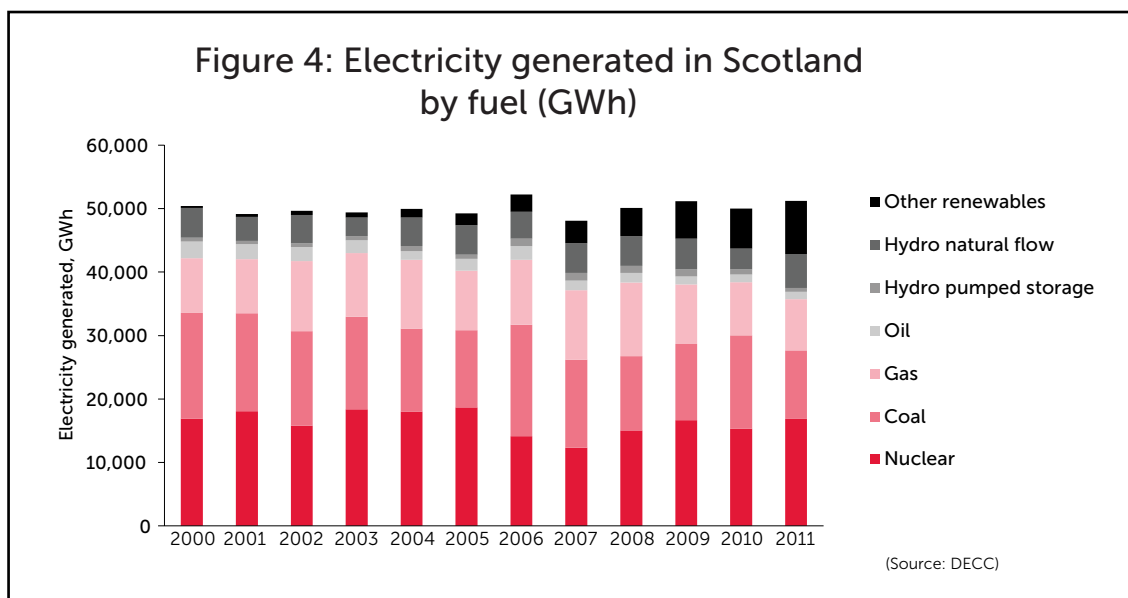
3. Scotland’s energy potential and the constraints on current policy

Scotland is rich in energy resources; it has an estimated potential of 36.5 GW of wind and 7.5 GW of tidal power, 25 and 20 per cent respectively of the estimated total capacity for the European Union and up to 14 GW of wave power potential, 10 per cent of EU capacity (Scottish Renewables 2011; RSPB et al. 2006). The Scottish Government estimates that renewable generating capacity will rise from 11.8GW at present to 24GW by 2030 and between 2015 and 2030 it will export electricity to England 60 per cent of the time (Scottish Government 2013, pp.46, 47). While there is more controversy about the future economic contribution of North Sea oil resources, it is clear that both the UK and an independent Scotland will have substantial oil reserves until at least 2050 with more uncertainty after this point.

However, to maximise the benefits to society from these resources, Scotland needs a very different set of policies and a much more proactive set of relationships with other European countries and regions than the UK government is currently pursuing. The laissez-faire approach that has characterised energy policy in the past three decades is not fit for purpose whilst the approach advocated in the new Electricity Market Reform discussed above will provide guaranteed high returns for private investors with domestic and business customers picking up the bill in the form of much higher prices.

If Scotland is to achieve its 2050 climate change targets the entire current energy infrastructure from generation, transmission, domestic heating as well as transport will require renewal. This will involve a huge investment and potentially enormous benefits. To achieve these benefits, a fresh approach to energy policy is both possible and necessary.

As noted in the Introduction, energy policy is currently a reserved matter so that most of the policy legislation, tools and mechanisms rest with the UK government and the Department for Energy and Climate Change (DECC). Nevertheless, the Scottish Government has been effective on two counts in its energy strategy. In the first instance, it has been proactive in encouraging renewable energy to the extent that non-hydro based renewables as a share of electricity generation have grown to over 16 per cent (Figure 4), almost four times the UK figure according to the data for 2011.



It has also developed some important initiatives in encouraging community ownership, notably the 2003 land reform bill that has given some impetus to community ownership, as has current Scottish Government policy around CARES (the scheme Community and Renewable Energy Scheme in rural areas) – and overseen by Community Energy Scotland - that provides support for local ownership and expertise for communities in installing renewable energy. The scheme provides £13.5 million per year for community renewables and micro-generation. The Scottish Government has a target of 500 MW of installed capacity to be under local or community ownership by 2020 (DECC 2012). However, these figures are dwarfed by the overall scale of renewables energy generation that is being developed in Scotland; 147 MW of existing generating capacity from community owned projects in 2011 represents around three per cent of the total of 4.3 GW. Similarly, the 2020 target represents between three and four per cent of the overall figure.

This means that renewable revenues look set to follow the trend of North Sea oil with the lion's share of the income generated going to foreign owned corporations. Scotland's nine largest wind

farms (operating as of May 2012), with over 100 MW of turbine capacity, were owned by private corporations, five of these foreign enterprises see Table 4). Most of the remaining wind turbines above 1 MW are also owned by private and foreign corporations.

Although it is difficult to estimate what the revenues are for wind producers, given the lack of transparency on these matters from private corporations, we can make a rough estimate, based upon known figures from community owned schemes, such as Gigha and Westray. These estimate that around £100,000 can be earned per annum in revenue for every MW installed, 50 per cent of which comes from the existing government’s Renewables Obligation Feed-in-Tariff. Over a twenty-five year period therefore, a 1 MW wind farm will produce £2.5 million for its owners.

A conservative estimate (not taking into account economies of scale and productivity improvements through technology and operational improvements) suggests that the largest current Scottish wind farm, operated by Scottish Power, at Whitelee south of Glasgow will make £32.2 million per year or £805 million over twenty five years. Other estimates put the figures far higher. A recent article in *The Daily Telegraph*, for example, estimated the profits received by large scale wind farms closer to £800,000 per annum, which if unchanged would translate into £257.6 million per annum or £6.4 billion over twenty five years for Whitelee (Booker 2012).

By comparison, the benefits being offered to communities in such schemes are miniscule. An example can illustrate these imbalances. SSE’s new Clyde Windfarm which was commissioned in 2012 and at 350 MW should raise revenues of anywhere between £875 million and £7 billion, dependent on whose figures you believe. In contrast, a community development fund has been set up to offer what seems at first glance a generous figure of £17 million over 25 years until you realise that this will amount to about two per cent of the return expected by SSE (on the most conservative estimate).

