

Contested Energy: A Long-term Perspective on Opposition to Renewable Power Developments in Scotland.

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Abstract

The decision to approve the Beaully-Denny power line brought into sharp focus the contested nature of the Highland landscape. Local vs. global, development vs. delight and green vs. green disputes have all been entered into; crucially, these disputes have all reflected on the questions of what – and who – the Highlands are for. This paper makes some comparisons between the arguments around Beaully-Denny and renewable power more generally, and those that were advanced during the construction of hydro-electric schemes in the post-war era – particularly relating to the Tummel-Garry schemes. The argument is made that objectors' appeals to generalised concerns about landscape or amenity are unlikely to be successful when confronted with public-policy discourse focused on wider questions of economic development and well-being.

## **Contested Energy: A Long-term Perspective on Opposition to Renewable Power Developments in Scotland.**

The Scottish Government's decision in January 2010 to approve the construction of the Beaully-Denny power line brings an end to a long-running public dispute.<sup>i</sup> The decision, the Public Inquiry which preceded it, and the proposal to build the 220 km, 400kV transmission line through some of Scotland's most revered mountain scenery, have all focused attention on two of the key questions of Scottish economic historiography: what – and who - are the Highlands for? Written off as economically uninteresting and irredeemably backward for much of the twentieth century,<sup>ii</sup> more recent analyses have taken a more optimistic view and discerned both substantial growth and significant future potential.<sup>iii</sup> The identification of Scotland as a 'Saudi Arabia for Renewables'<sup>iv</sup> has played an important role in changing popular perceptions of the economic vitality of the region, but the development and exploitation processes have not gone uncontested. The arguments between those who favour the kinds of development represented by the power line and those who wish to preserve the pristine beauty of the Highlands take a number of forms, but, ultimately, they represent competing conceptions of the relationship between landscape and the people who live in it.

Use of the landscape and natural resources for a variety of purposes has long been contentious. Smout sees the fundamental dispute as between 'use and delight,'<sup>v</sup> in rural areas, and the doyen of Highland historians, James Hunter, has discussed the conflict between 'a concern for community and culture, on the one hand, and a concern for the natural environment, on the other,' at some length, though he describes any attempt to set these against one another as a false paradox.<sup>vi</sup> Warren and Birnie recently explored the 'energy or environment' debate and have suggested that there are a number of dimensions to the arguments, including 'local v global', and 'insider-outsider' conflicts.<sup>vii</sup> The proposals to develop the superquarry on Lewis and the construction of the funicular railway in the Cairngorms crystallised some of these arguments around local benefits and jobs vs. outsiders' perceptions of the despoliation of the landscape.<sup>viii</sup> It is clear, however, that environmental arguments are seldom one-sided: Warren et.al. note the emergence of 'green on green' debates in which some campaigners laud the renewable energy benefits represented by wind farms and

other technologies, while others decry the impact on landscape and loss of amenity.<sup>ix</sup> This is a deep conflict of values,<sup>x</sup> since it asks fundamental questions about where the public interest lies, how it might be defined, and which groups get to define it in particular cases.

The Beaully-Denny case raises a number of these arguments, but it does not sit easily in the dominant discourses. First, the power line itself is designed to deliver electricity from a variety of renewable sources in the Highlands to the much more populous central lowlands of the country, including the main cities of Glasgow and Edinburgh – where the demand for power is greatest. While some objectors see this as evidence of exploitation of the Highlands for the benefit of the lowlands<sup>xi</sup> – a classic local-global issue – it is also the case that a variety of renewable energy projects in the Highlands would be unsustainable without it. There is, therefore, an added layer of complexity to the development vs. environment arguments. Second, the range of objections to the power line is built on two fundamental arguments, landscape aesthetics and the disputed economics of power generation and transportation.<sup>xii</sup> There is in many ways here a series of overlapping conflict between communities of place – who may benefit from investment and jobs, but have their lives affected in other ways by the infrastructure – and some communities of interest – whose focus may lie entirely on aesthetic issues, but whose wider interests may best be served by an active and gainfully employed population in the Highlands. The ‘green on green’ nature of many of the objections makes the environmental balance of the proposals difficult to determine, though popular debate may currently lie in favour of the benefits of the renewable energy sources.<sup>xiii</sup>

These disputes are not new in Scotland, and it has been suggested that examination of some earlier controversies may shed light on current disputes.<sup>xiv</sup> This paper explores some of the protests raised at the building of hydro-electricity schemes across the Highlands in the twenty-five years or so after 1945, and offers some points of comparison between the arguments advanced then, and those recently deployed against the plans to build the infrastructure required for current renewable energy growth. In both cases, it will be suggested, official appeal to the wider social and economic benefits of development meant that generalised protests around the destruction of beauty could be dismissed. Economic arguments – either in terms of

the expense of particular projects or the overall benefits to be gained – have tended to carry greater weight, though it will be suggested that where specific arguments related to local environmental impact can be aligned with wider political economy concerns, then they can prevail. The paper proceeds as follows: Section II examines some of the debates around large-scale hydro-electric developments in the Highlands in the 1940s and 1950s. Section III considers the impact on fishing in the context of one of the earliest and largest schemes. Section IV discusses the changing economics of hydro-power generation between the 1940s and the 1970s. Section V investigates some of the general arguments around wind power and renewable energy in the Highlands, and Section VI focuses specifically on the Beaully-Denny transmission line. Section VII concludes.

## **II The Development of Hydro-electricity in the Highlands**

As part of UK government plans to halt emigration from and raise the standard of living in the Highlands, the post-war years saw a rapid expansion of hydroelectric development. These developments entailed the construction of very large civil engineering works throughout the Highlands. These were promoted as a necessary public good, designed to contribute to national energy security and support the people of the region both economically and socially. They also, however, triggered a wave of protests from those seeking to keep the region in its ‘natural’ state. This position focuses attention on the long running conflict between the romantic appeal of the Highlands to outsiders and the reality of a declining economy and society for much of the twentieth century.<sup>xv</sup> The ‘public good’ argument, in this period, lay firmly on the side of economic and social development and was therefore able to carry the day.

