

Be careful what you wish for: Comparative Advantage and The Wilson Smelters Project, 1967-82

DRAFT COPY: NOT FOR CITATION OR QUOTATION

Niall G MacKenzie, University of Glasgow
n.mackenzie@arts.gla.ac.uk

The 1967 announcement of the Wilson Government of its intention to commission the construction of two new aluminium smelters marks an important juncture in the British Aluminium industry's lifetime. Prior to Wilson's announcement, UK annual domestic aluminium production was 38,200 tonnes compared to a UK annual consumption of 360,500 tonnes.¹ The two new smelters were to be financed by governmental loans and grants and were to produce 200,000 tonnes annually between them whilst being powered by two newly constructed AGR nuclear power stations – a first for aluminium production globally. British Aluminium (BACo) and a consortium headed by Rio Tinto Zinc (RTZ), both multinational aluminium companies, tendered for and won the right to operate the smelters locating them at Invergordon in Scotland and Anglesey in Wales respectively. The paper charts the genesis of the smelters and details the diverging experiences of each company in their dealings with the UK government during the construction and operation of each smelter, focusing specifically on the contracts agreed between each company and the government for the provision of electricity for the smelters. Consistent within this discussion is an analysis of the failure of the Invergordon smelter and reasons for its closure in 1982 in comparison to the continued operation of the Anglesey smelter. The paper explores the complex motivations on the parts of both companies and government for the creation and operation of the smelters. For the companies the issues of profit motivation, market accessibility and comparative advantage were key in their decision to tender for the smelters. For the government the issues of joining the European Free Trade Association, the balance of payments, regional economic development and technological modernity were primary motivations behind pursuing what was a massive increase in capacity in domestic aluminium production. Consequently the paper is divided into two parts focusing firstly on BACo and RTZ's experiences of the smelters project and secondly on the role the UK government played in their creation and subsequent operation.

The paper builds upon work by Coopey and Edgerton in assessing the Labour Government of 1964-70 and its role in encouraging the growth of high technology industry as well as on Cailluet's short assessment and Perchard's ongoing research into the UK aluminium industry and British Aluminium Company in particular.² Wilson's announcement of the smelters project was a part of a raft of measures

¹ OECD, *Problems and Prospects of the Primary Aluminium Industry*, (OECD, Paris, 1973), pg. 7.

² Coopey, R, 'Industrial policy in the white heat of the technological revolution' in, Coopey, R et al, *The Wilson Governments 1964-1970*, (London, Pinter, 1995); Edgerton, D, 'The White Heat Revisited: The British Government and Technology in the 1960s, *Twentieth Century British History*, vol. 7, No. 1, 1996, pp 53-82 & *The Warfare State*, (Cambridge, CUP, 2006); Cailluet, L, 'The British aluminium industry, 1945-80s: chronicles of a death foretold?' in *Accounting, Business & Financial History 11:1* March 2001 (Taylor & Francis Ltd., 2001); Perchard, A, *Aluminiumville: Metal, the British Government & the Scottish Highlands* (Lancaster, 2009).

implemented by the 1964-70 Labour Government aimed at modernising British industrial production, improving the economic situation of the country and projecting the image of a government committed to modernising industry through technological advancement. British advances in nuclear power technology were viewed as the ideal opportunity to offset her comparative disadvantage in aluminium smelting – the UK aluminium industry up until the announcement of the Wilson smelters was reliant on relatively small-scale hydro-electric generation in the Highlands of Scotland. Both companies embarked on extensive discussion with the UK government with a view towards agreeing the finance for construction of the smelters and the price of electricity provision for the operation of the smelters. The disparity in the final agreed contracts between the government and each company and the subsequent experience of each sheds light not only on the UK government's industrial location policy during the 1960s and its effect on business at both domestic and international levels, but also the attitudes of two multinational primary industrial producers on locating operations in the UK. Further, the discussion also brings into focus the importance of institutional structures – in this instance particularly the electricity generating boards – on business development during the period. It is, in short, an analysis of the two very different experiences of BACo and Rio Tinto Zinc in doing business with the UK government between 1967-82.

White Heat and the Smelters

The Britain that is going to be forged in the white heat of this revolution will be no place for restrictive practices or for outdated methods on either side of industry.³

- Harold Wilson, Labour Party Conference, October 1963.

Wilson's quote above stated clearly and concisely the Labour Party's commitment to the modernisation of British industry. The aluminium smelters project was part of this modernisation, although it was not implemented as a policy until 4 years later when the Labour Party were in government. In RTZ in partnership with the United Kingdom Atomic Energy Authority (UKAEA), made an application to government to build the Capenhurst Project (also known as the UNCLE Project); a combined aluminium smelter and nuclear diffusion plant. The proposal required 40% of the cost of the project to be supported by development grants from government, while retaining the right to sell surplus power to the National Grid. The government rejected this proposal, not stating publicly at any point its reasons why. One possible reason for the proposal's rejection is that had the development gone ahead, it would have certainly constituted a potential threat to the Central Electricity Generating Board's (CEGB) monopoly on power production. The CEGB was not eligible for development grants however, meaning that had RTZ and UKAEA's proposal been accepted, the precedent set opened up the possibility of large industrial users grouping together and becoming the lowest cost producers of power, made viable by government development grants - an unappealing prospect for government.⁴ Nevertheless, the idea of an aluminium smelter powered by nuclear energy was not

³ Quoted in Knowles, E. (ed.), *The Oxford Dictionary of Modern Quotations*, (OUP, Oxford, 2002), pg. 227.

⁴ Utiger, RE, *Never Trust An Expert: Nuclear Power, Government and the Tragedy of the Invergordon Aluminium Smelter*, (London School of Economics Business History Unit, London, 1995), pg. 1.

without merit and discussions took place detailing the benefits and difficulties of the project, resulting in the production of the Final Report of the Official Group on Capenhurst, published in November 1966. This report detailed the possibility of aluminium smelting to the country's economy in protectionist terminology, stating,

The object of the exercise is to give domestic production of aluminium a degree of protection, which it does not now enjoy, and so to make possible a reduction of 25% (15m a year)⁵ or more in the expected United Kingdom imports of aluminium.⁶

Although the government rejected the proposal, it presaged the announcement of the plan to build the new smelters by only a year and directly informed the idea that Britain could produce more of its own aluminium, alleviating its balance of payments problem and affording the country some protection against the possibility of aluminium price escalation.

In October 1967, Harold Wilson announced the government's intention at the Labour Party conference in Scarborough to build two aluminium smelters, putting the sites for these new smelters out to tender. The government's announcement was a result of a combination of different factors, the first of which was the country's balance of payments problem. There was a clear desire on the part of government to reduce its reliance on imports of aluminium and it was believed that the new smelters could help the balance of payments problem by £50m or £60m per year.⁷ Second, the advent of new generating techniques based on industrial applications of nuclear power gave the government belief that the new smelters could harness a cheap supply of the required enormous amounts of electricity for smelting aluminium and provide the country with a clear comparative advantage over its competitors who were mainly reliant on hydro power. This goes some way to explaining the its decision to build the smelters since the country was bereft of any natural advantage in aluminium smelting. At this stage in aluminium smelting, electricity accounted for 15% of the final cost of producing primary aluminium⁸ meaning it was of the utmost importance that an economical means of producing power was found. Third was the government's commitment to pursuing the policy of regional development of deprived areas. In order for the smelters to be built a number of criteria had to be satisfied. The smelters had to be situated in a development area, within close proximity to the National Grid (to reduce transmission costs) and with at least 100 acres of flat building land adjacent to a deep bay harbour.

The government's election manifesto commitment to regional development meant that it sought to site the new smelters in designated development areas. Resultantly, the companies invited to tender bids had to propose to locate in an area that was not only designated as a development area, but also satisfied the aforementioned logistical requirements for operating a smelter. Invergordon and Holyhead in the island of Anglesey off the coast of Wales satisfied all of these requirements and were the choices for the three companies that tendered bids - RTZ,

⁵ It is not made clear in the report what this figure is in reference to, although it is most likely pounds.

⁶ Final Report of the Official Group on Capenhurst November 1966, TNA PRO CAB 164/157, pg. 18.

⁷ Cailluet, L., 'The British aluminium industry, 1945-80s: chronicles of a death foretold?' in *Accounting, Business & Financial History* 11:1 March 2001, pg. 89.

⁸ *The Times*, 25/07/1968, pg. 23.

Alcan and BACo. Invergordon's position as a potential growth point for the Highlands of Scotland⁹ as a whole was of particular interest to the government in Scotland as a result of its acceptance of the recommendations of the Toothill Report that areas be identified for growth and regional policy be tailored to this effect. In relation to the Anglesey smelter, regional policy elsewhere in the UK was focused primarily on the alleviation of unemployment¹⁰, meaning the area's unemployment rates, combined with its position as a development area and its geographical characteristics put it into pole position to be one of the sites for the smelters.