Table 4: Details of Scotland’s largest wind farms (over 100 MW)

Operator	Capacity (MW)	Location	Nature of private ownership
Scottish Power	322	Whitelee	Spanish
E.On UK	180	Robin Rigg (offshore)	German
Scottish & Southern	156	Griffin	Scottish
Fred Olsen	138	Crystal Rig II	Norwegian
Scottish & Southern	129	Clyde South	Scottish
Scottish Power	124	Black Law	Spanish
Scottish & Southern	120	Hadyard Hill	Scottish
Scottish Power	120	Arecleoch	Spanish
Scottish & Southern	113	Clyde Central	Scottish

Source: DECC 2012

Another social group that is currently profiting massively from wind farms – on an almost completely risk-free basis – are the small group of private landowners that account for the largest part of Scotland’s rural land (a mere 432 landowners account for half of all Scotland’s privately owned land; Hunter et al 2013). A recent report in *The Guardian* revealed a number of such examples where landowners are making massive profits from the rental values of wind turbine production. The Earl of Moray is benefiting to the tune of around £2m per annum from a 49 turbine wind farm on his Doune Estate whilst the Duke of Roxburgh is set to make £1.5 million per year from a similar development in the Lammermuir Hills (Vidal 2012). Issues surrounding land reform and how we might tackle these inequities are the subject on an excellent recent paper by Jim Hunter, Andy Wightman and colleagues (ibid).

A further anomaly exists around the fledgling offshore wind sector. The Crown Estates is currently solely responsible for who is awarded the right to build offshore wind farms. Whilst the right to proceed is subject to Scottish Government planning consent, the decision on which consortia are awarded the rights or indeed invited to tender for this right is entirely up to the Crown Estates who then charge a rental for exploiting these rights. To date no public consortia have even been invited to tender. Of the projects in Scotland awaiting consent the largest are Firth of Forth at 3.4GW capacity issued to SSE (UK) and Fluor (a US quoted company), and Moray Firth at 1.3GW issued to EDP (Portugal) and Repsol (Spain) with a significant interest from Three Gorges (China).

Although the House of Commons Scottish Affairs Committee has asked for these powers to be devolved to local government and the Scottish Government has also demanded Crown Estates devolution, all that has happened is the setting up of a Crown Estates Scotland office and website. Since 2011, 15 per cent of the profits from Crown Estates go to the Queen, the rest to the UK Treasury. So the monarch and largely foreign corporations, but not the people who will have higher bills, will be major beneficiaries from the proposed Scottish offshore wind farms.

3.1 The need for a radical alternative

In its 2010 report *A Low Carbon Energy Strategy for Scotland* the Scottish Government heralded the emergence of “another energy revolution” (Scottish Government 2010, p. 43) which it felt confident enough to proclaim would “open up enormous opportunities for businesses across Scotland” and would “be a source of international competitive advantage in the decades ahead. This will help us to meet our climate change and renewable energy targets and generate substantial new economic activity, jobs and prosperity and give Scotland a leading position in emerging global markets.”(ibid).

Unfortunately, this is predicated on a set of policies that are heavily reliant upon attracting foreign inward investment and expertise, set in a context in which most of the profits and revenues are already flowing out of Scotland and with a privatised market system in which the best means of securing such investment is through ‘creating market incentives’ that will be immensely costly for the public purse.

A further problem confronting Scotland’s energy potential is the massive investment required to upgrade its grid and infrastructure, shifting from the current centralised and conventional power generation network to a more decentralised and distributed network suitable for renewable energy growth and development. There is little sign that the current privatised utilities will shoulder this burden without massive state subsidy. At the same time, in the austere economic circumstances of the present, married to the difficulties in persuading private corporations to invest in long-term projects – despite many being ‘cash rich’ - a much more radical solution is required. To achieve its potential in the years ahead, Scotland needs state intervention and planning that requires different institutions and ownership structures.

In its current guise, the Scottish Government lacks the powers to radically alter the prevailing situation given that energy is a reserved matter. It can neither develop a coherent industrial strategy, nor change the fundamentals of the energy sector with regard to ownership and strategy. Because basic infrastructural capacity, such as the national grid, also remains in private hands, it also cannot make the long-term strategic decisions over critical energy supply that the country needs. A case in point is the proposed connector to Norway that would marry up Scottish renewables capacity with the integrated Nordic electricity grid. With the recent withdrawal of SSE from this project which is critical to Scottish ambitions to export renewable energy and use the massive Nordic HEP capacity as base load indicates the vulnerability of national strategic priorities to private profit-driven rationalities.

As a legal requirement, the Norwegian Government insists that interconnectors are controlled by its integrated network, Statnett, and refuses to jointly develop interconnectors with “merchant connectors” i.e. private companies (House of Lords 2013 QQ339-357 P11- 12). Things might be different were SSE a state owned organisation.

Were it an independent country, or a fully devolved region with power over its own energy strategy, Scotland could pursue a much more progressive set of policies that would not only distribute the benefits from energy resources more equitably for the common good domestically but would become a beacon in the global fight against global warming with a more responsible approach to oil and gas developments alongside the promotion of renewable energy sources. Furthermore, the shift towards renewable forms of energy offers the potential for smaller countries and regions such as Scotland to play an increasingly significant role in broader European energy networks because of the likely geographical shift in the organisation of energy production in the years ahead: from large-scale and concentrated sources of conventional energy to more small-scale and dispersed sources of power. Many of the most interesting and far-sighted initiatives at present are led by smaller countries and regions such as Denmark, various of Germany’s federal regions, and the Canadian province of Quebec.

4. The view from elsewhere: the renaissance of the public sector in energy development

Outside the UK, there continues to be a rich diversity of alternative ways of running energy sectors that recognise energy as a key strategic resource that should not be appropriated by private interests. Few countries in the world – outside the United States – have completely privatised their energy sectors in the manner of the UK. In many parts of the world, notably in Latin America and Western Europe, there has been a developing trend to take formerly privatised sectors and companies back into forms of common and public ownership.

4.1 The German remunicipalisation movement

An interesting development in Germany has been a trend towards remunicipalisation. According to a recent report by the Public Services International Research Unit, 44 new municipal companies (Stadtwerke) have been set up and over 100 energy concessions have returned to public hands since 2007 (Hall 2012). In the remaining cities and regions that underwent some form of electricity privatisation in the 1990s, there are growing public campaigns to take the sector back into public ownership, including in major cities such as Hamburg, Stuttgart, Bremen, Frankfurt and Berlin, triggered mainly by the coincidence of poorer quality services with higher prices (Hall 2012).

The role of public ownership at the local level is increasingly important in sustaining renewable developments. The re-emergence of municipal public ownership of energy in Germany has also been accompanied by the establishment of new collaborative and partnership networks between cities and regions to promote public energy policies as an alternative to commercially driven and profit-centred strategies (see Box 1).

Box 1: New forms of public-public partnership between Germany's cities and regions

Germany's *stadtwerke* (local and municipal electricity companies) have formed strong network associations to promote the role of municipal enterprise, share common services and provide knowledge and information exchange over energy matters. Two in particular are worthy of note here. The first is the VKU (Verband kommunaler Unternehmen - the Association of Municipal Corporations), with over 1400 members. The VKU has a core statement that states the importance of citizen needs and community interests over private commercial objectives while also insisting on local democratic self-administration.

A second network (Trianel) was formed in 1999 and is a venture between 80 *stadtwerke* to strengthen the role of municipal enterprises in purchasing electricity in the liberalised EU energy market – particularly in their dealing with the big three German private energy generators and the Swedish state owned firm Vatenfall – and in developing their own sources of power. Trianel has expanded its operations to build its own pumped storage power stations in conventional forms of energy as well as investing £800 million in its own offshore wind project off the island of Borkum in the North Sea. It has also expanded its geographical membership to include municipalities in Switzerland, Austria, and Netherlands. A key priority is the expansion of renewables in electricity production with a target for the network of 80 per cent by 2050 and the reduction of electricity consumption by 25 per cent, and primary energy consumption by 50 per cent, by 2050.