The first large-scale hydro-electric developments in the Highlands were undertaken by the British Aluminium Company (BAC) which sought to utilise the electricity generating potential of the Highlands for the electrolysis of aluminium. Between 1895 and 1924 BAC began work on three successively bigger plants, at Foyers, Kinlochleven and at Lochaber.<sup>xvi</sup> The 1930s saw a shift in the economics of hydro-generation with the growing market for electricity in Central Scotland leading the Grampian Electric Power Supply Company to construct power stations at Rannoch and Tummel Bridge in Perthshire by 1934, and the Caledonian Power Scheme,

designed to harness the Moriston and Garry rivers and their catchment areas, for the production of calcium carbide at Corpach, was presented to Parliament three times between 1936 and 1938.<sup>xvii</sup> These various attempts to develop the water resources of the Highlands for commercial purposes attracted considerable opposition. In 1942 the Report of the Committee on Hydro-Electric Development in Scotland concluded that the development of waterpower resources had ‘become involved in an atmosphere of grievance, suspicion, prejudice, and embittered controversy’.<sup>xviii</sup>

Local opposition to new schemes and the costs of promoting a private bill in parliament meant that relatively few proposals for hydro-electric developments were put forward in Scotland prior to World War II. From 1943 onwards, however, a resurgent ‘Highland policy’, heavily influenced by Tom Johnston, wartime Secretary of State for Scotland, led to the systematic exploitation of Highland water resources for the benefit of the local population.<sup>xix</sup> In common with the inter-war schemes, the work of the North of Scotland Hydro-Electric Board was controversial; the Board received strong objections to its proposed projects, most often from the owners of fishing rights. This opposition has been characterised as ‘a rearguard campaign by landowners, who suddenly developed a passionate concern for the amenity values of their estates’ but the schemes were successfully driven through.<sup>xx</sup>

This success is partly because the NSHEB received strong political support, led by Tom Johnston, who dismissed opposition concerns over the impact of the schemes as little more than the ‘fantastic and ridiculous imaginations from beauty lovers, some of whom saw in their visions the Highlands being converted into an amalgam of a Black country, a rubbish heap and a desolation’.<sup>xxi</sup> Johnston reserved particular scorn for the fishing interests and hoteliers who complained that the hydro-electric schemes would ruin their businesses. The Highland literary icon Neil Gunn echoed Johnston’s derision by claiming that hydro-power would allow the Highlands to ‘develop their natural industries through water power [and] beat the landlords and the scenic sentimentalists’.<sup>xxii</sup> The official perspective on those opposing change came in 1942 with the publication of the Report of the Committee on Hydro-Electric Development in Scotland in 1942 that concluded;

‘If it is desired to preserve the natural features of the Highlands unchanged in all time coming for the benefit of those holiday-makers who wish to contemplate them in their natural state during the comparatively brief season imposed by climatic conditions, then the logical outcome of such an aesthetic policy would be to convert the greater part of the area into a national park and to sterilise it in perpetuity, providing a few “reservations” in which the dwindling remnants of the native population could for a time continue to reside until they eventually became extinct.’<sup>xxiii</sup>

This is an important passage, since it very clearly set the parameters of debate for the next twenty years or so: the landscape and natural resources of the Highlands were to be used for the benefit of the people who lived there. Arguments about protecting the scenery for tourist or other purposes were trivialized and ridiculed in the name of economic and social progress. Johnston’s view was that the economy and people of the Highlands had been held back by ‘Great landlords and sporting *gentricle* who lived in London or the Riviera most part of the year and saw amenity in the Highlands only along the barrel of a sporting rifle’.<sup>xxiv</sup>

The political influence and rhetorical skills that Johnston brought to the NSHEB had a profound influence on how the hydroelectric developments of the 1940’s and 1950’s were perceived. So powerful were the cultural and political arguments put forward in favour of the hydroelectric schemes that they remain largely unchallenged by recent historians. Peter Payne depicts Johnston as ‘forever dreaming up novel applications for hydro-power, new plans for the better utilisation of the Board’s assets and ingenious ways of securing the political acceptance of the Board’s policies.’<sup>xxv</sup> On the other hand, opponents of the schemes have been described as sharing ‘one dark characteristic’; that they were motivated by ‘absolute self-interest despite claiming to speak for the good of the entire nation’.<sup>xxvi</sup> The assertion that the ‘water resources of the Highlands were to be developed in the interests of the native Highlander’ remains fundamentally unquestioned.<sup>xxvii</sup>

For Johnston the development of the Hydropower resources of the Highlands was an opportunity to rebuild economic and social relations in the Highlands. The NSHEB and the programme of electrification undertaken in the post-war years set the

foundations for Highland development. Without electricity, the ‘Highland policy’ of Labour and Conservative governments - including the creation of modern standards of living and employment opportunities - could not be fulfilled.<sup>xxviii</sup>

The ‘social clause’ in the Hydro-Electric Development (Scotland) Bill, gave the NSHEB significant economic and social responsibilities.<sup>xxix</sup> Cameron has suggested that the establishment of the Board represents an example of special treatment for the Highlands.<sup>xxx</sup> This is an important element in understanding the approach taken to opposition to the development schemes. So great were the problems afflicting the Highlands, the need to overcome these issues meant opposition on the grounds of amenity or financial loss to private interest were brushed aside.<sup>xxxi</sup> In the creation of hydro-electric generating capacity, the public-interest – defined in terms of economic and social benefits to the people of the Highlands – was the overwhelming priority.

### **III: Fishing and the Tummel-Garry Scheme**

One of the most controversial projects undertaken by the NSHEB was the Constructional Scheme No. 2, known as the Tummel-Garry Scheme, first mooted in 1945. This scheme brought the Board into significant conflict with sporting and fishing interests, since it involved building a series of dams and reservoirs in the heart of Highland Perthshire, including across the River Tummel, one of Scotland’s premier salmon fishing rivers. At the same time, it was noted that the NSHEB highlighted the protection of the fisheries by construction of fish ladders that would allow migrating salmon to negotiate the new obstructions. Despite bitter local opposition a public inquiry ‘vindicated the board’ and recommended that the project should proceed as proposed.<sup>xxxii</sup>

Although the report of the public inquiry played down the impact on the fisheries it soon became apparent that the fish passes built into the dams did not provide an easy answer to the problems created by the scheme. Low stocks of salmon in the River Tummel following the completion of the scheme were soon blamed on the high mortality of smolts. The Tay District Salmon Fisheries Board, in a letter to the Fisheries Committee in October 1952 complained that ‘the provisions for dealing with smolts at Dunalastair have been a lamentable failure’<sup>xxxiii</sup> Indeed, there appear to

have been few environmental (rather than sporting) concerns over the development of the Tummel-Garry scheme, and concern for fish stocks by the Tay District Salmon Fisheries Board did not extend to other native species; they demanded that the NSHEB eradicate pike from the enlarged Loch Tummel.<sup>xxxiv</sup> The secondary role of sporting interests in the decision-process was replicated in later schemes. The Report of the Public Inquiry into the Fada/Fionn Scheme in 1965 recognised expert opinion that ‘after about two fishing seasons or more, the fishing appears to deteriorate rapidly, and does not seem to recover’ in lochs dammed in hydro schemes, but this was not deemed sufficient reason to stop the project.<sup>xxxv</sup>

Other grounds of objection included the visual impact of the various civil-engineering works and changes to the landscape. Objections that the Tummel-Garry Scheme would submerge Clunie Bridge received short shrift in the report of the Public Inquiry into the Scheme.