The balance of payments problem was another influential factor in the government's decision to increase the production capacity of the aluminium industry in Britain. Until its announcement of its intention to build the smelters, Britain produced around one tenth of what the new smelters were to produce in primary metal. British annual consumption of aluminium at this time was 360,500 tonnes, but production (at Kinlochleven and Foyers) was only 38,200 tonnes per year, although capacity was only 39,000 tonnes per year, meaning the two smelters were running at 97.95% capacity, leaving very little room for improved efficiency.¹¹ The new smelters were to reduce the reliance on imports of aluminium by up to two thirds, helping the balance of payments problem. However, there were two problems associated with this. Britain's membership of the European Free Trade Association (EFTA) meant that any element of subsidy on the part of government for the new smelters would see it breach the association's rules.¹² With the coming of the Common Market it was clear that Britain would be obliged to join a customs union, meaning that it would then have to impose an import duty of 9% on North American ingots, its largest supplier of aluminium at the time, further exacerbating its balance of payments problem.¹³ Thus, the government was faced with a choice - increase its domestic aluminium production, possibly breaching the EFTA agreement, or not and risk worsening their balance of payments problem with increased tariffs on aluminium imports from North America. In order for the former to happen a way of providing cheap power for the new smelters had to be found that did not breach Britain's agreement with EFTA. Nuclear power had identified as the source of potential cheap electricity and companies were invited to tender bids for the operation of the smelters, with the intention that a solution to the problems posed by Britain's membership of EFTA would be found.

The aluminium smelter project was attractive to the government not only because it could reduce reliance on import of aluminium and help the balance of payments, but for more straightforward political reasons also. Edmund Dell, a member of the Labour government, wrote 'Politically it had the further advantage of corresponding to the bright technological image which the Labour Government wished to create.'¹⁴ The Wilson government's industrial policy during this period is described by Coopey as a 'directly interventionist, technologically oriented

⁹ Memorandum, author unknown, Regional Development Division, Scottish Development Department, 18/12/1967, NAS SEP4/177.

¹⁰ Tomlinson, J, *The Labour Governments, 1964-70, vol. 3: Economic Policy*, (MUP, Manchester, 2004), pg. 86

¹¹ OECD, *Problems and Prospects of the Primary Aluminium Industry*, (OECD, Paris, 1973), pg. 7.

¹² Final Report of the Official Group on Capenhurst November 1966, TNA PRO CAB 164/157, pg. 16.

¹³ Cailluet, L., 'The British aluminium industry, 1945-80s', pg. 89.

¹⁴ Dell, E, *Political Responsibility and Industry*, (Edinburgh, Allen & Unwin, 1973), pg 106.

strategy'.¹⁵ Dell described the government rather more simply as having 'interventionist inclinations'.¹⁶ Labour and the Conservatives at this point were tussling over images of modernity - each wanted to show to the nation that it was the party that would bring about the modernisation of British industry and technological change. Investing in cutting edge high-technology projects such as aluminium smelting powered by nuclear energy would prove to the nation that the party was committed to modernising industry and was capable of delivering on its promises. Moreover, helping the balance of payments problem and avoiding a further devaluation of the pound would certainly curry favour with the electorate and strengthen the government's credentials for running the country. The aluminium smelters project was to help Labour satisfy all of these aims. Further, the aluminium industry at this point in time was 'a highly integrated producer-to-consumer field.'¹⁷ Thus, having a producer on your doorstep was an attractive proposition to any national consumer of aluminium, especially if you were providing them with development grants and a cheap source of power for production. However, before any of this could be achieved, companies needed to be chosen to operate the smelters and contracts agreed for the provision of power for the developments.¹⁸

Tendering for the Smelters

Alcan, BACo and a consortium led by RTZ named Anglesey Aluminium Metal Ltd. (AAM), all tendered bids to operate the two new smelters at the request of the Board of Trade in October 1967, before submitting revised bids in mid-December that year after the devaluation of sterling.¹⁹ All 3 companies identified Invergordon as a potential site, although only Alcan and BACo identified it as their preferred site. The RTZ consortium identified Holyhead in Anglesey as its preferred site. RTZ and BACo each put forward a proposal to build a smelter capable of producing 120,000 tonnes of aluminium per year, providing an estimated balance of payments saving to the government of £22.75m per annum per smelter.²⁰ Government identified BACo and RTZ's proposals as the most attractive tendered on the basis that it provided the greatest benefit to the balance of payments problem, resulted in the lowest cost of production and also that the company's terms for the contract arrangement were the most favourable.²¹ BACo and the RTZ consortium were chosen to operate the smelters in part due to their bids, but also on the basis of political reasoning. BACo was effectively British-controlled - its parent company Reynolds Metal Company/Tube Investments had won a takeover battle the previous decade, but under

¹⁵ Coopey, R, 'Industrial policy in the white heat of the technological revolution' in, Coopey, R et al, *The Wilson Governments 1964-1970*, (London, Pinter, 1995), pg 109.

¹⁶ Dell, E, *Political Responsibility and Industry*, pg 103

¹⁷ Gibson-Jarvie, R., *The London Metal Exchange: a commodity market*, (Woodhead-Faulkner Ltd, Cambridge, 1976), pg. 154.

¹⁸ The government rejected the opportunity to supply the new smelters with electricity supplied by gas-powered stations sited on the East coast and taking advantage of North Sea gas. For more on this see PR Odell's article 'The British Gas Industry: Review in *The Geographical Journal*, Vol. 134, No. 1, March, 1968.

¹⁹ Aluminium Smelting in the UK - summary report of the Industrial Reorganisation Corporation, submitted to the Board of Trade 4th January 1968, TNA PRO BT258/2659.

²⁰ Aluminium Smelting in the UK - summary report of the Industrial Reorganisation Corporation, submitted to the Board of Trade 4th January 1968, TNA PRO BT258/2659.

²¹ Aluminium Smelting in the UK - summary report of the Industrial Reorganisation Corporation, submitted to the Board of Trade 4th January 1968, TNA PRO BT258/2659.

the Treasury's insistence Reynolds Metal Company had to retain a minority shareholding, with Tube Investments holding a 51% stake, to ensure the nationality of BACo stayed British.²² Tube Investments also held some influence in government - its former employee Fred Catherwood was the former Director General of the National Economic Development Council (NEDC) before becoming Chief Industrial Advisor to the Labour government in the Department of Economic Affairs.²³ Another factor was the company's history of Highland production of aluminium with its smelters in Kinlochleven and Foyers, operated since 1896 and 1924 respectively²⁴, constituting the UK's only domestic aluminium production, and the number of Scottish employees employed in these smelters meant the company had previous experience of dealing with Scottish workers as well as cultural experience of operating in the Highlands. The latter is interesting as it was something that the company was keen to stress in its dealings with the public during the planning and construction process, believing that stressing this point would curry favour with the locals and smooth over its expansion of heavy industrial operations in an otherwise picturesque area.

BACo was keen to operate the new smelter at Invergordon for a number of reasons. The company wanted to escape from its 54% holding in Canadian BACo (CBA), which obligated it to take the full 90,000 tonne output from the company's only smelter in Baie Comeau, Quebec (hydro-powered), which between the period 1961-68 provided over half of BACo's profits. However, there was a considerable drawback to this agreement that directly influenced the company's decision to tender a bid to operate one of the smelters. As a result of Canadian withholding tax, all dividends paid to the UK were liable for a 59% tax-rate, which in turn prevented the company from making use of the capital generated by the smelter. This arrangement was scheduled to remain in place until 1977.²⁵ The company reached agreement with Reynolds that if it acquired a British smelter then Reynolds would purchase BACo's share in CBA. Ronnie Utiger, BACo's chairman described the arrangement as the company taking 'all the commercial risk for only 54% of the profits (which were then excessively taxed) and had no access to the cash-flow.'²⁶ Utiger does not explain how the company got into such a peculiar arrangement, but the answer would most likely be found in its management. Alcan, examining the possibility of a merger with BACo in 1969 stated in a confidential report that 'BACo has an uninspiring record of management... management and market attitudes are generally considered archaic... it is thought that their approach to labour relations is considerably behind ours.'²⁷ BACo had also become increasingly uncompetitive in the aluminium semi-manufactures field in the three years previous to the government's announcement (losing £2m per year), making the idea of operating a smelter in the UK attractive to the company in helping it improve its position relative to the other main producers -

²² For more on the takeover of BACo Company, Ludovic Cailluet's article 'The BACo industry, 1945-80s: chronicles of a death foretold?' in *Accounting, Business & Financial History* 11:1 March 2001 (Taylor & Francis Ltd., 2001) should be consulted.

²³ O'Hara, G, 'Dynamic, Exciting, Thrilling Change: The Wilson Government's Economic Policies, 1964-70', *Contemporary British History*, Vol. 20, No. 3, pg. 395

²⁴ BACo, *Aluminium in the Highlands*: promotional brochure (London, Raithby, Lawrence & Co. 1978), pg. 4.

²⁵ Analysis of BACo Company Smelter by SD Wilks, Board of Trade, 06/12/1967, TNA PRO BT258/2659.

²⁶ Utiger, RE, *Never Trust An Expert*, pp 4-5.

²⁷ Letter from DA Pin to PJ Elton, January 1969, BACo Company Records (British Alcan), University of Glasgow Business Records Archives, UGD 347/10/3/1.

Alcan and RTZ, both of whom were planning smelters themselves at Anglesey and Lynemouth.²⁸ RTZ under the Wilson smelters umbrella, Alcan on its own.

The AAM consortium was comprised of several companies including RTZ, British Insulated Callender's Cable Aluminium Holdings and James Booth Aluminium Ltd., who were eventually replaced by Kaiser Aluminium. This is important due to the commercial considerations of the project. James Booth was 50% owned by Kaiser and 50% owned by Delta Metal, before Delta sold its share to Alcan.²⁹ As a result of this, the British government became somewhat concerned by Alcan becoming privy to the commercial considerations of the smelter's operations due to a member of its board being appointed by the Norwegian government as part of an agreement that allowed Alcan to operate a smelter in Norway. The British government were already battling accusations by the Norwegian government of subsidising the smelters (a contravention of the EFTA agreement) and did not want the Norwegians to have further access to any of the arrangements for the Anglesey smelter lest their accusations become more solidly founded. Consequently, Kaiser agreed to take over James Booth's share in the consortium and then provide the aluminium James Booth had originally agreed to absorb from the smelter to James Booth, thus avoiding alerting the Norwegian government to the commercial arrangements of the smelter.