Source: Hall 2012

Additionally, many of the regional governments in Germany, notably the largest state Nordrhein-Westfalen and Baden-Württemberg have recently bought back energy generating companies from privatised entities (ibid). The motivation behind these developments was put succinctly by Dieter Reiter, Munich councillor in charge of labour and economic development in a conference address in 2011:

Energy supply was one of the key sectors affected by privatisation of formerly public enterprises. Today, energy supply is characterised by oligopolies of private energy suppliers. There is practically no competition on price. The transition to renewable energies is made rather reluctantly and only as a consequence of massive state subsidies and regulatory requirements... The example of Munich shows how the transition process can be sped up if a city owns a utility company. By 2025, our utility company aims to produce so much green energy, that the entire demand of the city can be met. That requires enormous investments – around 9 billion euros by 2025 – and can only be successful if the long-term goal is sustainable economic success rather than short-term profit maximisation." (Reiter 2011)

As Reiter and many other politicians at local and national levels are discovering, the long-term commitments needed to move towards post-carbon energy systems needs public investment and strategic planning. Indeed, the EU Commissioner for Energy has now advocated the nationalisation of transmission networks across the European Union as a way of speeding up modernisation of grids and the development of a pan-European super-connector grid (Hall 2012).

4.2 Community ownership, renewables and rural development

Elsewhere too, there is a growing amount of evidence of a clear link between developing effective renewable energy policies and public ownership. Quebec is an interesting and relevant example for Scotland as a devolved region of seven million people with both large urban population, dispersed rural communities and an abundance of natural resources. Unlike Scotland, Quebec

has complete autonomy over energy policy. The province has massive hydro-electric power resources which are managed by Hydro-Quebec (HQ) – a public corporation at arm’s-length from government but with the principal objective of supplying cheap electricity to consumers. HQ has been a very important actor in the economic development of Quebec since the 1960s, playing a critical role in both innovation and the promotion of energy sector R&D, most recently with the development of renewables such as wind power. By imposing 60 per cent local content requirements in Quebec and 30 per cent in Gaspésie, wind power contracts in the more peripheral and economically marginal rural regions have been used to help develop local capacity. These regions have previously suffered from the decline of fishing, mining and forestry (OECD 2012)

A recent report by the leading international development think tank, the OECD, also noted from its international study of renewable energy opportunities in rural regions across Western Europe and North America that three of the most important institutional factors driving the most successful rural regions were “strong regional/local governments with wide powers to act, cooperative or community enterprises active in renewable energy and local/regional government ownership of power utilities” (OECD 2012, 62).

The Nordic countries offer important alternative examples for managing the energy sector in the interests of society as a whole, rather than private vested interests (These models are discussed in greater depth in Cumbers 2012, chapters 8 and 9). Two countries that are particularly apposite here in offering policy options that would benefit Scotland are Norway in its North Sea oil experience and Denmark in its role as a world pioneer in wind power. Both countries have similar size populations to Scotland and faced similar dilemmas in terms of maximising the benefits of national energy resources in the face of foreign and elite interests as well as ensuring future security of supply.

4.3 Norway’s oil experience: state ownership, active civil society and deliberative democracy

The ‘Norwegian model’ is rightly acclaimed around the world for its approach to North Sea oil and gas development, particularly for dispersing the benefits throughout the country’s economy and society rather than allowing resources to be captured for vested interests. After almost forty years of oil development, Norway remains one of the most egalitarian societies on the planet, and compares particularly favourably with the UK. The UK has had a worsening Gini index (which ranks inequality on a scale from 0 = highly equal to 1 = highly unequal) rating of 0.28 in the mid-1970s, 0.33 in the mid 1980s and a figure of 0.36 today compared to figures for Norway (no figures are available for the 1970s) of 0.24 in the mid 1980s and 0.26 more recently (UNDP 2009) Norway consistently ranks near the top of the United Nations Human Development Index league table (number one for the most recent rankings in 2011).

Its careful husbandry of its oil interests has been a critical part of this story. Its experience is particularly interesting for us here because of the nature of state intervention and public ownership in the development of its oil and gas resources. When the first discoveries were made in the 1960s the approach adopted had much in common with Third World countries in dealing with the power of the international oil cartel: setting up a nationalised entity that should enter into joint ventures and over time develop indigenous expertise. This involved a ‘top-down’ model of state ownership led initially by elite groups within the central state apparatus. However, over time, as the magnitude of oil resources became apparent, a much more wide-ranging debate over the impact of oil on Norwegian society and culture developed that went beyond narrow economic considerations. In the process, some interesting institutions and mechanisms emerged that have embedded oil development within a more deliberative and democratic framework where more progressive agendas could develop.

The continued commitment to social equality has been matched by an impressive level of state-driven industrial development and economic modernisation, again in marked contrast to the UK, where there has been a distinct absence of any cohesive industrial strategy towards North Sea resources.

As is well known, Statoil was created in 1972 as a nationalised oil company charged with safeguarding the national interest by taking a 51 per cent share in all new field developments. Foreign oil companies were also required to cooperate with Statoil in the transfer of industry-specific knowledge, skills and expertise – known as Goodwill Agreements – so that by the early 1980s Statoil was able to pursue its own oil and gas field developments independent of any foreign involvement. Such legislation for dealing with foreign private corporations was informed by much longer-established Norwegian institutions of governance when dealing with how to safeguard national assets on behalf of the domestic community (see Box 2).

Box 2: Developing a Norwegian 'Common Weal' in the governance of energy and natural resources

The key economic development issues for Norwegian society in the early twentieth century were negotiating with foreign MNCs over the country's rich abundance of natural resources (particularly hydro power and timber). In this regard, the state tended to play the role of entrepreneur to stimulate industrial development, with a concern to increase the nation's skill base and technical capacity. This was done through negotiating joint venture deals and technology transfer agreements with the foreign companies concerned, with the aim of establishing Norwegian firms in strategic sectors.

A strong thread of 'Norwegianisation', defined as the principle that resource wealth should be evenly distributed to the benefit of the nation's people as a whole rather than appropriated by private interests, either foreign or domestic, has subsequently underpinned the state's economic development strategy in recognition of the perceived vulnerability of the country's decentralised economy to foreign control.

In particular, the response to what became known as the 'Waterfall Law Controversy' in 1905 (Ryggvik 2010) created the legal and institutional basis for the state's negotiations with foreign corporations. The fear that Norway's (as a primarily agricultural society) lack of indigenous engineering knowledge would render the country's resources vulnerable to capture by foreign interests underpinned a desire to develop appropriate legislation to retain national control. The government therefore passed what were known as the 'hjemfallsrett' laws (literally meaning land falling back or returning), which enabled foreign companies (which were mainly German and French) to exploit water resources in the first instance but under the premise that the resource would return to the state without compensation after a given time period.