If it is true and established that this Scheme may serve in some measure to bring the amenities of life where few existed before and to inject new energy into the straths and glens of the Highlands then we feel that the submergence of one bridge, albeit beautiful...is but a small price to pay.<sup>xxxvi</sup>

In short, this one paragraph highlights the greatest challenge facing those opposed to the developments undertaken by the NSHEB in the 1940s and 1950s. The developments were considered essential to the future economic and social development of the Highlands, and arguments to preserve the historic sporting and pristine character of the landscape paled by comparison.

This position reflected in some important ways the drive to modernity that was a feature of government policy in the Highlands in the post-war years, and it was embedded in the structure of the NSHEB itself.<sup>xxxvii</sup> In theory, statutory protection for local landscape and wildlife lay with the Amenity and Fisheries Committees established to examine the impact of the developments proposed by the NSHEB. However, the remit of the Amenity Committee in the early developments was circumscribed, ‘it would... be an unduly wide interpretation of the functions of the committee if amenity is to be regarded as covering the long-term effects of the



schemes.... the result might well lead to a great deal of controversy.’<sup>xxxviii</sup> The economic and social benefits of the schemes – and of the NSHEB’s activities more widely – clearly had priority in all discussions of impact, but this underlying assumption was soon to be challenged.

#### **IV: The Economics of Hydro**

Johnston may have thought that the Board had ‘got off lightly’ in its battles with ‘the Luddites’, but later challenges over the economic viability of the hydro schemes ultimately stymied the NSHEB programme of development.<sup>xxxix</sup> Influential criticisms first appeared in the *Scottish Journal of Political Economy* in 1956, and were repeated in evidence given to the Committee on the Generation and Distribution of Electricity in Scotland in 1962.<sup>xl</sup> The Mackenzie Committee challenged not only the economics of hydroelectric development, but also the independence of the NSHEB itself. The terms of reference were to review the arrangements for the generation and distribution of electricity in Scotland with regard to the cost of hydroelectric power, the rate of increase in demand and the needs of remoter areas.<sup>xli</sup> The conclusions of the Mackenzie committee are described by Payne as reading ‘like the steps of the hangman approaching the condemned cell’.<sup>xlii</sup>

During the 1950s, there was a significant increase in the efficiency and size of thermal power stations in Scotland that outstripped the rate of progress in hydro stations, with the former increasing output by 28% as opposed to the latter’s 15%.<sup>xliii</sup> The apparent advantages of a ‘free’ fuel supply from hydro were rapidly evaporating, as the average cost of hydro moved from 0.3647d to 0.7627d per unit generated, while thermal power rose from 0.6617d to 0.8931d between 1951 and 1958.<sup>xliv</sup> At the same time, the substantial capital investment programme came under scrutiny: the MacKenzie Committee reported that the capital costs involved in generating one kilowatt of power through Hydro were up to four times that required for conventional thermal stations.<sup>xlv</sup> Further, as a result of the use of hydro-electric plant as peak-load stations, the cost per unit of electricity generated was high, up to six times the cost of conventional base-load plants.<sup>xlvi</sup>

With the erosion of economic arguments the NSHEB's development programme effectively ground to a halt. Facing an extremely hostile environment, the NSHEB scheme at Glen Nevis was left to 'gather dust' while the Fada/Fionn scheme went to public inquiry.<sup>xlvi</sup> Unlike the earlier schemes, where the main opposition to the Board's plans came from the landowner and fishing interest groups, the Fada/Fionn Scheme came under concerted attack on economic grounds. Chief among the opponents was the South of Scotland Electricity Board (SSEB); its 'formidable evidence' suggested that the scheme would not be needed to meet demand until 1974/75.<sup>xlvi</sup> Further undermining the Board's case was the public inquiry's view that the MacKenzie Committee had given 'generous treatment to (small) hydro stations in comparison with larger thermal stations'.<sup>xlix</sup> The deciding factor was the requirement imposed by the Scottish Office that the scheme should achieve a net return of 8% on the capital invested. This was bitterly opposed by the NSHEB who contended that the rate set was too high and took no account of inflation,<sup>l</sup> but Chick has shown that this was a key political victory for the UK Treasury as it sought to constrain the free hand that Johnston and his successors had given the NSHEB, by imposing stern economic tests on new projects.<sup>li</sup>

Following the rejection of the Fada/Fionn Scheme hydro electric development switched away from conventional storage schemes to pumped storage.<sup>lii</sup> The use of off-peak electricity to refill the reservoir pumped storage schemes offered the potential to generate electricity at a lower unit cost than conventional schemes.<sup>liii</sup> Despite the potential advantages, the NSHEB completed only two such schemes, the first at Cruachan on Loch Awe, the second at Foyers on Loch Ness. A combination of factors, including a mature market for electricity, slower economic growth and the decline of traditional manufacturing industries in Scotland, meant that, by the late-1970s, the demand for electricity was growing less quickly than at any time since 1945. As a result, proposals for a further large-scale pumped-storage scheme at Craigroyston on Loch Lomond were shelved by the Board.<sup>liv</sup> The high inflation rates of the 1970s proved a challenge to the NSHEB. On its completion in 1975 the Foyers scheme cost almost double the original estimate, some £20.2 million, 60% of which reflected the impact of inflation.<sup>lv</sup> Foyers was to be the last scheme developed by the NSHEB; further proposals for two run of river schemes fell foul of the Treasury on the grounds of Public Sector Borrowing Requirement.<sup>lvi</sup>

By the mid 1960s the economics of conventional hydropower stations had become unattractive.<sup>lvii</sup> Just as the political economy of Highland development had trumped all objections in the earlier period, the hard economics of cost brought an end to large-scale hydro projects in the 1970s. Issues of landscape and environmental protection had been largely sidelined by the more powerful arguments of political economy when the schemes had been proposed: by the 1970s, further developments were blocked, not by appeal to those concerns, but once again by the stronger and more pressing economic case.

## **V: Wind Power**

The key battleground in the exploitation of natural resources in Scotland has largely shifted in recent years from water to wind power. The rapid growth in the number of wind farm developments across Scotland has been driven by a familiar combination of economic and environmental issues, and it is on these grounds that much of the public battle relating to the developments has once again been fought. The government has identified renewable energy as a critical aspect of Scotland's future economic development and has emphasised the environmental credentials of the sector as well as its contribution to driving sustainable economic growth, creating jobs and meeting the challenge of fuel poverty.<sup>lviii</sup> The economic benefits, especially in job creation, are seen to be especially important to rural areas. The proposed expansion of the Skykon wind turbine factory at Machrihanish has been hailed as having the potential to create almost full employment in the Campbeltown area.<sup>lix</sup> The public discourse has been shaped – in the same way but with less success than Johnston managed with hydro – towards a focus on economic development and the employment benefits of particular projects. The landscape, as the source of the power, has been somewhat overshadowed.