Operating a smelter in Britain was an attractive proposition for aluminium companies for several reasons. The soft loans on offer by the British government, as well as the development grants for building the smelters in development areas, were attractive as was the prospect of locating in a politically stable country close to main markets and crucially, using a power source that was to, ostensibly, supply cheap power. This was based primarily on the advice proffered by UKAEA who were charged with providing consultancy on the construction of the Hunterston B and Wylfa nuclear AGR power stations, having operated and built several other stations around the country. UKAEA made it clear that nuclear power was to be the new hope for industry, providing cheap electricity that would be 'too cheap to meter'. For its part, government told BACo that any escalation of energy costs was unlikely to affect adversely any arrangements made between the company and the boards for provision of electricity supply for the smelter, persuading the company to agree to the contract.³⁰

The announcement of construction of five new AGR nuclear power stations was taken with the intention of utilising two new stations, Wylfa in Holyhead and Hunterston on the Scottish South West coast, for supplying the two new aluminium smelters at Anglesey and Invergordon respectively firmly in mind. However the AGR stations suffered from severe delays in their construction arising from design problems resulting in massive deficits for the Invergordon smelter in particular. The severe delays resulted in not just massive deficits for Invergordon, but considerable embarrassment for the government. Edgerton has described the decision to adopt the British AGR technology over American light water reactors (LWR) as having

²⁸ Note by the Board of Trade for Chancellor's visit to Invergordon, 27/06/1969, TNA PRO BT321/40.

²⁹ Supplementary Brief for President's Dinner with Sir Val Duncan (RTZ), Industries 2 Division, 09/10/1968, TNA PRO BT346/21

³⁰ Note from RE Utiger, Managing Director of BACo to Department of Trade and Industry, 25/06/1973, TNA PRO FV54/56.

‘subsequently been regarded as a disastrous choice, but was wildly applauded at the time’³¹, encapsulating succinctly the earlier points made in the thesis about using technology, poor choices and national pride. It is arguable that had the Wilson government adopted the existing and proven LWR technology then the severe delays experienced by the AGR stations would likely not have occurred which would in turn have certainly helped the Invergordon smelter’s operation. In relation to the Invergordon development and the Wilson government’s commitment to building two new aluminium smelters, the relevance is clear. Without the government’s firm commitment to the establishment of the smelters and the promise of cheap electricity powered by the new AGR stations, it is somewhat unlikely that either smelter would have been built, based on the fact that there was no way of building the smelters without either a cheap supply of electricity, that Britain didn’t have, or substantial subsidies. Put simply, there was no economically viable way of running an aluminium smelter the size of either that would have been acceptable to anyone without the promise of nuclear power. Coal-power was too expensive without a competitive agreement in place that subsidised the cost and the hydro-power present in the Highlands of Scotland was neither big enough or available at competitive rates to industry.

During the initial planning stages of the smelter project it was agreed that both smelters would produce an output of 120,000 tonnes per year each. However, after considerable opposition from Canada and Norway it was agreed to reduce the output to 100,000 tonnes per year. BACo was upset by this reduction as it raised the cost of production by £4 per tonne, approximately 2.5% of the total cost per tonne.³² Norway, fearing for its aluminium exports to Britain, opposed the initial output capacity, believing that the British government was contravening the EFTA rules by effectively subsidising the creation of the new smelters through its loans to the companies involved. Canada too was concerned that Britain, as one of its main export markets, would considerably reduce its imports of aluminium if it was producing its own. This is evidenced by a telegram sent by the Canadian High Commissioner to Sir Anthony Part regarding the new smelters and aluminium production: ‘British regional incentives in this case will adversely affect one of the most important items of Canadian exports to Britain’. Canada, only 6 years previously, was responsible for 55% of Britain’s imports at this point.³³ Sir Anthony Part’s terse response was to point out that Britain’s projected output of 360,000 metric tons was insufficient to cause disruption to the projected world output of 12.2m tons for the year (1969), effectively ignoring the Canadians’ concerns.³⁴ The increase in production to 360,000 tonnes per year output was a result of Alcan’s decision to go ahead and build and operate its own, coal-powered, aluminium smelter capable of producing 120,000 tonnes of aluminium per year at Lynemouth³⁵, for which it negotiated with the National Coal Board.³⁶

³¹ Edgerton, D, *The Warfare State: Britain, 1920-1970*, (CUP, Cambridge, 2006), pg.256.

³² Utiger, RE, *Never Trust An Expert*, pg. 8.

³³ From Addendum to the Brief for the British Delegation to the EEC, from NWP Wallace, Board of Trade, 19/04/62, NAS SEP4/2.

³⁴ Telegram from Canadian High Commissioner to Sir Anthony Part, 27/11/69, NAS DD12/3180.

³⁵ *Hansard*, vol. 765, House of Commons Debate, 29/05/1968, col. 1798.

³⁶ Alcan’s Lynemouth smelter is the only one of the three smelters built in the 1960s that is still fully operational.

Although the government strenuously denied the accusations of subsidy from the Norwegians³⁷, the risk of being seen to contravene EFTA rules was enough to persuade the government to seek and ensure a reduction in projected output capacity from the companies involved. BACo issued a briefing in 1968 detailing the history of the smelter which briefly touched upon this issue, and which attempted to defuse the situation by stating that ‘The BACo scheme will not reduce imports of metal from Norway [the reason for Norway’s complaint] and other EFTA countries. In fact, the company’s present limited imports from Norway will be increased.’³⁸ However, the President of the Board of Trade, Anthony Crosland, speaking in the House of Commons, stated 19 days before the publication of the BACo briefing that ‘in agreement with the companies, we reduced the capacity in stage one to reassure our EFTA partners that we would examine any possible adverse effect on Norwegian exports to us.’³⁹ Of course, examining adverse effects is different to rectifying them, but not as different as making it clear that they wouldn’t exist at all. Irrespective of this, the government was not about to halt its plan to produce its own aluminium on the basis of Norwegian complaints. It was already clear in its belief that the projects were safe from claims of subsidy and therefore not in contravention of EFTA rules, if not perhaps in the spirit of the agreement itself. Thus, a reduction in production was considered as a means of keeping the Norwegians happy, whilst still allowing the project to go ahead.

Statutes, Boards and the Contracts

Before the decision to locate the smelters at Invergordon and Anglesey could be announced by either government or the companies, power contracts had to be agreed. BACo had to agree a contract with the North of Scotland Hydro Electricity Board (NSHEB) for the initial provision of electricity for Invergordon, although it was actually the South Scotland Electricity Board (SSEB) that was to provide the power from Hunterston B upon its completion. The RTZ consortium had only to agree to a power contract with the CEGB as it was the sole supplier of electricity in England and Wales. The convoluted process faced by BACo hindered the negotiations on several occasions and caused considerable friction between the company and the generating boards concerned, as well as government. The negotiations were complex by virtue of necessity in respect of both smelters, although RTZ’s contract was agreed more quickly than the contract agreed by BACo.⁴⁰ The agreed power contracts had to be framed in such a way that they did not contain any element of subsidy on the part of government *per se*, so as not to breach EFTA rules. Relative to the Invergordon smelter, this involved three parties - BACo, SSEB and NSHEB - as a result of the location of the smelter in Invergordon and the location of the power station intended to supply it with power on the Ayrshire coast. As a result, negotiations took place between the company and the boards with regular recourse to the government in London as well as the Scottish Office to solve disputes and impasses during their course. The Anglesey smelter on the other hand was a relatively straightforward being as it was an agreement only between the RTZ consortium and the CEGB, with recourse to Government where necessary. Further, the CEGB did not

³⁷ BACo Aluminium Briefing, UK Press Gazette, 12/08/68, NAS DD12/3180.

³⁸ BACo Aluminium Briefing, UK Press Gazette, 12/08/68, NAS DD12/3180.

³⁹ *Hansard*, vol. 769, House of Commons Debate, 24/07/68, col. 586.

⁴⁰ Note on Aluminium Smelters by SD Wilks, Board of Trade, 02/10/1968, TNA PRO BT346/21.

have the same statutes regarding its customers as the NSHEB did – that is, it did not have an obligation to provide cheap power only to domestic users and was happy to agree contracts with reduced prices with industrial users where it deemed it suitable.

BACo wanted guarantees on the price of power before agreeing to build the smelter, arguing, rightly, that it was absolutely crucial to the viability of its Invergordon project. Aluminium smelting uses enormous amounts of electricity and therefore it was expedient on both the company and the government to ensure that a competitive price for supply to the smelter was agreed. The price of the power supply in aluminium smelting at this time accounted for 40% of total conversion cost from alumina to aluminium ingot.⁴¹ Therefore, any increase in the cost of power would automatically affect the conversion cost for the company. A substantial increase could have potentially disastrous consequences for the company should it occur over a prolonged period resulting in a deficit build up, affecting profit margins and potentially jeopardising the entire operation. Obviously BACo wished to safeguard itself against any such occurrence, and sought assurances in order to avoid as much uncertainty as possible. In the initial stages of the smelter's operation, power to the smelter was to be supplied by NSHEB run coal-powered stations with the supply being switched to nuclear power after the construction of Hunterston B nuclear power plant was completed, planned for 1974. The effect of this agreement was that BACo agreed to pay a higher sum for the power provided in the initial stages than in the latter stages, as the power generated by coal was to be more expensive than that generated by nuclear power. BACo agreed to this under the proviso, gained after extensive negotiations and a personal intervention by the President of the Board of Trade, Edmund Dell, that in the event of any aspect of change in the design of the new nuclear power station that may affect the price BACo had agreed to pay, the government would agree to alter the agreement accordingly so that the company would not be wholly responsible for the extra costs as a result. Crucially, this was not written into the contract itself but took the form of a letter written by Dell to Sir William Strath, the then chairman of BACo, be known as the 'fair clause'. This would prove to be a monumental mistake on BACo's part.