Such laws allowed the state to develop its own technical capability and knowledge over the long term, with policies put in place to increase the number of technologists and engineers in key sectors. More pertinently for us here, they also inscribed an important set of moral and institutional norms regarding the relationship between natural resources and economic interests. Influenced by the American progressive journalist Henry George, the Norwegian justice minister, Johan Carlsberg, believed firmly that the economic rent emanating from natural resources should not be captured by any private individual or group of private interests but should be the 'common property of the people'.

(Ryggvik 2010)

Norwegian policy also created a number of other important mechanisms and institutions to secure the national collective interest and ensure that society as a whole both benefited from oil and gas but also shared in the public debate during the 1970s about the future direction of the nation's resources. These included the creation of the state's direct financial interest (SDFI) in 1985. The latter was established because of fears that Statoil was becoming too powerful; the SDFI was valued at about £80 billion in 2008 (NPD 2009). Another point of comparison, marking out Norwegian oil operations from those of the UK, has been the establishment of a state oil fund – known as the 'Government Pension Fund – Global' – in 1990, which is currently worth around £485 billion (From Norwegian pension fund website at: www.nbim.no/en/About-us/Government-Pension-Fund-Global).

Two other important institutions were critical. The first was the creation of a Petroleum Directorate as a separate organisational actor to Statoil charged with administering, regulating and controlling oil and gas resources and independent of the oil companies. One of the consequences was the development of the safest offshore oil and gas regime in the world from the early 1980s onwards. But the Directorate also developed its own professional and technical expertise in all matters to do with oil. The second feature was the establishment of what became known as the Paragraph 10 clause in the legislation that created Statoil. While Statoil was always meant to be a commercial operation at arm's length from government, the clause meant that the company had to present an annual report to parliament on "significant issues relating to principles and policy" (Ryggvik 2010: 100). The effect was that the company and the broader impact of oil on Norway was the subject of continuing scrutiny and debate into the 1990s.

A whole series of committees in the Storting (Norwegian Parliament) set up their own consultation exercises, including Social Affairs, Foreign Affairs and Local Government to consider all aspects of oil development, in the process drawing upon a diverse range of knowledge and expertise from all sectors of civil society, including professional association, trade unions, fishing and farming interests, church groups and trade unions. Overall there was an impressive process of wide-ranging deliberation on questions of oil policy as well as collective learning so that many parliamentarians also developed extensive knowledge of oil affairs. The outcome was probably the most progressive approach to energy development ever seen which involved the following radical proposals. Norway committed itself to a "socialised" model of oil, key elements of which were the priority that oil should create a "qualitatively better society" and crucially a "moderate rate of oil extraction" (ibid, 34, 35) with a 90 million tonne ceiling that was not breached until the early 1990s. Additionally, emphasis was put on developing the resource in the most environmentally friendly manner as well as using revenues to boost the country's spending on international development.

4.4 Denmark's wind power revolution: a lesson in diversified and decentred public ownership

Where Norway's example shows how an older form of top-down public ownership – a state enterprise – can be embedded in democratic and participatory institutions to provide what the American sociologist Erik Olin Wright calls progressive social empowerment (Wright 2010), the Danish experience with renewable energy points us in the direction of a diversified and innovative mix of forms of public or common ownership that might enrich democratic processes in the economy.

In the field of energy policy Denmark has been held up as a model by the International Energy Agency for its far-sighted approach to tackling climate change. The country went from being completely dependent on foreign oil and gas for its energy needs in the 1970s to being self-sufficient in energy and generating a new renewable sector accounting for twenty eight per cent

of its electricity needs by 2000. The cornerstone of this success was the emergence of a wind power industry which has not only been at the forefront of Denmark's strategy to increase self-reliance and reduce CO2 emission but has also created 20,000 jobs and given the country's firms 50 per cent of the world market for wind turbine manufacture (DEA 2010).

Despite the international plaudits, there has been rather less recognition of the policies and institutional mechanisms that have been behind this shift, largely because they fly in the face of much mainstream policy wisdom regarding the reliance on market solutions and private ownership in particular. Denmark's wind power revolution has been based upon public ownership and planned interventions but is neither a top-down state driven process nor a grassroots achievement. Instead, it reflects the combination of state action, grassroots social mobilisation and a diversified set of public ownership arrangements operating at different geographical scales. While it reflects some important historical and geographically specific factors, it also offers some important insights for developing more sustainable and democratically based forms of economy.

The oil crises of the 1970s exposed Denmark's vulnerability to imported oil, accounting for around 90 per cent of the country's energy demand by 1973 (Cumbers 2012). Rising oil prices over the course of the decade prompted a rethink of Danish energy policy. While the country lacked the vast oil and gas resources of the UK and Norway, there were still important discoveries in the Danish North Sea that enabled the country to reduce its dependence on imports during the 1980s. However, it still faced significant problems and some hard choices in achieving long-term security of energy supply.

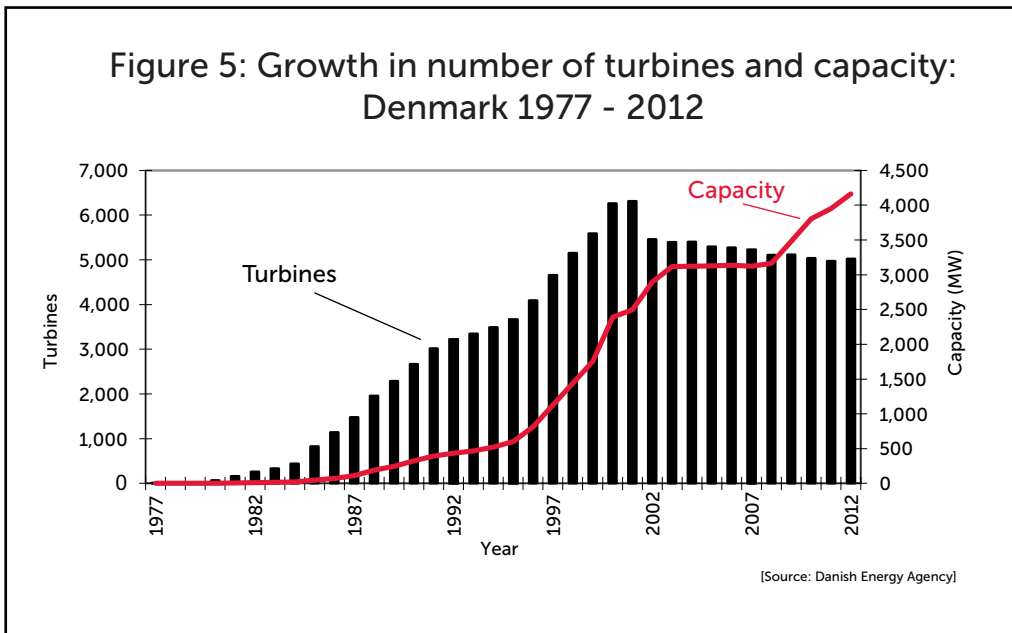
In this context, there was an intense political struggle over the direction of energy policy. Much of the country's political and business establishment favoured nuclear power as an alternative to oil, but was opposed by a coalition of green, left and rural communities around an alternative vision of a more localised, decentred model based on renewable energy. An important factor that probably helped to tip the balance away from nuclear was the continuing tradition of interest in wind power as an alternative, and the existence of engineering and scientific communities that were able to showcase the viability of non-nuclear technologies in a populist way, generating an alternative discourse around 'clean' and 'pure' energy.