As well as having environmental and job creation benefits, the supporters of wind farms have argued that wind power also has wider economic advantages. Wind farms have an important financial advantage over thermal stations; their fuel is free once it has been tapped. One estimate has placed the annual fuel cost savings over gas for the Clyde Valley Wind farm as being £43.8 million per annum over the cost to an equivalent gas fuelled power station.<sup>lx</sup> It is believed that the lack of inflationary

increases in fuel costs will lead to significant differences in operating costs between thermal and renewable schemes over time, though it could perhaps be noted that this is very similar to the claims that were made in earlier times for hydro generation. At a time when Britain has become a net importer of oil and natural gas, developers are promoting the benefits of substituting domestic wind power – both on and offshore - for imported fossil fuels.<sup>lxi</sup> There is evidence that volatility of oil and gas prices has a relatively large negative economic impact where a 10% price increase there can lead to a 0.5% loss in Gross Domestic Product (GDP).<sup>lxii</sup>

The main statutory instrument used in Scotland to promote the increased use of renewable energy sources is the Renewable Obligations (Scotland) (ROS) scheme. ROS places a requirement on electricity generators to supply an increasing amount of electricity from renewable sources each year. While the ROS is designed to be ‘technology neutral’ the Enterprise and Culture Committee of the Scottish Parliament found that the financial returns from wind power were greater than those of other renewable sources.<sup>lxiii</sup> The relative ease with which onshore wind farms can be developed and the existence of tried and tested technology mean that financial incentives given for renewable energy production have gone almost exclusively into developing onshore wind facilities in Scotland.<sup>lxiv</sup> The result has been a rapid increase in the number of proposed developments over a relatively short time period. This in turn has led to accusations that Government policy goals have outweighed the visual and amenity impact of wind generation.<sup>lxv</sup>

A perception that planning policies are skewed in favour of wind power developers has led to accusations that planning policy is undemocratic and being abused by the Government.<sup>lxvi</sup> Indeed, Brian Wilson, the (then) UK Energy Minister told journalists in 2001, that ‘if we are going to meet our targets, we will require both large-scale wind farms and micro-farms. People will eventually get used to seeing turbines.’<sup>lxvii</sup> This is reminiscent of Johnston’s dismissal of the landscape puritans of the post-war era, and has some support in the literature. Strachan and Lal have argued that a failure to educate the general public on the benefits of wind power is one of the main reasons for objections.<sup>lxviii</sup> Similarly, Wolsink has argued that the planning approach adopted in the Netherlands represents a ‘*decide-announce-defend* model’ that has led to strong opposition to the expansion of wind power developments.<sup>lxix</sup>

A growing concern for wider environmental issues and what Reid, Pillai and Black have described as, ‘a gradual change of focus from private amenity to regard the scenery as a public concern to the final recognition of ecological issues’ has led to public concern over the impact of large-scale developments in rural areas.<sup>lxx</sup> These comments, written specifically in relation to hydro-electric developments, are equally valid in the context of wind power.

Much of the opposition to wind power developments in Scotland appears to be based on what Wolsink describes as ‘Resistance Type D’, that is, particular projects are targeted due to their impact on scenery and, to a lesser degree, on issues such as noise and impact on bird life.<sup>lxxi</sup> One study found that opponents of windfarm developments tended to focus on the scenic quality of the landscape, with potential adverse impacts on tourism, and only after that came the danger to protected bird species.<sup>lxxii</sup> The evidence here is not conclusive, however: a study carried out in 2007 found that three-quarters of tourists felt that wind farms had a positive (39 per cent) or neutral (36 per cent) impact on the landscape. It was also suggested that tourist revenues would only be affected by a very minor amount (0.18 per cent) if the Scottish government renewable targets were to be met by substantial windfarm development by 2015.<sup>lxxiii</sup> Such numbers, of course, do nothing to deter the critics, who, in arguments reminiscent of those that developed against the hydro schemes in the 1960s, have begun to question both the landscape impact and economics of on-shore wind-power.<sup>lxxiv</sup>

## **VI Beaully-Denny**

The previous section made clear that the main arguments in the debate – scenic amenity, the impact on wildlife, job-creation in rural areas and wider concerns of economic development, as well as the economics of renewable power generation, are all present in the debate over wind power, as they were in hydro power. The impact of the expansion in electricity generation in rural areas through wind power is not limited to the turbines themselves. Increased capacity has brought with it the requirement for a reinforced transmission network. Running from Beaully, to the west of Inverness, to Denny, south of Stirling, the proposed upgrade of the Beaully-Denny transmission line has seen significant opposition. Passing through some of the

remotest and most scenic areas of the Highlands, the proposed line has been described by one objector as ‘one of the largest and most intrusive single projects ever proposed in the Highlands’.<sup>lxxv</sup> Over 17,000 objections were received by Scottish Ministers including from Highland, Perth and Kinross, Stirling and Falkirk Councils and the Cairngorms National Park Authority, and led to the longest public inquiry in post-devolution Scotland.

In common with post-war objectors to hydro-electric developments those opposed to the upgrade of the Beaully-Denny transmission link have raised a number of issues including the visual, environmental and economic impact of the development. Scottish National Heritage (SNH), the statutory body responsible for environmental impact assessment, is required to consider a wide range of socio-economic, ecological and amenity factors when reporting on proposals, and industries such as tourism are carefully considered. As a result, it would be expected that the conclusion of the Public Inquiry into the Fada/Fionn Scheme that ‘While the loss of virgin country to the hill walker, climber, adventurer, sportsman or private owner, would be permanent, we consider that the reduction in public amenity as a result of the Scheme are comparable to small dust of the balance’ would not be so easily reached today.<sup>lxxvi</sup>

The Beaully-Denny upgrade has been controversial partly because it does not relate to the building and installation of wind turbines. Rather, it is a proposal to construct up to 600 60m-tall pylons to carry the power lines 220 km through rural Scotland, so that the electricity produced by a variety of renewable methods – onshore and offshore wind farms, tidal, wave and hydro – can be transferred to the central belt of Scotland, where most of the demand for electricity is located. The objections rest on a number of grounds, including the thermal efficiency of renewable power and the medical and health impact on those living close to the power lines. But the strongest case was put in terms of the visual impact of the proposed pylons and the fact that this would deter visitors.<sup>lxxvii</sup> In 2007, the tourism sector in the Highlands and Islands had a gross output of £735 million and employed over 23,800 people, approximately 13% of employment in the region.<sup>lxxviii</sup> Opponents have claimed that the visual impact of the pylons ‘is no more acceptable to those within more distant sight of the giant pylons or to travellers, local or visiting, on roads and railways. Because they are so much bigger

than anything we have had before these giant towers will detract from beautiful landscapes which have high amenity and economic value for communities.<sup>lxxix</sup>