The price agreed by the government and BACo for the supply of power to the smelter was a result of extensive negotiations between the company and the two electricity boards operating in Scotland. After much discussion and consideration of other smelter operations in foreign countries and the prices paid there, the two parties came to an agreement. The breakdown of the price agreement was as follows:

⁴¹ From a Memorandum left by BACo for the Minister of State for the Board of Trade Edmund Dell (no date) attached to a letter from JB Beaumont of SDD to KR Vernon NSHEB, 31/01/73, NAS SEP14/1473.

Table 1: Price agreement for electricity supply to Invergordon smelter

	p/KWH	mils
Capital charge on annuity basis	0.141	3.38
Operating costs and fuel	0.117	2.81
Rates and royalty, net of plutonium credit	0.005	0.12
Total	0.263	6.31

Source: Utiger, pg. 13.

BACo had mooted a price of 0.25p/KWH as the required level for competitiveness, which would have provided a total cost of 6 mils per unit⁴², 1.5 mils above its target level of 4.5 mils, but offset by the 40% investment grant on the smelter. Other companies operating in foreign fields experienced prices ranging from 2.5 mils (Canada, Norway and the West Coast of the USA) to 4/4.5 mils (Tennessee in the USA and France). The final agreed price was set at 0.263 p/KWH that gave a total of 6.31 mils, 5% over the company's target power cost. The smelter at Invergordon would therefore be operating on a more expensive power price at nearly 2 mils per unit more expensive than its nearest rivals in Tennessee and France. BACo agreed this figure as over half was from the capital charge incurred for the construction of Hunterston B, which would not vary after construction and therefore began to proceed with the deal.⁴³ Herein lies the crux of the power contract, and by extension the entire project. From the beginning the smelter was uneconomic without governmental subsidy. The price agreed was above the required level for competitiveness. It is clear from the numbers presented that smelting on such a scale in the UK was uneconomic. Dell says: 'No nuclear reactor could supply electricity at prices comparable with hydro-electricity in Norway. The electricity therefore would not have been cheap enough to make had it not been for the subsidy on the plant represented by the 40% investment grant.'⁴⁴ Smelter operations can operate profitably as long as their power prices remain competitive and the price of aluminium remains at a profitable level. So, even though the power price agreed was above the required level for competitiveness, the investment grant was designed to offset this. As a result, the company accepted the proposed price.

The siting of the smelter in the Cromarty Firth area under NSHEB auspices gave rise to frustrations during the negotiations for BACo as when figures changed the company sought explanations only to find that they had to go to both boards for them. The company also found that there was apparent collusion between the Scottish boards and the CEGB, and that they were unlikely to get any special concessions in the negotiations.⁴⁵ That the company was not to get any special concessions should not have come as any great surprise however as the NSHEB could not provide industry with more favourable pricing arrangements for electricity supply than

⁴² Power prices for aluminium are measured in mils: 1 mil = 0.1 US cents.

⁴³ Utiger, RE, *Never Trust An Expert*, pg 13.

⁴⁴ Dell, E, *Political Responsibility and Industry*, pg 106.

⁴⁵ Utiger, RE, *Never Trust An Expert*, pg 9.

domestic customers by virtue of its statute.⁴⁶ Thus, even though NSHEB was negotiating on a short-term basis for supply to Invergordon, there was almost certainly the mindset that the NSHEB could not provide any concessions to BACo that would see the company receive a better rate for electricity provision than domestic consumers. The board were very keen to safeguard the price their domestic customers were paying and unprepared to give any concessions to BACo that would result in their other customers subsidising the company's price. A further irritation to the company was the fact that the NSHEB insisted on negotiating the contract by itself, even though many key aspects of the contract necessitated the SSEB's consent for later provision of electricity from the as yet unconstructed Hunterston plant:

There was an animated exchange on the subject of electricity supply, on which BACo said that they were nearing the end of their discussions with NSHEB but felt that they were being required to deal with a blinkered small middle man who was not the real supplier (which was SSEB), with the result that they were getting an unimaginative response *not in the best interests of the UK economy* [my emphasis]; in particular their broad assessment was that electricity costs of their competitors in Canada and the US was 20% less than here and this was an unfair handicap.⁴⁷

It is clear from the above that BACo were negotiating on the basis of the whole smelter development was a national interest project with Highland concerns secondary to the arrangements. The NSHEB's statute preventing it from providing industry with favourable pricing for electricity provision was viewed as a hindrance to BACo rather than an integral part of the whole function of the board. Highland concerns were subordinate to the national interest of getting an aluminium industry up and running as soon as possible and contributing to the UK economy. In spite of the difficulties that transpired in these negotiations however, they were completed on time and mostly to the satisfaction of all parties. The main points of the contract were as follows:

- 1) BACo was to make a capital contribution to the construction of the Hunterston B AGR nuclear power station to the sum of £30m, advanced to them by the government in the form of a loan.
- 2) BACo was to make a proportionate contribution to the estimated operating costs of the coal-fired⁴⁸ power stations run by NSHEB and SSEB up until March 31st 1974. After this date, the company would then make a similar contribution in place of the earlier agreement to the estimated operating costs of Hunterston B. (Under this agreement, the cost of power from the coal-fired power stations would be appreciably higher than from the nuclear power station.)

⁴⁶ McCrone, G, 'The Role of Government' in Saville, R. (ed), *The Economic Development of Modern Scotland 1950-80*, (John Donald Publishers Ltd, Edinburgh, 1985), pg. 200.

⁴⁷ Letter from TRH Godden to AG Manzie, Scottish Economic Planning Dept. detailing a meeting between BACo and representatives of Industrial Development Board concerning possible expansion to Invergordon, 12/01/77 NAS SEP4/4053.

⁴⁸ Use of the term 'coal' here should be read as coal, natural gas or oil-fuelled, as stated in the Memorandum left by BACo for the Minister of State for the Board of Trade Edmund Dell 12/01/73 attached to a letter from JB Beaumont of SDD to KR Vernon NSHEB, 31/01/73, NAS SEP14/1473.

- 3) An annuity calculation was made to convert the loan interest charges and capital repayments from point 1) and the annual contributions to operating costs from point 2) above, to an equal total payment payable annually over the whole 28 years of the contract.
- 4) In addition to the above, the company was to pay the addition to power cost arising from the escalation of operating costs determined by the following: i) Scaling up the underlying coal cost in proportion to the actual NSHEB and SSEB cost in relation to the base of 4.7d/therm (the agreed price). This would be in effect until 31st March 1974 and prior to the equalisation process mentioned in the previous point (3), ii) Within the same timescale, scaling up the underlying operating cost for coal-fired stations in proportion to the actual average operating cost for coal-fired stations in proportion to the actual average operating cost of the Scottish generating boards, iii) From 1st April 1974 onwards, scaling up the underlying nuclear fuel cost in proportion to the actual Hunterston B nuclear fuel cost in relation to a base of £83000 per tonne as agreed, iv) scaling up the underlying operating cost estimate for Hunterston B in proportion to the actual operating costs of Hunterston B.⁴⁹

The contract provided that the company would determine the amount of power Invergordon would use in respect of its actual operating experience. This would be in the range of 189 MW +/-10% which represents the figure against which all prices were agreed. The company and the electricity boards agreed that the figures dependent on the actual operating experience of the smelter would be determined by the 31st March 1973.⁵⁰ Further, NSHEB asked for a provision of £1.5m in case of escalation in the power price.⁵¹ There needed to be agreement on both sides over pricing, but there also needed to be transparency in the arrangements so as to avoid any criticisms of subsidy and denial of cheaper energy for ordinary consumers.

The RTZ consortium agreed contracts with the Board of Trade and the CEGB whereby they agreed to receive and pay back a loan totalling not more than £33m for the construction costs of the Anglesey smelter and their capital contribution towards the construction of the Dungeness B nuclear power station. The loan would be available on an interest rate of 5% or 1% above the Bank of England's available official discount rate, whichever of the two was higher.⁵² The consortium would be able to draw on the loan from November 1968 until the 31st December 1974. The government's loan was to cover the capital cost of constructing the new nuclear power station and help it avoid accusations of subsidising the new smelter. The negotiations for the RTZ contract were less difficult than the BACo one by virtue of the fact it was dealing with one generating board with no constricting obligations to ensure parity in cost for domestic and industrial users. Furthermore, the size of the

⁴⁹ Details of power contract taken from a Memorandum left by BACo for the Minister of State for the Board of Trade Edmund Dell 12/01/73 attached to a letter from JB Beaumont of SDD to KR Vernon NSHEB, 31/01/73, NAS SEP14/1473.

⁵⁰ Details of power contract taken from a Memorandum left by BACo for the Minister of State for the Board of Trade Edmund Dell 12/01/73 attached to a letter from JB Beaumont of SDD to KR Vernon NSHEB, 31/01/73, NAS SEP14/1473.