By 1980 the Danish government had embarked upon a decisive strategy in support of renewables with a model of decentred and localised forms of collective ownership to the fore. There were three critical pillars of government policy:

- First, government funding for thirty per cent of all investment in new wind turbines over the period from 1980 to 1990 giving an important boost to Danish windpower producers;
- Second, the 'Energipakken', compelling electricity distribution companies to purchase a certain quota of energy supply every year from renewable producers as part of nationally set targets, strengthened in 1993 through an amendment to the Renewable Energy Act to set up a 'feed-in' fixed price tariff for 'green energies' of 84 per cent of the utility's production and distribution costs;
- Third, and most pertinent to our interests here, the encouragement of local and collective ownership of turbines. This has occurred largely through a series of laws that limit ownership of wind turbines to those residing in the municipality where the turbine is built, known as 'residency criteria' or distance regulation laws.

Together these policies gave a massive boost to the wind power industry with a particularly pronounced period of growth in the second half of the 1990s (Figure 5) following the setting up of the Feed-in-Tariff, a policy that has subsequently been applied in other EU countries.

Figure 5: Growth in number of turbines and capacity:
Denmark 1977 - 2012



Although these ownership laws have been relaxed more recently, they gave critical political momentum to localised and collective forms of ownership which have had long-lasting effects. They have meant that wind turbine ownership remains dominated by either small-scale forms of private ownership (typically partnerships between local neighbours) or cooperative forms. The first Danish onshore ‘wind farms’, in the sense of larger scale activities that supplied more than a local neighbourhood, were all cooperatively owned. At its height in the late 1990s, it was estimated that 150,000 families or around 10 per cent of the population were involved (Cumbers 2012).

The participation of communities in the ownership and development of the technology has been a critical factor in the successful growth of renewable energy capacity. Surveys suggest around 70 per cent of the population are in favour of wind farms with only around five per cent against (Soerensen et al 2003), figures that are far higher than found elsewhere.

Together, the ‘distance regulation’ laws, state support for renewables, and the localist and collectivist traditions of Danish society have been important in both dispersing economic power and creating the conditions for greater public participation, deliberation and economic democracy in the energy sector. At this point it is also worth emphasising the decentralised and cooperative nature of the electricity distribution system, in contrast with the more centralised systems put in place through nationalisation in France and the UK after 1945. The electricity utility industry in Denmark emerged at the local level in the first decades of the twentieth century and was operated by cooperative and municipal enterprises on a not-for-profit basis to provide for local needs rather than by private or state-run firms. Although economies of scale were realised in power generation by the coming together of cooperatives to form associations and build plants – coal in the early twentieth century followed by oil after 1945 – the national state was not directly involved in such developments.

Today the system is still heavily decentralised with around one hundred local distribution companies (primarily cooperative and municipally owned) and ten regional transmission networks (which are amalgamations of the 100 local cooperatives) (DEA 2007). This means that local cooperative and mutual forms of ownership dominate the electricity distribution system (Table 4). While there is still a more traditional oil and coal fired centralised power generation system around the state owned energy company, DONG (Dansk Olie og Naturgas A/S) and Vattenfall, a subsidiary of the Swedish state-owned corporation, turbine growth has helped to provide a strong element of localisation in power generation.

Gas distribution is also in the hands of either state-owned or municipal companies at the local level. Although there has been a growing amalgamation of decision-making in the electricity sector through the setting up of regional associations – ELKRAFT for the main island Zealand (which includes the capital Copenhagen) and ELSAM (for Jutland and the island of Funen) – and these bodies wield considerable power in national energy policy debates, it is important to emphasise the continuing democratic constitution of these organisations with the two associations’ main boards subject to elections.

Boards of municipal companies (which tend to be the main urban centres) are appointed by the local government, whereas the cooperatives (which tend to be rural) are democratically elected by meetings of consumers. The regional companies are in turn elected by the representatives of the local boards. Overall, the Danish energy network is remarkable for both its level of public participation, democratic decision-making and the manner in which these powers are ‘de-centred’ and not bound up in one organisation or set of elite institutions. It has also created an active and knowledgeable civil society around renewable energy and climate change politics that represents a progressive force for broader processes of social and environmental change.

	% share	Nature of ownership
Power generation		
Central generation plants	61	State: DONG, Swedish state subsidiary
Wind turbines	19	Co-ops, state, municipal and private
CHP/industrial		
auto-producers	20	Mix of private and public
Electricity distribution		
Joint stock companies	26	State owned under DONG Energy
Co-operative companies	55	Co-ops owned by consumers
Municipal companies	12	Co-ops or joint stock state owned
Other	7	

Source: derived from DEA 2007, p. 17.

Rule by a centre-right coalition with an anti-environmentalist premier, Anders Fogh Rasmussen, from 2001 to 2011 slowed the growth in renewables (Figure 5); the government cancelled three new offshore projects on coming into office and also cut support for the previously successful policy of domestic energy conservation.

Interestingly, there have been some innovative new forms of local public ownership since 2000, notably the development of partnerships between municipal and publicly owned utility companies or by partnerships between the municipal governments and residents’ cooperatives. Perhaps the best example is the massive Mittlegrunden wind farm, which was constructed off the coast of Copenhagen in 2001 and which provides 40 mega watts of electricity, equivalent to three per cent of the capital’s electricity needs. Acceptance of the project by the local population was facilitated by the ownership structure which was divided fifty/fifty between the local utility company, Copenhagen Energy (itself owned by the city council) and a bespoke cooperative, created with the aid of the city council’s energy department and the support of local residents’ groups in which individuals were able to buy shares, with over 10,000 residents taking up the

option (Soerensen et al 2003). Such schemes as these might well prove to be an important new form of public ownership, combining civic participation with control and strategic direction from the state – at the local scale.

4.5 A Nordic model of energy development? The deliberative economy, de-centred decision making and the common good

At the heart of the very different approaches employed by Norway and Denmark, we can define a set of common principles that underpin a Nordic philosophy toward natural resource development (Table 5). Whilst many of these are historic and specific to the context of the evolution of economic development in the two countries, there are some important elements that should provide a guide to a more progressive, social and environmentally oriented energy policy in Scotland.

Foremost amongst these is the deeply-held belief that such resources should be collectively owned for the community as a whole rather than the preserve of an elite of private interests. A second feature is that social need and a long-term perspective, rather than narrowly-focused economic interests and short-termism, govern energy and natural resources policy. The importance of collective decision-making and a tradition of public deliberation is also key. While there will always be disagreements and conflicts between competing groups, it is important to develop appropriate institutions and association between state, the private sector and civil society that allow legitimate differences to be debated and negotiated in the formulation of policy.

Out of the collectivist approach also comes a tradition of collective learning and knowledge formation where technology and innovation are shared across communities rather than being privately appropriated. A remarkable feature in the growth of the Danish wind turbine industry was the absence of patenting of prototypes; indeed, no patents were developed in the industry until the mid-1990s, which in part was due to an 1885 law that banned rural technology patents. This meant that, in the early years of the industry, the technology was commonly available to local producers and experiences were shared.