While objectors claim that large-scale developments will have a negative impact on the tourist industry, the evidence is incomplete, and a matter of subjective interpretation.<sup>lxxx</sup> Claims that the Tummel-Garry scheme would damage tourism around Pitlochry were rejected by the Report of the Public Inquiry.<sup>lxxxii</sup> Ironically, objectors to the Beaully-Denny scheme have highlighted hydro-electric schemes as positive examples of how landscape impacts can be minimised. Sir Donald Miller, former chairman of Scottish Power, in his evidence to the inquiry praised the ‘care and attention... lavished’ on hydro-electric developments while David Jarman praised ‘well conceived schemes’ such as at Pitlochry for their minimal impact.<sup>lxxxii</sup>

The ‘scenic sentimentalists’ so derided by Neil Gunn and Tom Johnston still represent a very powerful strand of opinion. Among the objectors to Beaully-Denny was the pressure group, the Beaully-Denny Landscape Group (BDLG), which comprises The Association for the Protection of Rural Scotland, the John Muir Trust, the Mountaineering Council for Scotland, the National Trust for Scotland, Ramblers Association Scotland and the Scottish Wild Land Group. David Jarman, the landscape witness for BDLG, claimed to represent the views of a diverse group, including regular hill goers, residents of the Highlands and visitors to Scotland as well as the members of the BDLG.<sup>lxxxiii</sup> The BDLG claimed that ‘the residents and decision-making bodies of an area are not always best placed to be the long-term guardians of its landscape or wider heritage.’<sup>lxxxiv</sup> For these groups the Highlands represent an indivisible entity where damage to one part of the landscape detracts from the whole, but it is not clear why those who seek to ‘protect’ the Highlands should have a clearer long-term view of the benefits or otherwise of such projects than do ‘residents and decision-making bodies.’ But the conflict between preservation and economic development - as well as the question of for whom the scenery should be preserved - is clearly pointed.

The objectors to the scheme sought to present themselves as protectors of the Highlands: it was claimed that the damage to the tourist industry and a loss of amenity resulting from the increased size of the pylons would result in an ‘exodus of

economically active people’ undermining the economy of the area.<sup>lxxxv</sup> On the other side of this argument, of course, lie the economic benefits of the construction and maintenance of the line, as well as the activity related to the development of a plethora of renewable projects which would be impossible without the increased transmission capacity. There is an interesting aspect to the insider/outsider conflict here. Of the 17250 objectors to the scheme, 41.74% had postcodes in the Inverness and Falkirk areas – the two most affected. Perth (an area through which the line will pass) postcodes accounted for 6.49%, while those living outside Scotland contributed 12.09% of objections.<sup>lxxxvi</sup> Objections to the line clearly came from those most obviously and directly affected by it, but the wide geographic spread of the objectors indicates that ‘outsiders’ were also anxious to protect their vision of the Highlands.

The overwhelming argument in the case of the Hydro-Board schemes was the economic development one: arguments about scenery and fishing rights were no match for Tom Johnston’s mission to deliver employment opportunities and social improvements in the Highlands. The same is true for the Beaully-Denny line. Generalised arguments about amenity and environmental degradation could not overcome the economic and social momentum behind the need to develop renewable energy sources and deliver that electricity to the central belt of Scotland. This is not to argue, however, that environmental arguments are worthless. Such concerns were the primary reason for the rejection of a proposed hydro-electric scheme by Highland Light & Power Ltd at Shieldaig in Ross-shire in 2004. Scottish Natural Heritage (SNH) recommended that the proposals be rejected due to the potential negative impact on ‘a large and thriving population of freshwater pearl mussels’, while the Royal Society for the Protection of Birds (RSPB) raised concerns about the conservation importance of the site with up to four pairs of black-throated divers nesting on the lochs within the proposed development area.<sup>lxxxvii</sup> Similarly, in April 2008, Scottish Ministers rejected plans for the construction of 181 wind turbines on Barvas Moor on Lewis, on the grounds that it would have had significant impact on the Lewis Peatlands Special Protection Area and its high value for rare and endangered birds.<sup>lxxxviii</sup> These local, specific and targeted arguments were successful in stopping the developments, in a way that the general, and to a large extent undemonstrable, arguments about tourism and amenity, have found very difficult. By aligning local interests and specific conservation arguments with wider concerns



(about rare species, or the value of the SPA) then the objectors were able to win the day.

The long-term economics of hydro-power construction eventually undermined the case for the large schemes developed by the NSHEB. Wind power developments share many of the advantages and disadvantages of generating electricity from hydroelectric sources. There are benefits from avoided fuel costs and the renewable aspect is attractive. However, it is also clear that the cost of constructing wind farms capable of producing a given output of electricity is higher than that for either coal or gas. Moran and Sherrington have estimated the capital cost of the Clyde Wind Farm as being some £246 million higher than the equivalent gas power station.<sup>lxxxix</sup> In addition, accusations that wind power and other forms of renewables are unreliable and intermittent and must be backed up by conventional fossil fuelled or nuclear generation are at the core of many objections. It is argued that the inconsistent output of electricity associated with wind generation in particular leads to a higher capital cost per MW/hour of electricity generated. Sir Donald Miller in his evidence to the Beaully-Denny public inquiry estimated the cost of back-up plant at 80% of installed wind capacity and the operation of a reserve capable of absorbing the effect of a drop in power from wind stations equivalent to 60% of the wind turbine output would cost some £22.60/MWhr.<sup>xc</sup> Further, wind power also appears to suffer from diseconomies of scale. As wind power produces an increasingly large fraction of electrical output the costs of long distance electricity transmission and backup capacity increase rapidly.<sup>xc<sup>i</sup></sup> Miller questioned the necessity of the Beaully-Denny line by noting that the costs of transmitting wind energy from the Highlands to load centres would be 'excessive'.<sup>xc<sup>ii</sup></sup>

Alternative views exist, of course: De Carolis and Keith have suggested that the costs of intermittency to the system vary depending on the mix of generating infrastructure in the market.<sup>xc<sup>iii</sup></sup> Systems dominated by technologies such as nuclear or coal powered stations are likely to incur higher costs than those with a significant proportion of electricity generated from hydro and gas. Combining wind power with the relatively rapid start up capacity of hydro and gas stations could result in a more efficient use of resources. Whatever the static economic arguments about renewables may currently be, however, it is clear that, so long as public discourse is focused on the need to

develop greener technology and more environmentally-sensitive means of generating electricity, then renewables will have a significant advantage. The general economic benefits trumpeted by the Scottish government add significantly to that case.