⁵¹ 'Aluminium smelters: state of play on negotiations with BACo and AAM, 02/10/1968, TNA PRO BT346/21.

⁵² Details of power contract between AAM and the Board of Trade, 26/11/1968, TNA PRO BT346/21.

CEGB and the amounts of electricity it was to supply the Anglesey smelter were, relative to the Invergordon smelter and NSHEB, quite a bit smaller. That is, the CEGB were able to absorb the new smelter into its network of electricity supply far easier than NSHEB.

From the view of the government, the contracts were a well-designed solution to the claims of subsidy and the subsequent claims of ordinary consumers being deprived of cheap energy. By having both companies contribute towards the capital cost of starting up the new nuclear power plants through the loan provided by the government, it was effectively giving each company part-ownership of the respective power plant, tying the company and operation of the smelter to the plant for twenty eight years:

The capital contribution from BACo was not to create a physical asset within their control. If BACo were to fail and default on the loan, the Government would be left in no worse position than if it had paid the whole cost of the power station directly. It would lose a customer if the smelter were not sold as a going concern, but then demand for electricity has tended to outstrip supply.⁵³

This was equally true of the Anglesey agreement. Thus, the government was able to avoid the potential pitfall of contravening the EFTA agreement and the criticisms of denying ordinary consumers cheaper energy by having both companies pay substantially towards the new plants. The only potential complaint was that the government was still paying for the start up of the new smelters at the outset through the loans it was making to the companies. These complaints were minor however as they were loans and not grants, at least ostensibly.

The government, and the electricity boards, felt pleased at the final draft of the contracts. From BACo's point of view however the agreement did not invoke the same sense of satisfaction. They had tried and failed to obtain guarantees over escalations in power costs written into the contract. However, the Scottish generating boards were statutorily bound to 'protect both their own interests and those of their customers'⁵⁴ and as a result were not prepared to give any guarantees that would jeopardise the prices their other consumers were paying. As a result, the Board insisted that an account, imaginatively titled the 'Smelter Account' be created so as to make clear the distinction between this agreement and its domestic provision of electricity.⁵⁵ Further, the contract contained no provisions for a revision of the agreement in the event of price escalation. The company was very unhappy at having to assume risks on matters that it felt it had no control or knowledge on, but eventually assented only after Edmund Dell had personally intervened with a letter reassuring the company of the government's willingness to review the agreement in the event of an escalation in the power price. The contract was agreed and signed on the 24th July 1968.

⁵³ From Financial Appraisal of BACo in a Governmental Discussion paper used as a briefing for Industrial Development Board, 24/01/74. Circulated by CB Benjamin, Secretary of IDB. NAS SEP4/4053.

⁵⁴ Dell, E, *Political Responsibility and Industry*, pg 117.

⁵⁵ Letter from NSHEB (author unknown) to Gordon Campbell MP, Secretary of State for Scotland, 19/04/1973, TNA PRO T319/2090.

The details of the contracts were deemed confidential and were unavailable for scrutiny by anyone other than those involved in their formulation and agreement, much to the chagrin of the Expenditure Committee in Parliament who noted in their report 'Public Money in the Private Sector' that 'the inability of Parliament to discover either the very large amount paid out in investment grants or the unit cost of electricity supplied to the smelters must greatly weaken any serious attempt to judge whether the public expenditure was justified.' The committee noted further that the basic motive was export saving although they did acknowledge that there were elements of regional development policy in the siting of the smelters also.⁵⁶ This led to calls in the House of Commons for disclosure over the details to ensure that the consumers of the nation's energy at large, the general populace, did not incur any of the financial burden created by the construction of the new smelters.⁵⁷ Representatives in the House of Commons asked numerous questions, of which many were to be somewhat prophetic. Teddy Taylor, the MP for Glasgow Cathcart, asked:

What will the position be in the event... of the price of the power coming out being in excess of the estimates which are considered now?⁵⁸

Edmund Dell, speaking as Minister for the Board of Trade, responded that 'the company has negotiated the contract and takes the risk of escalation'⁵⁹, contrasting with his earlier letter to BACo stating:

We agree that the Board of Trade and BACo will consult together if circumstances arise which, in the opinion of either party, substantially modify the assessments which at present underlie the project.⁶⁰

This apparent contradiction illustrates the government's desire at the time to appease both those critical of the project, in terms of alleged subsidy, and BACo; without actually committing itself wholly to either argument, such was the desire to get the smelter up and running as soon as possible without further delay. Of course, in the terms of the actual power contract itself, the company had little recourse to the government for help with any potential escalation in the power price for whatever reason, save for the letter from Edmund Dell stating that there would be a review of the agreement in any such event. This was termed the 'Fair Clause' as a result of the 'novel form of the arrangements and the inability to foresee and provide for every contingency that might arise over the duration of the Contract'.⁶¹ It was however to be a misnomer. Unfortunately for the company, the clause was to hold little sway with future administrations that did not feel duty bound to honour a promise made by an erstwhile Cabinet member in a letter that was not part of the official agreement. This

⁵⁶ Background Note 'Aluminium Smelters' by Miss MM Deyers, Treasury, 27/06/1973, TNA PRO T319/2431.

⁵⁷ Lack of transparency in smelter power contracts, according to an OECD study in 1983, was a feature of many aluminium smelters in Europe during the period. For more information on this consult *Aluminium Industry: Energy Aspects of Structural Change*, (OECD, Paris, 1983), pp 88-91.

⁵⁸ *Hansard*, vol. 773, House of Commons Debate, 20/11/68, col. 1453.

⁵⁹ *Hansard*, vol. 773, House of Commons Debate, 20/11/68, col. 1453.

⁶⁰ From letter from Edmund Dell Minister of State, Board of Trade, to Sir William Strath, KCB, BACo, 23/07/68, NAS SEP14/1473.

⁶¹ Taken from 'The History of the Invergordon Aluminium Smelter's Electricity Supply Contract 1967 to 1976' A Departmental Report (unspecified), written by JA Cowell, March 1977, NAS SEP4/4053.

omission of the agreement between the Board of Trade and BACo was to be a fatal blow to the future of the company in light of subsequent events. All of the fears the company had going into the agreement would ring true and all of their good faith in the government would be rewarded with failure on a massive scale.

Operational Difficulties

After the successful conclusion of the negotiations for the contract to operate the smelter, plans for the construction and operation phases were implemented. Edmund Dell presented a draft of the Aluminium Industry (Invergordon Project) Scheme, 1968 and the Aluminium Industry (Anglesey Project) Scheme 1968 to the House of Commons on the 6th November 1968 preceding its approval by Parliament on the 20th November. During the debate for its approval on the 29th, Nicholas Ridley, Conservative MP for Cirencester⁶², said of the plan:

The motive is said to be import saving... This is a policy of protectionism designed to slow down world trade. If it does not pay us - as I believe it does not - to make aluminium here, we are distorting the whole mechanism of trade to save a few paltry pounds.⁶³

Ridley's analysis of the project as a means towards protecting British interests further illustrates the true intentions of the smelters. He was correct in asserting that it did not 'pay' the UK to make its own aluminium - the smelter projects were uneconomic without subsidised electricity provision - even more so in the Highlands due to the inflexibility of the electricity board's statute of limitations concerning electricity supply, not to mention the increased transport costs of the finished products to markets. However, the promise of cheap electricity from nuclear power stemmed from the technological strides being made by the Fast Reactor facility at Dounreay and the commitment to the new AGR projects across the country stemming from the UK's position at the forefront of the nuclear race. The government was looking to exercise what it believed would be its comparative advantage in aluminium smelting stemming from its belief in the ability of nuclear power to produce electricity 'too cheap to meter'. That it was trying to distort the mechanism of trade is not in argument. Tariffs, the traditional form of protection, were not an option under EFTA rules meaning an alternative way of safeguarding British interests through increased production of necessary goods was sought. If nuclear power could provide cheap electricity and alumina could be bought in relatively cheaply, the belief was that nothing should stop Britain exercising its right to produce aluminium cheaply. Ridley and another MP, Peter Emery the Conservative member for Honiton, further accused, quite rightly as it transpired, the government of subsidising the Anglesey smelter contract.⁶⁴ In spite of their protestations, as well as several other concerns over the power contract, loan arrangements, grant provision and potential escalation of costs

⁶² Ridley later served in Thatcher's government and was a staunch advocate of monetarist policies and the insistence on pursuing a market economy - one of the reasons given for Invergordon's eventual closure.

⁶³ *Hansard*, vol. 773, House of Commons Debate, 20/11/1968, col. 1455.