Both Norway and Denmark have traditions of more decentred (rather than merely decentralised) economic decision-making with regard to energy where a range of public, private and civic associations are involved in the formulation of policy. Critically, all organisations – even private corporations above a certain minimum threshold – are subject to democratic processes and elections of board members. In Norway, this decentring also involves a mix of public and collective-owned organisations that marry together national strategic priorities with the encouragement of local forms of public ownership.

Table 5: Key principles for a Nordic approach to the ownership of energy resources	
1	Resources should be commonly owned to benefit the community as a whole rather than vested interests.
2	Resources should be geared to social need rather than private economic returns.
3	Support for principles of collective learning and knowledge formation.
4	Development of de-centred institutional structures that spread economic decision making power.
5	A mix of forms of collective and public ownership that allow strategic planning at higher levels to fuse with the encouragement of local democracy and community participation.

5. An alternative structure and strategy for energy policy in Scotland

As the preceding analysis has demonstrated, the current market driven, privatised energy regime that exists in Scotland and the UK is failing to secure important economic, social and environmental policy goals. This report proposes an alternative strategy that draws upon best practice elsewhere, and in particular from Nordic models, where social need, environmental sustainability and common ownership of resources are placed above private appropriation and profit.

In devising an alternative strategy for Scotland's energy resources, the proposals advocated here are dictated by the following four key broad objectives:

- achieving long-term security of energy supply for Scotland;
- taking Scotland's broader responsibilities seriously by developing a fully integrated strategy for combating climate change;
- enhancing the redistribution of income from rich to poor, with particular regard to eradicating fuel poverty and price discrimination of poorer customers;
- widening participation and decentralising economic decision-making.

To achieve these goals, the report advocates a radical transformation of the ownership structure of the Scottish energy sector which shifts away from the fixation with privatised and largely corporate forms to employ a diversity of forms of public ownership, including cooperative and community-owned enterprises (See Cumbers 2012 for a more extended discussion of diverse forms of public ownership). Whichever forms of ownership are employed, they should operate according to three critical criteria:

- that they are democratically accountable, either to a layer of government or to collective (in the sense of forms of public or community owned) interests;
- that they operate according to clearly defined public interests with set targets and objectives;
- that best practice employment relations are adhered to, including full recognition of trade unions, the election of worker representatives onto company boards above a minimum size threshold (e.g. 20), and a commitment to skills upgrading and training.

At the core of this proposal are plans to create new forms of public ownership at the local level that give real participation and decision-making power to local authorities and communities in the shift away from carbon-based energy sources to renewables. But the structure proposed also recognises the need to provide higher level strategic coordination to secure key national policy goals.

At present the sector is dominated by private corporations with state involvement reduced to regulation and the setting of market-based incentives (e.g. for producing renewables). Reflecting the ludicrous complexities of a 'failed market' environment in which energy has effectively to be treated as if it were a consumer good such as a loaf of bread, successive governments have ended up creating their own bureaucratic entanglements to attempt to steer market-based systems towards public policy goals. Instead, what is proposed here is a planned and integrated approach in which state forms of ownership – though fully democratically accountable – are responsible for securing key long-term objectives and, wherever it is technically possible, more localised forms of public ownership are stimulated.

Moving on from the well-trammelled debate about the shortcomings of privatisation, it is important to recognise the deficiencies of older forms of public ownership in the energy sector where monolithic and over-centralised state bureaucracies were created that were highly undemocratic and lacking in sensitivity to local needs. In the interests of national efficiency and economies of scale, the electricity and gas sectors became nationalised in every sense of the word where municipal and locally-owned entities were submerged under larger public corporations which, while accountable to secretaries of state, were in practice far removed from the interests of consumers, workers and local government control. Whilst this may have made sense in terms of productive and technical requirements in the period from 1945-79 where the focus was on larger centralised sources of power generation and the development of a single national electricity grid (although other countries, notably Denmark and Germany, continued to have much more decentralized forms of publicly owned electricity supply and distribution systems), there is no reason why such centralised structures should be replicated now where the shift towards renewables actually requires more decentralised and dispersed forms of energy supply and connection.

5.1 A publicly owned energy sector in the twenty first century

The basic organisational structure of the proposed energy framework is set out in Figure 6. At the apex of the structure would be a new body, the Scottish Energy Agency, a body charged with overseeing the sector and setting key objectives and targets. The SEA would play a similar role as the Petroleum Directorate in Norway (with regard to its North Sea resources) in having overall strategic control of energy policy, but with a strong remit to shift the country towards a post-carbon future. As well as meeting the current Scottish Government's renewables targets, the SEA would also have responsibility for North Sea oil and gas, particularly with regard to the pace of production. Rather than an over-focus on producing as much oil as possible – current UK and Scottish Government objectives coincide in trying to increase the rate of production – the SEA would seek to reduce production from the North Sea, developing a more integrated and responsible approach to carbon emissions. While recognising the realities of continuing Scottish reliance on oil and gas for domestic household and industrial consumption, the 1970s Norwegian strategy of a production ceiling should be adopted over a short-term revenue-raising approach to limit North Sea production. In this way, North Sea resources will become strategic reserve assets for the nation and future generations. The SEA would also develop its own research capacity and expertise in energy matters – in partnership with universities, other public agencies such as SEPA and relevant private companies and interests.

Given the maturity of North Sea oil and gas resources, wholesale nationalisation of the sector at this stage is undesirable as the state would be left with declining assets and high decommissioning costs. Nevertheless, some forms of partial state ownership might be appropriate (through SEA). Following policy elsewhere (e.g. Venezuela, Norway) by taking a 51 per cent stake in all new oil and gas fields and acquiring state shares in existing large scale ventures might be an important extra means of developing greater public control and benefit from revenues, in addition to the existing taxation regime. As with other parts of the energy sector, workers in the North Sea should be afforded the same rights to unionisation and representation in the workplace. Norwegian best practice employment relations, health and safety, and training obligations should also be adopted.