## **VII Conclusion**

This paper has shown that the arguments against the continuing expansion of renewable power developments in the Highlands of Scotland have parallels with opposition to the development of hydro electric schemes in the post war years. In common with the hydro-electric schemes developed by the NSHEB, wind and renewable power developments are being built in some of the most scenic rural areas of Scotland, they can have a negative impact on the amenity value of the land, and as a result are leading policy makers into conflict with those who seek to preserve the wild nature of these areas. While opponents of hydro-electric developments pointed to the impact on scenic amenity and complained, with some justification, that the salmon fisheries, and associated employment, would be badly damaged by developments such as Tummel-Garry, opposition to the Beaully-Denny power line largely – though not entirely - focused on a generalised argument relating to scenery and the tourist industry. In both cases, the ‘preservation’ arguments were defeated by official appeal to the greater good of economic and social transformation. In promoting hydro, Tom Johnston was able to align the national interest in energy security with local needs for employment and the social benefits that electricity would bring. In sanctioning the power line, Scottish ministers have explicitly brought together the national interest in reducing carbon emissions and developing renewable technologies with the local benefits of maintaining an economically active population, who will benefit from the plethora of projects whose output will be transported south.

The development of renewable energy projects and their associated infrastructure has also re-opened old debates between those who seek to preserve the wild nature of rural areas and those who seek to exploit their economic potential. Policy makers, and influential voices such as Tom Johnston, effectively dismissed opposition to hydro developments as the ‘fantastic and ridiculous imaginations from beauty lovers’.

<sup>xciv</sup> Such attitudes, while ostensibly an expression of the primacy of public good over private interest served to stifle proper debate over the merits and benefits of development schemes. In a similar vein, the complaints over the visual impact of

wind turbines or electricity pylons apparently carry little weight with ministers when set against what they see as substantial benefits.

It was the economic arguments put forward against the development of hydro-electric power in the Highlands that were – in time - less easy to dismiss. The publication of the Mackenzie report and the changed political economy of the 1960s impeded the development of new hydro schemes. A switch to pumped-storage technology allowed two further schemes to proceed, but the economic environment of the 1970s finally put a halt to further developments by the NSHEB. The potential long-term economic and environmental advantages to be gained from the development of renewables and the dominant technological position held by wind generation seem, at the moment, unassailable in terms of dominating government decision-making and policy. One lesson of the hydro experience is that, unless there is a radical technological shift that undermines the prevailing economic and environmental benefits of renewables, the opposition will need to develop focused and specific, rather than generalised arguments.

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<sup>i</sup> Decision letter, Colin Imrie, Head of Energy Markets, Scottish Government – Ian Marchant, Chief Executive, Scottish and Southern Energy, 6 January 2010 <http://www.scotland.gov.uk/Resource/Doc/917/0092854.pdf> (accessed 7 January 2010). ‘Scotland Splits as Controversial Power Line Gets Go-Ahead’ *Sunday Herald*, 25 October 2009; *The Herald*, 27 October 2009.

<sup>ii</sup> See, e.g. W.R. Scott *Report to the Board of Agriculture for Scotland on Home Industries in the Highlands and Islands* (1914, Cmnd 7564); D.I. MacKay and N. K. Buxton ‘The North of Scotland Economy: A Case for Redevelopment’ *Scottish Journal of Political Economy* 12:1 (1965) pp.23-50.

<sup>iii</sup> J. Hunter ‘The Atlantic North West: The Highlands and Islands as a Twenty-First Century Success Story’ *Scottish Affairs* 31 (2000) pp. 1-17; OECD *Rural Policy Reviews: Scotland, UK* (OECD 2008).

<sup>iv</sup> ‘Scots Told ‘Go Green for Growth’’ <http://news.bbc.co.uk/1/hi/scotland/8304378.stm> (accessed 27 October 2009)

<sup>v</sup> T.C.Smout, *Nature Contested: Environmental History in Scotland and northern England Since 1600* (Edinburgh, Edinburgh University Press, 2000) p.4.