⁶⁴ *Hansard*, vol. 773, House of Commons Debate, 20/11/1968, col. 1477.

and the effects on domestic consumers voiced by other MPs, the House passed the bills.⁶⁵

By the time the smelters' construction was completed, the government's balance of payments problem had improved, in 1969, when it moved into the positive posting results of £180m to the good, an improvement on the previous year's result of negative £380m. In 1971, it posted results of £770m to the good, a considerable improvement.⁶⁶ As meticulous as the planning and development of the smelter and the associated infrastructure was, its success depended not on these factors, but instead upon the issues of power price and the world price of aluminium, both of which it was assumed would pose no threat to the smelter. BACo on the other hand made no such presumption and worked on the premise that prices were always subject to change. As a result, the company made a concerted effort to ensure that the price it was to pay for power was one that gave it enough room for manoeuvre should prices in the world market for aluminium or alumina change. Any price change in supplies of alumina for example would directly affect the company's profit deriving from its Invergordon arrangement as the agreement with the government was set up on the basis of a total cost approach, covering as many variable and capital costs as possible as well as allowing for profit. If any of the variable or capital costs increased, predicted or not, it would be the company's profit that would be squeezed. This was a feature of the aluminium industry worldwide under the producer pricing system until the introduction of new producers into the market (mostly additional non-OECD producers) and the introduction of aluminium onto the London Metal Exchange, significantly enlarging the previously small 'free market' in aluminium in the 1970s.⁶⁷

The start-up of the smelters coincided with a world slump in aluminium prices that began in 1970 and lasted until the oil shocks in 1974 resulting in high prices for aluminium on the basis of higher energy costs.⁶⁸ This can be more clearly seen in the chart below:

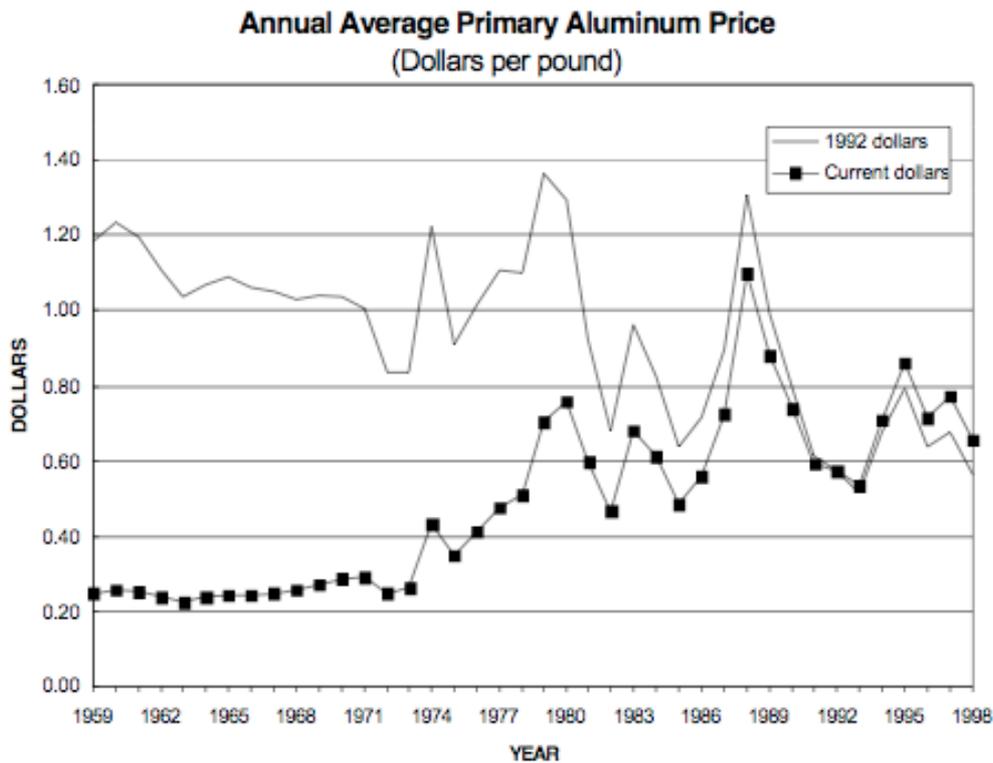
⁶⁵ For the full text of the Parliamentary discussions with each concern raised by individual MP's, *Hansard*, vol. 773, House of Commons Debate 'Aluminium Smelters', 20/11/1968, should be consulted.

⁶⁶ Scott, A & Cuthbert, M, *Reviewing Industrial Aid Programmes: (I) The Invergordon Smelter Case*, pg 21.

⁶⁷ OECD, *Aluminium Industry: Energy Aspects of Structural Change*, pp 84.

⁶⁸ Scott, A & Cuthbert, M, *Reviewing Industrial Aid Programmes: (I) The Invergordon Smelter Case*, pg 23.

Chart 1 Annual Average Aluminium Price, 1959-1998 (1992 prices)



Source: <http://minerals.usgs.gov/minerals/pubs/commodity/aluminum/050798.pdf>

As a result of the slump, the Invergordon smelter was only able to operate at 50% of its intended capacity. This was an expensive and frustrating episode for the company, but one it accepted due to its belief that the cyclical nature of the industry meant that the hitch was temporary. This belief coupled with the growth rate of 8% per annum in demand over the previous twenty years in the industry led the company to take the decision to operate at less capacity without any great concern.⁶⁹ The success of the planning and construction phase had buoyed the company and they were confident about their new operation. Morale was high, the start-up had gone well and capital costs were low. The positivity of timely completion was short-lived however. The world price slump in aluminium during the period 1970-72 placed the smelter project on the back foot from the outset. The inability of the smelter to operate at full capacity effectively meant that the company was playing at catch-up from the beginning. This was further exacerbated by the labour shortages caused by the discovery of oil in the North Sea and the subsequent rush to create the new industry in order to take full advantage of the newfound source of wealth.

As problematic as the world price of aluminium and the labour shortages were to the smelter, they paled in comparison to the major problem that was beginning to arise in the delay in construction of Hunterston B and Dungeness B. As noted, aluminium smelting involves the usage of enormous amounts of electricity and any kind of change in the price of electricity supplied could have potentially disastrous

⁶⁹ Utiger, RE, *Never Trust An Expert*, pg 20.

effects on the viability of the whole project. Any delay in the construction of the AGR plants meant that the smelter would have to continue to use the more expensive coal-fuelled electricity. This was particularly disastrous for BACo who had planned on using the coal-powered electricity only until 1974 and believed it would be able to offset the cost of which against its capital outlay on Hunterston B and subsequent supply of cheap energy, as per the power contract. The obvious downside of this was that using more expensive energy meant that the company was making less of a profit on the aluminium it was producing and would have to continue with the more expensive coal-fuelled electricity. Concurrent with this was the fact that operating costs were rising as a result and if the profits weren't there to cover this rise then a deficit would occur. Further compounding this rise in costs was the increase in the price of coal in 1972 to 5.5 d/therm; whereas the agreed price for BACo was 4.7 d/therm.⁷⁰ The effect of this were yet further increases in the costs of energy for the smelter. As a result, the company found itself on the receiving end of price escalations that it had no control over.

Details of the power contract with BACo become central to the story here. The conditions of the side letter (which was *not* a part of the contract), ostensibly agreed to safeguard BACo against any such escalations, were inadequate when the company sought recourse to them during this time. The letter from Edmund Dell was the only safeguard that the company had, but not legally binding as part of the contract. Since the reassurances written in letter were never inserted into the contract they were useless in the company's representations to the new Conservative government and the electricity boards who stuck rigidly to the legal interpretation of the contract:

It is clear... that there are likely to be very substantial extra costs in supplying the smelter because of the forecast delays of Hunterston 'B'. These extra costs, and in particular the interest charges on them, are such that the Smelter Account is unlikely to recover when Hunterston 'B' comes into full operation. The Board considered this review at their January Meeting and I was asked to raise the whole matter with the Department in the context of understandings previously given to the Board that the interests of their ordinary consumers be safeguarded.⁷¹

The delay in completion of Hunterston B meant that the capital cost escalation would exceed the original estimate provided by the SSEB (who were in charge of the construction of Hunterston B), and was double what the company had provided for. SSEB tabled revised estimates that put the company's contribution at £29m for 189 MW, compared to £27.3m in 1968. By October 1972, it became clear that the capital cost escalation was going to exceed £30m; the limit of the loan agreed by BACo and the Government, without taking into account that Hunterston B would be operating potentially at only 80% of the design rating due to corrosion caused by seawater getting into the reactor.⁷² As a result, the company invoked the Edmund Dell letter in January 1973, believing that this protected it from any such escalations. The company argued that the possible reduction in operating capacity and coal and nuclear fuel price escalation were reason enough that they would, in the terms of the letter,

⁷⁰ Utiger, RE, *Never Trust An Expert*, pg 24.

⁷¹ Letter from KR Vernon of NSHEB to JB Beaumont, SDD, 02/02/73, NAS SEP 14/1868.

⁷² Utiger, RE, *Never Trust An Expert*, pg 25.

‘substantially modify the assessments which at present underlie the project.’⁷³ This was a perfectly reasonable request on the part of the company, given that it entered the contract in good faith and on the understanding that it would not be left to bear the full cost of any such escalations. However, there was no response from the Government concerning the escalation in costs until October later that year, when the Department of Trade and Industry (DTI) (previously the Board of Trade) indicated that it was prepared to enter discussions regarding the situation. It should be noted however that there was correspondence between the two sides, at the behest of government, concerning the value of the aluminium smelters’ production to the balance of payments with the company providing an analysis of projected savings on imports provided by the new smelters. This can be seen in the table below:

Table 2 Projected import savings from new aluminium smelters

Year	1972	1973	1974
1. UK Primary Production (000m.T)	171.0	252.0	355.0
2. Less Lochaber & Kinlochleven (000m.T)	(32)	(36)	(36)
3. New smelters production (000m.T)	139.0	216.0	319.0
4. Price per tonne of imports (£)(a)	221.0	233.0	256.0
5. Equivalent import value (£m)	30.7	50.0	81.7
6. Alumina required (b)(000m.T)	271.0	533.0	622.0
7. Price per tonne (c)(£)	34.0	34.0	40.0
8. Cost of alumina (£m)	9.2	17.8	24.9
9. Other material costs (d)	2.0	3.2	4.0
Import savings £m = (5-(8+9))	19.5	30.0	52.8

(000m.T)= 1000 metric tonnes.