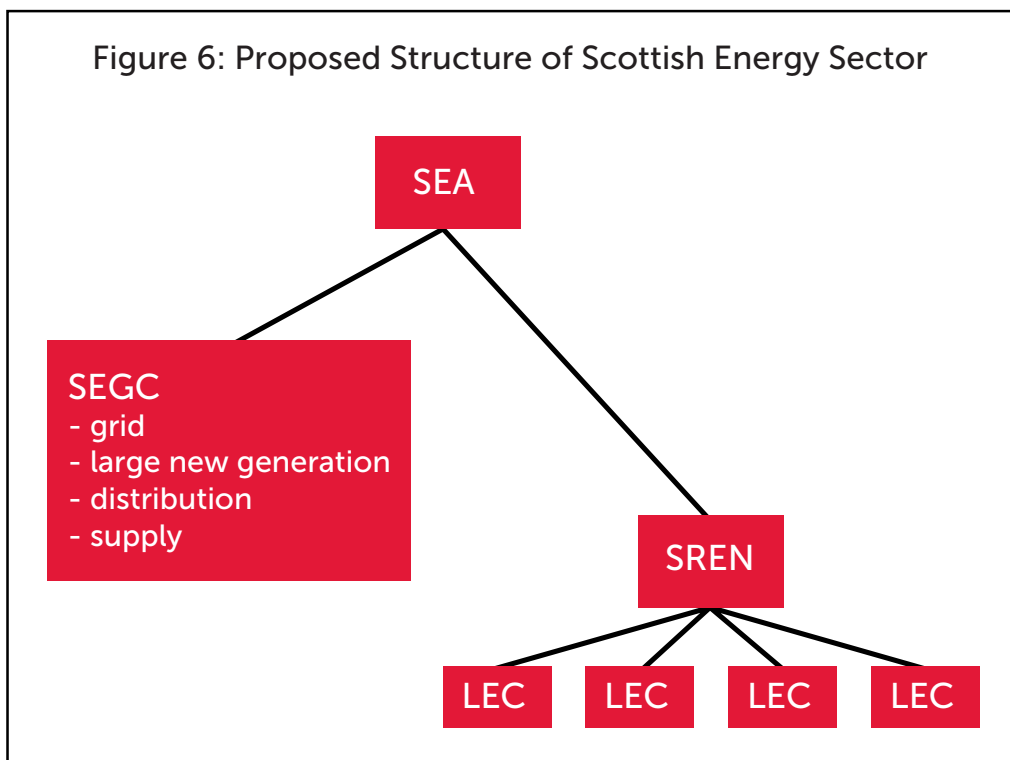
In contrast to the situation in England and Wales, where the ownership of the energy generation, distribution and supply network has become hugely fragmented as a result of privatisation, the structure of the energy network in Scotland is less complex. Where south of the border a separate company, National Grid, is responsible for the overall network, the electricity transmission network in Scotland is run by the main electricity generating companies, Scottish Power and Scottish and Southern Energy (SSE) (see Table 2). These are vertically integrated companies, which own and run power stations (including wind turbines) as well as being electricity distributors and suppliers.

5.2 Grid and distribution network

What is proposed here is that the grid and electricity distribution responsibilities of these companies are nationalised into a single entity, the Scottish Electricity Generation Corporation (SEGC). This body would have overall responsibility for making sure 'the lights stay on', i.e. energy security, akin to the UK's old Central Electricity Generating Board. It would be the main body in charge of the energy mix, in ensuring the right degree of spare capacity in the system. It would also ensure equity in pricing arrangements and service delivery across the system, whilst allowing opportunity for cross-subsidisation and income redistribution to tackle fuel poverty and inequalities in production and consumption costs. In partnership with the SEA it would have key climate change objectives (e.g. increasing energy efficiencies, reducing CO2 from non-renewable sources) but its primary role would be in dealing with energy supply issues.

It would also have the role of ensuring a stable transition towards renewables through overseeing the long-term running down of existing large-scale conventional power stations (coal fired and nuclear) and the gas fired power station at St Fergus, and the building up of sufficient renewable capacity across the system to ensure security of supply. A recent report for Friends of the Earth notes that, even with a conservative scenario, renewables production should be producing 89 per cent of Scotland electricity needs by 2030 and the likelihood is that this will reach 100 per cent (Garrad Hassan 2010).

A key issue in the years ahead will be ensuring that the Scottish electricity grid is modernised to allow it to incorporate both localised and dispersed sources of renewable energy whilst also ensuring the appropriate mix between base load (energy available at any time) and more intermittent sources (such as wind, tidal and wave) and appropriate energy storage facilities for resilience. The SEGC would have the remit to develop offshore and marine grid capacity (taking these powers away from the Crown Estate) and to foster links with other European countries (including England and Wales) to further advance Scotland's connectivity to mainland Europe and Nordic electricity systems through the North Sea Super Grid. The organisation would also have its own research and technology arm with a key priority being cleaner technologies and investment funds available for the development of alternative non-carbon or lower carbon forms of base-load power (e.g. biomass, hydro, Combined Heat and Power and Geothermal).



The SEGC would also take over the responsibility for new strategic electricity supply in the short-term although in the longer term this should be transferred to local authority control as is the case in many parts of western Europe and Latin America. Local energy companies (LECs) that integrate electricity generation and supply should be created with the remit to deliver on national renewables obligations and CO2 reduction targets. For Scotland's larger cities, municipal authorities might create combined electricity generation and supply companies, perhaps in partnership with other local authorities to create decentralised fully integrated renewable generation and supply networks. For rural areas, more community-based schemes might be developed that would be in the position to generate surplus electricity to the national grid.

5.3 Decentralised energy production and empowering local communities

Prior to the post 1945 nationalisations, many local authorities played a key role in the ownership and management of electricity and gas supplies. In this respect much can be learned from the experience of countries such as Denmark, in increasing democratic involvement through more decentralised energy systems. In the interests of promoting more localised forms of public ownership it is proposed that a separate branch for renewable energy should be created, the Scottish Renewable Energy Network (SREN). SREN would provide the main impetus for achieving a shift towards renewable energy and would be composed of local energy companies (LECs) established under local authority and community control throughout Scotland. The scale that these companies should operate at would be a subject for debate and should be contingent on local conditions. For technical reasons, it would make sense to introduce LECS with their own grid networks at the old strategic regional council level for some parts of Scotland (Strathclyde, Lothian, Grampian) to develop greater integrated local energy capacity. Clearly for many remoter highland and island communities, different logics would apply where more community-based associations might develop.

The LECs will be concerned with the development and running of renewable energy plants and will receive investment for start-up and research and development from a renewable energy fund, drawn from revenues from North Sea oil and administered by the SREN. Existing onshore (including the massive wind turbine developments currently in private hands) and offshore renewable schemes would come under the control of the SREN with a legal obligation to transfer a 51 per cent shareholding to a publicly owned enterprise in partnership with the appropriate local LEC. The exact composition would be determined by the relevant LEC and would follow a range of the hybrid forms of public ownership being followed elsewhere but local ownership legislation, borrowing another idea from Denmark, should be introduced to protect local democratic control.

It should be recognised that given Scotland and the UK's lack of an industrial strategy thus far towards renewables, much of the expertise is foreign owned, with the result that there is a lack of Scottish content in the supply chain for wind turbine construction. Although both Scottish and UK governments have the stated aim of increasing local employment and the supply base, there are not effective policies in place to realise this. The example of Norway in the 1970s with its North Sea oil experience is pertinent here where Statoil became a fully-fledged operating oil and gas company, independent of foreign partners in under a decade. There were also an accompanying technology transfer policy and what became known as 'Goodwill Agreements'. These compelled foreign companies to build up local technology, research and development capacity, and local skills in the industry to the extent that Norway developed a fully-integrated local supply chain. Scotland should have the same ambition with renewable energy. Giving the SEA the power to oversee this development would also enable it to play a role in encouraging local oil- and gas-based companies to diversify their skills and knowledge to renewables, especially in the offshore wind field through appropriate subsidies and incentives. Equivalent laws to the Norwegian

'hjemfallsrett' laws should also be passed with regard to new offshore renewables developments so that where foreign expertise is required, the assets pass wholly back to the Scottish state – in the form of a partnership between SEA and the relevant LEC – over a certain period (perhaps ten years).