- <sup>vi</sup> J. Hunter, *On the Other Side of Sorrow: Nature and People in the Scottish Highlands* (Edinburgh, Mainstream, 1995), p.17.
- <sup>vii</sup> C.R. Warren and R.V. Birnie 'Re-Powering Scotland: Wind Farms and the 'Energy or Environment' Debate' *Scottish Geographical Journal* 125: 2 (2009) pp. 97-126.
- <sup>viii</sup> C.R. Warren 'Of Superquarries and Mountain Railways: Recurring Themes in Scottish Environmental Conflict' *Scottish Geographical Journal* 118:2 (2002) pp. 101-127
- <sup>ix</sup> C.R. Warren, C. Lumsden, S.O'Dowd and R.V. Birnie "' Green on Green" Public Perceptions of Wind Power in Scotland and Ireland' *Journal of Environmental Planning and Management* 48:6 (2005) pp.853-875.
- <sup>x</sup> G. Ellsi, J. Barry and C. Robinson 'Many ways to say 'no' different ways to say 'yes': Applying Q-methodology to understand public acceptance of windfarm proposals' *Journal of Environmental Planning and Management* 50:4 (2007) 517-551
- <sup>xi</sup> Beauldy-Denny Public Inquiry. (<http://www.beauldydenny.co.uk/> (henceforth BDPI)). Closing statement of 'Highlands Before Pylons' , page 1: 'The primary case against the need for the Proposed Line proposes that large scale generation should not be built in places very remote from the main centres of demand, following the principle of "Local Generation for Local Demand".'
- <sup>xii</sup> BDPI, closing submission of the Beauldy Denny Landscape Group.
- <sup>xiii</sup> I. McWhirter 'Pylons a small price if they help save the planet' *Sunday Herald* 7 Feb 2007
- <sup>xiv</sup> C.R. Warren and R.V. Birnie 'Re-Powering Scotland' p.121; see also C. Bean and F. Thin 'Hydroelectricity – Impacts and Opportunities for the Natural Heritage' in C..A. Galbraith and J.M. Baxter (eds) *Energy and the Natural Heritage* (Edinburgh, Scottish Natural Heritage, 2008)
- <sup>xv</sup> E.A. Cameron 'The Scottish Highlands: from Congested District to Objective One' in T.M. Devine and R.J. Finlay (eds) *Scotland in the Twentieth Century* (Edinburgh, Edinburgh University Press, 1996)
- <sup>xvi</sup> K. J., Lea, 'Hydro-Electric Power Generation in the Highlands of Scotland', *Transactions of the Institute of British Geographers*, No. 46, (Mar., 1969), p158.
- <sup>xvii</sup> W. Luckin *Questions of Power. Electricity and Environment in Interwar Britain* (Manchester, Manchester University Press, 1980) p.121.
- <sup>xviii</sup> Scottish Office, *Report of the Committee on Hydro-Electric Development in Scotland*, Cmd. 6406, (HMSO, Edinburgh, 1942), p6
- <sup>xix</sup> K. J., Lea, 'Hydro-Electric Power Generation in the Highlands of Scotland', *Transactions of the Institute of British Geographers*, No. 46, (Mar. 1969) p160
- <sup>xx</sup> E. Cameron, 'The Scottish Highlands as a Special Policy Area, 1886 to 1965', *Rural History*, Vol. 8, no. 2, (1997) p204
- <sup>xxi</sup> T. Johnston, *Memories*, (London, Collins 1952), p177
- <sup>xxii</sup> N. Gunn., *Off in a Boat: A Hebridean Voyage*, (Colonsay, House of Lochar, 2000), p323
- <sup>xxiii</sup> *Report of the Committee on Hydro-Electric development in Scotland*, p34
- <sup>xxiv</sup> T. Johnston, *Memories*, (Collins, London, 1952) p174
- <sup>xxv</sup> P. L., Payne, *The Hydro: A study of the Development of the Major Hydro-Electric Schemes undertaken by the North of Scotland Hydro-Electric Board*, (Aberdeen University Press, Aberdeen, 1988), p79
- <sup>xxvi</sup> E. Wood, *The Hydro Boys: Pioneers of Renewable Energy*, (Edinburgh, Luath Press, 2002)
- <sup>xxvii</sup> J. Millar, *The Dam Builders: Power from the Glens*, (Edinburgh, Birlinn, 2002), p 23. Though it should be noted that some native Highlanders lost homes and livelihoods as glens were flooded, and have questioned the benefits of the creation of 'vast desolation and ugliness'. I.R. Thompson, *Isolation Shepherd*, (Inverness, Bidean Books 1983) p. 182.
- <sup>xxviii</sup> The Scottish Office, 'Review of Highland Policy', Cmd. 785, (HMSO, London, 1959), para. 1, p2 . see also Scottish Home Department, 'A Programme of Highland Development', Cmd. 7976, (HMSO, Edinburgh, 1950), p21 Summary , para 1
- <sup>xxix</sup> P. L., Payne, *The Hydro: A study of the Development of the Major Hydro-Electric Schemes undertaken by the North of Scotland Hydro-Electric Board*, (Aberdeen, Aberdeen University Press, 1988), p45
- <sup>xxx</sup> E., A., Cameron, 'The Scottish Highlands' p204
- <sup>xxxi</sup> D., Turnock, *Patterns of Highland Development*, (Macmillan, London, 1970), Preface
- <sup>xxxii</sup> P. L., Payne, *The Hydro* p71. It should perhaps be noted that the scheme remains controversial: see the website of the Tay District Salmon Fisheries Board, <http://www.tdsfb.org/GarryHydroboardhistory.htm> (accessed 28/06/2010) and <http://savethegarry.com/WhyistheGarrylikethis.htm> (accessed 28/06/10).

- <sup>xxxiii</sup> National Archives of Scotland, SEP14/711 NSHEB Amenity and Fisheries Committee; Letter from The Tay district Salmon Fisheries Board to the secretary, The Fisheries Committee, Scottish Home Department. Dated 15<sup>th</sup> October, 1952 re operation of Tummel-Garry Generating Stations.
- <sup>xxxiv</sup> *ibid.*
- <sup>xxxv</sup> Scottish Development Department, *Hydro-Electric Schemes: Report of the public inquiry into the North of Scotland Hydro-Electric Board's Constructional Scheme No. 39 (Fada/Fionn Project) and Constructional scheme No. 38 (Laidon project)*, (HMSO, Edinburgh, 1965), para 32, p27
- <sup>xxxvi</sup> Scottish Home Department, *North of Scotland Hydro-Electric Board Constructional Scheme No. 2, Explanatory Memorandum*, Cmd. 6660, (HMSO, Edinburgh, 1945), para. 49,p16
- <sup>xxxvii</sup> N. MacKenzie 'Chucking buns across the fence? Governmental planning and regeneration projects in the Scottish Highland economy, 1945-82' Unpublished PhD thesis, University of Glasgow, 2007.
- <sup>xxxviii</sup> NAS, SEP14/710 NSHEB Amenity and Fisheries Committee, Letter addressed to Mr Cunningham [ Scottish Home Department- Amenity Committee]- undated (Dec, 1947) re. Appointment of Dr. Cowan (Assistant Keeper to the Regius Keeper, Royal Botanical Gardens, Edinburgh) as Assessor to the Committee.
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- <sup>xl</sup> D. L., Munby, 'Electricity in the North of Scotland', *Scottish Journal of Political Economy*, Vol. 3, no. 1 (1956) pp19-43
- <sup>xli</sup> Scottish Development Department, *Electricity in Scotland: Report of the Committee on the Generation and Distribution of Electricity in Scotland*, Cmnd. 1859, (HMSO, Edinburgh, 1962), p5
- <sup>xlii</sup> P. L., Payne, *The Hydro* p219
- <sup>xliiii</sup> Scottish Development Department, *Electricity in Scotland*: para18, p12
- <sup>xliiv</sup> M. Chick, *Electricity and Energy Policy in Britain, France and the United States since 1945* (Cheltenham, Edward Elgar, 2007). P. 93.
- <sup>xliv</sup> Scottish Development Department, *Electricity in Scotland*., para138, p46
- <sup>xlvi</sup> D. L., Munby, (1956), 'Electricity in the North of Scotland', pp24-5
- <sup>xlvii</sup> P. L., Payne, *The Hydro* , p225
- <sup>xlviii</sup> Scottish Development Department, (*Fada/Fionn Project*) para 56, p99
- <sup>xlix</sup> *Ibid*, para 69, p104
- <sup>l</sup> *Ibid*, para 59, p42
- <sup>li</sup> Chick, *Electricity and Energy Policy*, pp.94-95.
- <sup>lii</sup> F.G., Johnson, 'Hydropower Development on Rivers in Scotland', *Regulated Rivers: Research and Management*, Vol. 2, (1988) pp277-292, p281
- <sup>liiii</sup> P. L., Payne, *The Hydro* p231
- <sup>liiv</sup> F.G., Johnson, 'Hydropower Development on Rivers in Scotland', p290
- <sup>lv</sup> P. L., Payne, *The Hydro* , p247
- <sup>lvi</sup> F.G., Johnson, 'Hydropower Development on Rivers in Scotland', p289
- <sup>lvii</sup> M. Chick 'Time, Water and Capital: The Unintended Contribution of the North of Scotland Hydro-Electric Board to the Application of Welfare Economics in Britain, 1943-1967' *Scottish Business and Industrial History*, Vol. 25 (July 2009), pp.29-55. Office of National Statistics RP04- Retail Price index. [http://www.statistics.gov.uk/downloads/theme\\_economy/RP04.pdf](http://www.statistics.gov.uk/downloads/theme_economy/RP04.pdf) [accessed 30/06/09]
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- <sup>lx</sup> D. Moran and C. Sherrington, 'An economic assessment of windfarm power generation in Scotland including externalities', *Energy Policy* Vol.35, (2007), p2815.
- <sup>lxi</sup> Airtricity, *Clyde Wind Farm*, (Airtricity Developments UK, Glasgow)
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- <sup>lxiii</sup> 'Renewable Energy in Scotland' Scottish Parliament Enterprise and Culture Committee, 6<sup>th</sup> report, 2004 (Session 2), , SP Paper 194, Paras 20-21
- <sup>lxiv</sup> *ibid*, paras 13-14
- <sup>lxv</sup> P. A. Strachan, and D. Lal, 'Wind Energy Policy, Planning and Management Practice in the UK: Hot Air or a Gathering Storm?', *Regional Studies*, Vol.38, no.5 (2004), pp561-2
- <sup>lxvi</sup> Scottish Parliament, Enterprise and Culture Committee, 'Renewable Energy Inquiry', minutes of meeting held on 13<sup>th</sup> January 2004, Cols 362-364
- <sup>lxvii</sup> J Freeman, 'Farmers may reap a harvest from the wind' *The Herald* August 29, 2001
- <sup>lxviii</sup> P. A. Strachan, and D. Lal, 'Wind energy Policy, p562