- a) Actual average price for imports of pure primary aluminium in 1972 adjusted in proportion to actual or expected change in Alcan world price.
- b) Assumed 1.95 tonnes of alumina per tonne of aluminium.
- c) Actual for 1972, adjusted in proportion to rise in aluminium price.
- d) Petroleum coke, cryolite and fluoride.

Source: Letter from John Wall, Chief Economist BACo, to FC Carter, Department of Trade and Industry, 29/06/1973. TNA PRO FV54/56.⁷⁴

⁷³ Letter from Edmund Dell Minister of State, Board of Trade, to Sir William Strath, KCB, BACo, 23/07/68, NAS SEP14/1473.

⁷⁴ There is a counting mistake in the table. The figures for 1973 do not add up. The import savings should read as being £29.0m and not £30m. It is not clear from the archival sources how this mistake arose.

It is clear from the table above that the benefit of the smelters project to the balance of payments problem, if the above figures were realised, was to be quite substantial. More to the point, the timing of the correspondence reveals that the government was perhaps more interested in what benefits the smelters were bringing to the country's economic situation than rectifying the concerns expressed by BACo over the escalation of the energy deficit, unsurprising given that the country had lapsed back into deficit in its balance of payments again by this stage.

In March 1973, a letter from AM Cochran, writing on behalf of the Chief Engineer for the NSHEB to HFG Kelly of the Scottish Development Department stated:

There is really very little that can be said about fuel or capital escalation assumptions made in 1968. At that time escalation was not uppermost in people's minds, as it is today, and the provisions in the agreement were the normal ones to be expected in a long-term agreement. The BACo [BACo Company] are well aware that the price of fuel is outwith the control of the Electricity Boards and that any forecast of trends could be no more than speculative. Similarly, the effect of inflation and design changes on Hunterston 'B' could hardly have been anticipated. No doubt the BACo took the best possible advice from all sources before opting for a 100% nuclear supply tranche from 1974/75 onwards.⁷⁵

This illustrates the electricity boards' attitude towards understanding the predicament the company found themselves in and their role in it. The company *had* predicted the possibility of inflation and design changes in Hunterston B and had sought guarantees covering it against any such occurrences. Further, the board itself requested £1.5m be included in the agreement to cover escalation. The company also entered the agreement on the basis of estimates and suggestions concerning the unlikelihood of escalation costs posing a threat to the viability of the smelter and the power arrangements made by the electricity boards (and UKAEA). When these estimates and suggestions turned out to be inaccurate, as was the case now, the electricity boards, as apparent in the letter quoted, neglected to acknowledge their own input into negotiations. The Government during the course of negotiations was unprepared to give any guarantees and the electricity boards similarly so. Instead of dealing with one centralised agency charged with negotiating on the Government and electricity boards' behalf, the company had to deal with the NSHEB who were inexperienced in such matters and who had no real knowledge of what would be required of them, as well as being the middle man between the SSEB and the company. Moreover, NSHEB's statute concerning the primacy of domestic consumers in its provision of electricity in the region meant it was unlikely to provide for an amenable partner in these arrangements. The problems inherent in such an arrangement are obvious, which is why the fact that negotiations and construction were completed within the timeframe set can be considered a success. Of course, as successful as the completion of the negotiations on time was, had more time been taken and a more understanding approach to BACo's concerns been undertaken, then the problem of nuclear power cost escalation needn't have been as significant problem as it was turning out to be.

⁷⁵ From a letter from AM Cochran for Chief Engineer of NSHEB to HFG Kelly of the Scottish Development Dept re Supplies to BACo, Invergordon, 19/03/73 NAS Ref. SEP14/1868.

The change of the government as a result of Labour's narrow win in the February 1974 election signalled a change in policy towards discussions over the power escalation. Edmund Dell became the Paymaster General in the new government and as any agreement to cover the costs of the price escalation would have to go through the Treasury, this was deemed to be good sign for the smelter. However, it wasn't until August that the company was able to obtain a meeting with the new Paymaster General where he agreed that his letter was significant and January the following year before any decision was taken. During this period discussions were ongoing between the Treasury, Department of Energy, the Scottish Economic Planning Department, the Department of Industry, the Scottish Office and NSHEB about how best to deal with the situation. This resulted in a Treasury recommendation to the Secretary of State for Industry that the company be offered assistance on the basis that NSHEB shouldn't pass on to BACo the cost of the company's contracted share of any derating of Hunterston B and the NSHEB be given guarantees by Government to make good on the deficit run up by the smelter. Further, the Treasury recommended that the company be offered a Government loan of the amount necessary to cover the company's share of the increased capital cost of Hunterston B, also stating that those involved in negotiations should be prepared to concede to an extension of the current loan arrangements at 7%.⁷⁶ Willie Ross, reinstated as Secretary of State for Scotland under the new government, gave an undertaking to NSHEB that:

In present circumstances it is not possible to reach a firm view on the eventual outturn of the BACo smelter account. But to the extent that the eventual payments from the Smelter Company fall short of the costs of the NSHEB, the Government accept that the deficit should not fall on the Board's other consumers, and will take an appropriate opportunity to seek statutory powers to make payments to the Board meeting the deficit.⁷⁷

This was only after the company had detailed the consequences of the price escalation without governmental help however.

The consequences of price escalation were that in order for BACo to continue its operations without governmental help, it would need to borrow £16m on top of the already existing borrowings of £35m. This would mean that the company would have to pay an additional £3m interest per annum on these further loans which would add nearly 0.2p/KWH to the power price. The company could not justify borrowing such an amount as it would be prejudicial to its other operations and the board of the parent company (Reynolds and Tube Investments) would not agree to it. As a result, the only option for the company would be to reduce the operating capacity of Invergordon to between half and two thirds, which is what could be supported by the original £30m capital contribution. This in itself would be uneconomic and as a result BACo would be forced to close the plant.⁷⁸ Further, reducing its operations to this level would mean its contribution to the import/export balance would also be affected. The DTI then

⁷⁶ Treasury Recommendation regarding Invergordon Smelter to the Secretary of State for Industry by DJ Gerhard, 12/12/1974, TNA PRO FV54/60.

⁷⁷ Note by Department of Energy Officials (Electricity Division) concerning Aluminium Smelter Contracts, 27/01/1975, TNA PRO TS49/220.

⁷⁸ Utiger, RE, *Never Trust An Expert*, pg 26.

made a decision in March to offer BACo a loan of £7m at an interest rate of 14.5%, more than double the rate of interest for the original loan and 4.5% more than the Bank of England minimum lending rate of 10% at the time.⁷⁹ However, the company would be protected against further derating on the operating capacity of the delayed Hunterston B power station, but not further costs. The consequences of the new agreement were that the annual capital charge for Hunterston B rose from £2.1m (in 1968) to £3.6m per annum; resulting in an increase of 71% of an element of the power price, which it was claimed in 1968 would be stable.⁸⁰ Had it not been for the personal intervention of Edmund Dell, it is not entirely inconceivable that the company would have been left to deal with the problems it was facing alone, given that there had been little or no progress made prior to the new Paymaster General's actions. As a result of Dell's intervention, a payment of £113m in 1976, approved by Parliament, was made to the NSHEB to cover the energy deficit in the Smelter Account, now subsequently known as the Smelter Deficit Account. In order for this to happen the government passed the Electricity (Financial provisions) (Scotland) Act of 1976.⁸¹ This was followed by a further payment of £57m in March 1977.⁸² Sir Edmund was proving to be a good friend to the project, but the smelter was becoming an increasingly expensive venture for all concerned, not least the government. In formulating these agreements there were questions raised at the Department of Energy over whether or not the CEGB should receive parity of treatment with the Scottish boards. It was decided however that the CEGB should not receive the same treatment as the highest figure for exposure to losses caused by the Anglesey smelter was 1.4% of its total sales (£25.8m) for the period 1973/74, compared to NSHEB's exposure of 26.5% of total sales (£14.6m) for the same year.⁸³

Hunterston B eventually became operational in 1976, two years after its projected start date. However, the much-heralded cheaper power it was meant to bring failed to materialise. This can be seen more clearly in the table below:

⁷⁹ Bank Of England Quarterly Bulletin 16, (London, HMSO, 1976), Table 26.

⁸⁰ Utiger, RE, *Never Trust An Expert*, pg 26.

⁸¹ Internal Audit Report - June 1979. Audit of Payments to Aluminium Smelter Companies by PA Merker, Chief Internal Auditor, TNA PRO TS49/220.

⁸² Scott, A & Cuthbert, M, *Reviewing Industrial Aid Programmes: (I) The Invergordon Smelter Case*, pg 26.

⁸³ Note by Department of Energy Officials (Electricity Division) concerning Aluminium Smelter Contracts, 27/01/1975, TNA PRO TS49/220.

Table 3 Increases in annual running costs for power

Year	£m	p/KWH	% (a)	% (b)
1976/7	4.2	0.241	198	40
1977/8	8.2	0.472	387	64
1978/9	10.9	0.627	514	26
1979/80	14.8	0.850	697	30
1980/1	16.4	0.936	767	9
1981/2	23.6	1.354	1110	40

(a) Increase over contract figure from 1968.

(b) Increase over previous year.

Source: Utiger, pg 33.