A key element of the proposed structure is strong community participation and democratic accountability. The SREN would be organised at a national level, its board membership (of non-executive directors) would ensure a high level of representation of stakeholders through representatives from local authorities and the combined workforce across the energy sector on the main board, alongside ministerial appointees (Table 6). Similarly, the two other national organisations would also have a mix of interest groups represented on their boards. It is important in the new structure to avoid creating inter-organisational rivalry or agency capture. Thus, it is critical that different interest groups do not become tied to one institution, but instead have representation across the different range of agencies. To this end, an important component of the new structure is to create communities of interest that overlap and range across the different organisations, ensuring a more co-operative and consensual approach to the development of strategy. Whilst there will inevitably be conflicts between different groups, notably consumers and producers of electricity, the greater degree of participation and associational culture that the system would generate will hopefully provide negotiated solutions that meet long-term energy priorities.

Finally, drawing heavily upon the Danish model, it is also proposed to develop a diversity of ownership forms that encourage broader public participation and democratic deliberation within the system, avoiding the capture of energy policy by elite or vested interests. Whilst the main rationale for the proposed structure is the return of the energy sector to public control and accountability, it is important to introduce hybrid and diverse forms of public ownership that enable different interest groups to be represented.

Although the two nationally organised entities (SEA, SEGC) would be run as fully owned public companies at a national level, their boards would be equally weighted with nominees by the Minister for Energy, elected officials from local authorities or consumer groups and elected employee representatives (Table 6). Where there is a gridlock over strategic decision-making, however, the Minister (ultimately a democratically elected official) should have the casting vote.

Table 6: Membership structure of proposed public energy companies		
Organisation	Membership structure of board	Additional comments
SEA	33% ministerial appointee 33% local authority representatives 33% employee representatives	
SEGC	33% ministerial appointee 33% consumer representatives 33% employee representatives	

SREN	33% ministerial appointees 67% local authority representatives	Umbrella body coordinating local renewables
LECs	Determined by local authorities but statutory regulation requiring employee representation	Renewal energy companies regulated by local authorities

There is scope for innovation in ownership in the renewables area to stimulate greater local control over decision-making. Thus, a recommendation would be that local authorities (or even community councils) have jurisdiction over the forms of ownership developed for LECs. Forms of consumer cooperative or mutual companies would be developed within this framework or even the kind of innovative partnership between local government and residents' cooperatives found in Denmark and parts of Latin America. Alternatively, local authorities could establish their own municipal companies either individually or through collaboration with other authorities.

5.4 And how do we pay for this... or rather, what is the cheapest and most publicly accountable way of securing 'the lights stay on'?

Finally, to the issue of how all this would be paid for. As we indicated in our analysis of the existing policy regime, current government strategy relies heavily on the private sector and a hugely increased financial burden for domestic consumers as price rises subsidise the incentive regime to induce investment from foreign corporations. Our solution involves government borrowing and investing directly at rates that would be far cheaper than would be possible for the private sector estimated at 5.5 per cent in 2013 for onshore wind (GIB 2013 P43) and up to 7.5 per cent for offshore wind (DECC 2011 P18). If we take current UK government borrowing as a guide, 20 year bonds are currently trading at 3.5 per cent. Even allowing for the expected increase in borrowing costs in financial markets over the next few years, it is still plausible that an independent Scottish government could issue energy bonds (typically for twenty years given the lifespan of many energy projects) at between three and four per cent as a way of financing the larger capital investments required (e.g. major offshore wind or tidal projects). This solution would both be cheaper in the longer term for the government – because it would own the assets being created – and have the added advantage of keeping fuel prices lower for consumers. This has been modelled in the accompanying paper *Costs and Rate of Return from Off-Shore Wind Farms* (Reid Foundation, 2013). What this shows is that off-shore wind farms developed using the funding method proposed in this report are immediately six per cent less expensive to develop than the current funding model. This rises to 15.5 per cent in time and could reach as much as 22 per cent cost savings in the building of infrastructure.

Bond financing, alongside individual and community shareholding and public pension funds, would be the main means of raising revenue at the local level, whilst a green investment bank (it is worth noting in passing that the UK's Green Investment Bank has so far made no major investment in Scotland despite its renewables potential), perhaps building upon the Scottish Futures Fund (but with far greater capitalisation than the £250 million current scheme) might also be set up by the Scottish Government.

One model that might be adopted from Denmark, to encourage individuals to participate in community or cooperative schemes, would be the use of ring-fenced bank accounts for those who wanted to buy shares but did not have the capital available up front. Annual dividends/incomes from their share of profits would then be credited to these accounts allowing them to progressively assume full ownership of these shares as the 'loans' were paid off. Although it is

beyond the scope of this report, local authorities should be given greater power to raise their own revenues, perhaps even with the establishment of their own banks, following the example of Germany's Landesbanken (local banks owned by federal regions).

Conclusions

Existing energy policy, largely controlled at the UK level and predicated on market led and privatised solutions, is not fit for purpose. It delivers massive quasi-monopoly profits predominantly for private and foreign multinational corporations that represent largely 'unearned' profits. At the same time, it is failing to deliver on the key strategic policy goals of delivering the UK's commitments on reducing CO2 levels and tackling climate change, providing long-term security of supply, and affordable energy and tackling fuel poverty. The UK appears to have the worst of all possible worlds and there are strong parallels with the US health care system where privatised market relations end up with a grossly inefficient sector for which ordinary consumers end up paying far more than they would in a more publicly owned and planned one. In another parallel to the US health system, it also has produced powerful vested interests in the form of energy multinationals, a rich landowning class and financial elites whose grip on the policy agenda will be hard to dislodge.

A market based system up until the early 2000s ensured that there was no strategic assessment of the country's overall energy mix and resources so that there was a 'dash for gas' as the cheapest alternative in the short term. The failure to invest in new and alternative forms of energy by privatised corporations mean that the UK now faces potentially chronic supply shortages with over-dependence on important electricity and gas likely in the future. At the same time, the UK's current policy looks unlikely to deliver on the country's renewables obligation with renewed enthusiasm for gas among ministers. As Professor Michael Bradshaw of the University of Leicester has put it in a recent analysis: "A perfect storm is brewing, with major uncertainty around all the elements of current UK energy policy. This could delay the low-carbon transition and lead to continuing reliance on gas" (Bradshaw 2012, 4).

While the Scottish Government has put in place some important policies to attempt to encourage community ownership, and has a better record to date of shifting towards renewable energy than the rest of the UK, it remains hamstrung by the wider UK context, which remains wedded to distorted markets and private ownership. Because of these inherent market failures, only by breaking out of this policy regime and developing an alternative agenda around new forms of strategic planning and public ownership can Scotland fulfil its true potential and wider obligations as an energy rich nation.

Drawing upon a range of examples from elsewhere, and in particular the Nordic tradition of common ownership of resources to benefit society as a whole, we have argued in this report that an alternative, more environmentally sustainable and socially equitable form of energy development is not only possible but an imperative in the years ahead. The independence debate thus far has been mired in short-term thinking about the economic returns from energy without fundamentally challenging the status quo. A much longer term approach to Scotland's energy is required where energy resources are owned, managed and distributed for the collective good, and on behalf of present and future generations rather than being appropriate for private and corporate interests.

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