- <sup>lxix</sup> M. Wolsink, 'Wind power and the NIMBY-myth: institutional capacity and the limited significance of public support', *Renewable Energy*, Vol.21, (2000) p62
- <sup>lxx</sup> C. T. Reid, A. Pillai, and, A. R. Black, 'The Emergence of Environmental Concerns: Hydroelectric Schemes in Scotland', *Journal of Environmental Law*, Vol. 17, No.3,(2005) pp361-382, p373
- <sup>lxxi</sup> M. Wolsink 'Wind power and the NIMBY-myth' p57
- <sup>lxxii</sup> 'Renewable Energy in Scotland', Paras 101-102
- <sup>lxxiii</sup> Economic Research Findings: The Economic Impact of Wind Farms on Scottish Tourism <http://www.scotland.gov.uk/Resource/Doc/214905/0057315.pdf> (accessed 27 October 2009)
- <sup>lxxiv</sup> See, for example, 'Energy policy needed without wind power' letters to the editor, *The Herald*, June 29 2010.
- <sup>lxxv</sup> BDPI, Precognition By David Jarman p20
- <sup>lxxvi</sup> Scottish Home Department, *North of Scotland Hydro-Electric Board Constructional Scheme No. 2, Explanatory Memorandum*, Cmd. 6660, (HMSO, Edinburgh, 1945), para. 3,p85
- <sup>lxxvii</sup> Of the 17, 250 objectors prior to the establishment of the Public Local Inquiry, 99.32% mentioned 'landscape and visual amenity' as a ground for objection. The effect on tourism, the need for undergrounding the cables (to protect visual amenity) and the impact on recreational use of the area through which the line would travel, were each mentioned by more than 90% of objectors. Decision letter, Imrie-Marchant, Table 1, Objections by topic. <http://www.scotland.gov.uk/Resource/Doc/917/0092854.pdf> (accessed 6 July 2010).
- <sup>lxxviii</sup> Highlands and Islands enterprise, Tourism sector Profile 2007, < <http://www.hie.co.uk/HIE-economic-reports-2007/Sector%20profile%202007%20-%20tourism.pdf>>, [accessed 17/07/09]
- <sup>lxxix</sup> BDPI, Statement of case by Kiltarlity Community council, Beaully Community Council and Pylon Pressure in Association with Communities against Pylons , para 3.4.
- <sup>lxxx</sup> P. A. Strachan, and D. Lal, (2004), 'Wind energy Policy' p566
- <sup>lxxxi</sup> Scottish Home Department, *North of Scotland Hydro-Electric Board Constructional Scheme No. 2, Explanatory Memorandum*, Cmd. 6660, (HMSO, Edinburgh, 1945), para 51
- <sup>lxxxii</sup> BDPI, Evidence of Sir Donald Miller , p5, Precognition of D. Jarman, p8. In addition, it should be noted that the Hydro-Board did spend some time thinking about the aesthetic appeal of their buildings and made efforts to minimise the impact. H. Lorimer, 'Your wee bit hill and glen: the cultural politics of the Scottish Highlands, 1918-1945' (Unpublished PhD thesis, University of Loughborough, 1987). We are grateful to an anonymous referee for bringing this to our attention. Thomson makes a similar point about landscaping the access roads etc. I.R. Thomson *Isolation Shepherd*, p.181
- <sup>lxxxiii</sup> BDPI, Precognition By David Jarman pp14-16
- <sup>lxxxiv</sup> BDPI, Precognition By David Jarman p.16
- <sup>lxxxv</sup> BDPI, Statement of case by Kiltarlity Community council, Beaully Community Council and Pylon Pressure in Association with Communities against Pylons , para 3.5,
- <sup>lxxxvi</sup> 27.81% of all objectors had no postcode. Decision letter Imrie - Marchant, Table 2.
- <sup>lxxxvii</sup> Sheildaig Decision Letter, Scottish Executive, 16<sup>th</sup> March 2004, <<http://www.scotland.gov.uk/Topics/Business-Industry/Energy/Energy-Consents/Applications-Database/application/Sheildaig-Scoping-Opinion>>, accessed 19/06/09
- <sup>lxxxviii</sup> Scottish Government, Decision on Lewis Windfarm, 21/04/2008, <http://www.scotland.gov.uk/News/Releases/2008/04/21102611> accessed 28 October 2009.
- <sup>lxxxix</sup> D. Moran and C. Sherrington, (2007) 'An economic assessment' p2813
- <sup>xc</sup> Beaully-Denny Public Inquiry, Evidence of Sir Donald Miller, pp6-8
- <sup>xci</sup> J. F. DeCarolis, D. W. Keith, (2006), 'The economics of large-scale wind power in a carbon constrained world' , *Energy Policy* (2006) Vol.34, p395
- <sup>xcii</sup> Beaully-Denny Public Inquiry, Evidence of Sir Donald Miller, pp6-8
- <sup>xciii</sup> Joseph F. DeCarolis and David W. Keith, 'The economics of large-scale wind power' p397
- <sup>xciv</sup> T., Johnston, *Memories*, (Collins, London, 1952), p177