As the table shows, the increases in power cost were considerable. Any substantial increase in the cost of power in aluminium smelting can result in disastrous consequences for the operation involved. As the case of the Invergordon smelter unfolded, so the point was proven. From the agreed price of 0.263 p/KWH to a price of 0.503 p/KWH at the beginning of Hunterston B's lifetime, and subsequent increases from then on, the price of nuclear power was nowhere near as competitive as it was meant to be. The agreed sum of £83,000 per tonne for nuclear fuel elements rose to £214,000 in 1976/7 and then to £287,000 in 1977/8, excluding reprocessing, as a result of the extended delays in completing the AGR nuclear power stations and the subsequent failure of demand to meet the supply. British Nuclear Fuels operated a two-part tariff system in order to ensure that its profit margins were not affected by a lowering of demand. As a result of the delay in completion of the AGR power stations, the cost of the fuel rose accordingly. SSEB had failed to build Hunterston B on time⁸⁴ and NSHEB who insisted on negotiating the discussions itself on behalf of SSEB. Thus, as a result of the delay, the company refused to pay £24.5m in running costs and a further £3.9m in ongoing capital charges, but made provisions for them in the accounting balance sheets as a matter of financial prudence. The company believed that the increases were not solely attributable to inflation, but were in fact a result of massive under-estimation of costs in the 1968 agreement on the part of the generating boards.⁸⁵ Whilst this may be true, it should also be noted that the company should never have agreed to enter into an agreement with open-ended escalation clauses and non-specific clauses relating to design changes. That, put simply, was writing the government a blank cheque. The contract relied, at least on BACo's part, too much on good faith in the projections of UKAEA and SSEB, neither of who had any experience of constructing an AGR nuclear power station *on time*.⁸⁶ Perhaps the most

⁸⁴ For more on this and the problems with the construction of the AGR stations in the 1960s, as well as a general history of nuclear power in Britain, Walt Patterson's *Going Critical* (Paladin Books, London, 1985) should be consulted.

⁸⁵ Utiger, RE, *Never Trust An Expert*, pg 57.

⁸⁶ Hunterston A was delayed in its construction by 2 years, just as Hunterston B was delayed by 2 years.

damning part of the story here is the price BACo were paying for its nuclear based power in its last year of operation in 1981 - 29mils/KWH - almost five times the agreed price of 6.31mils/KWH in 1968.⁸⁷

Excluding the problems with the energy deficit it was running, the Invergordon smelter was profitably run for most of the late 1970s. According to a briefing for the Industrial Development Board, it was in fact the most efficiently run smelter in the country, with the brief stating that

The smelter has given no major technical problems, and the delays in commissioning have been from causes largely outside the company's control. The company is, in fact, regarded as the most efficient producer of aluminium in the UK. In 1973 average earnings per employee were £2050 per employee per annum and output per employee was almost £9000.⁸⁸

Regarding Invergordon as the most well run smelter in the country was faint praise however. By 1973 the smelter projects commissioned by government were all running at a loss. The smelters at Anglesey and Lynemouth operated by the RTZ consortium and Alcan respectively, were operating at losses of more than £4m, with each companies being accountable for approximately £0.5m and the CEGB and National Coal Board (NCB) exposed to the remaining £3.5m.⁸⁹ The total gross trading profit from 1971 to 1975 for Invergordon (when the smelter finally reached its intended capacity of 100,000 tonnes), excluding the disputed power charges was £4.65m. From 1975 to 1981 when the plant closed its doors, the total trading profit was £14.482m, a considerable improvement in operating performance from the previous year. This was helped by a recovery of the price of aluminium when it rose from £371 per tonne in 1975 to £780 per tonne in 1980.⁹⁰ Admittedly, this profit disappears when the power supply escalation cost is taken into account, since the company had been in dispute with the NSHEB over the power escalation costs since 1976, but it is an operating profit nonetheless showing that, given a competitive rate for power price, the company was capable of performing to expectation. The effect of the power costs on the profitability of the smelter can be seen in the table below:

⁸⁷ *Aluminium Industry: Energy Aspects of Structural Change*, pg 37.

⁸⁸ Financial Appraisal of BACo in a Governmental Discussion paper used as a briefing for Industrial Development Board, 24/01/74. Circulated by CB Benjamin, Secretary of the Industrial Development Board. NAS SEP4/4053.

⁸⁹ Letter from CJ Carey, Treasury, to Mr Mountfield, Treasury, 02/08/1973, TNA PRO T319/2090.

⁹⁰ Utiger, RE, *Never Trust An Expert*, Table 1, pg 38. Figures are before tax and interest.

Table 4 Trading Profit and Disputed Power Costs at Invergordon

Year Ending March	Trading Profit (£m)	Disputed Power Charges (£m)
1976/77	4.224	1.8
1977/78	8.815	4.7
1978/79	7.724	6.1
1979/80	4.578	8.0
1980/81	0.577	8.7
1981/82	-19.131	9.4

Source: Utiger, Appendix: Table 1 & Table 2B. Figures are before tax and interest.

The table shows that the smelter ran at a net profit until 1979 including the disputed power prices. It also shows that 1981 was the disaster period for the smelter, coming on the back of poor trading profit for the previous 2 years. Whilst the disputed power charges (which the company refused to pay) on first appearance don't look to be of any great concern to the company, when tax and interest is included in the figures they become more damaging. This combined with a falling price in aluminium conspired to push the smelter's operations into the red. From operating at trading profit from 1976 to 1981, the company posted losses of £19.131m in 1981/82. These losses, the burgeoning energy deficit and fall in world prices began the viability of BACo, its parent company Tube Investments (the majority shareholder), and was making the position of the Invergordon plant increasingly untenable and indeed undesirable. Consumption in the aluminium market fell by 5%, the exchange rate of \$2.80/£ and a general depression in world aluminium meant that the company's good operating performance in the previous 5 years counted for nothing. The actual price received for Invergordon products between January and May 1981 fell by £60/tonne below the 1980 average of £780 and the price for new sales fell by a further £70/tonne. This was compounded by NSHEB posting escalated power prices for the smelter of 40% more than in the previous year, which also included retrospective charges for the same year. The result of these factors was losses of almost £2m per month for the smelter.⁹¹ This led to the company to conclude that continuation of the situation as it was would result in one of three things; default on its loan repayments to the government, attempt to negotiate a further subsidy from the government or close the smelter. After the company made this clear to the government, the Scottish Economic Planning Department (SEPD) was tasked by the new Conservative government with calculating the cost of further subsidy of the smelter compared to closure. They produced the following calculations:

⁹¹ Ibid.

Table 5 Smelter Figures: Closure Costs

Closure	£m (1981/82 prices)			
	1981/82 (Jan/March)	1982/83	1983/84	1984/85
Net Cash to BACo.	30*	N/A	N/A	N/A
Loss of Revenue to NCB by coal displaced by Hunterston B	2**	8	5	2
Loss of Capital Repayments on loan by BACo.	0	2	2	2
Extra Expenditure by HIDB*	1	5	5	5
Unemployment Pay	1	3	2	1
Loss of Tax Revenue		2	1	1
Total:	34* or 4	20	15	11
Grand Total:			£80m* or £50m	

* Opposed by Treasury.

** Assuming that NCB cannot find alternative markets or rundown production in late years.

*** Provisional figures subject to examination by officials of remedial measures for which expenditure may be required.

Table 6 Smelter Figures : Continuation Costs

Continuation	£m (1981/82 prices)			
	1981/82	1982/83	1983/84	1984/85
NSHEB loss on supply to BACo	4 (iv) & (v)	14	14	13
Grand Total for 3 years:				45

- (i) In addition to other costs it will be necessary to place an Order before Parliament in 1982 to reimburse the disputed charges to NSHEB. These would amount to a total of approximately £59m. In exchange for this write-off the Government will take a charge on the tranche of Hunterston B previously held by BACo.
- (ii) Financial support for the deficit payments would be necessary until the end of the contract.

Source: Letter from George Younger, Secretary of State for Scotland to the PM Margaret Thatcher, 14/12/81, NAS SEP4/4055.

The calculations apparently show that it would have been cheaper for the government to continue the operations of the smelter than to close it down. However, the figures for continuing the smelter only account for the first 3 years following 1981/82. McCrone writing in a letter to George Younger advised:

We have shown... the cost of continuation over the next three years is less than closure... but the essential point is that continuation is likely to involve an obligation beyond three years... I remain of the view therefore that on economic grounds alone this scale of support cannot be justified.⁹²

McCrone felt that the Government would be taking an unacceptable risk of potentially having to subsidise the smelter for a period much longer than the three years envisaged if it decided on continuing it. McCrone also indicated that he felt the cost of subsidising the smelter for the three years alone to the tune of £14m per year plus writing off the disputed charges was ‘an excessive amount to pay for 900 jobs (or even 1500 if the indirect effects are included).’⁹³ The government was thus to close down a plant that was indirectly responsible for 1500 jobs in an area historically beset by problems of high unemployment, low wages and high outward migration, resulting in an increase in unemployment in the area up to 25%⁹⁴, undoing all that had been done to remedy these very problems. Faced with an underperforming money-pit and elected on the platform of no longer supporting ‘lame ducks’, the new Conservative government was unlikely to prove as friendly to the smelter as Edmund Dell had been in the past.

The Differing Approaches To The Smelters

George Younger, acting as Secretary of State for Scotland understood full well the implications of closing the smelter and sought to ensure its continuing operation, at least initially. Writing in a letter to the Prime Minister the day before receiving McCrone’s advice, Younger states: ‘As... seen from the table the costs of closure exceed those of continuation over the first three years. I therefore recommend strongly that we offer arrangements to the company which will enable the plant to continue.’⁹⁵ Younger’s advice appears to be founded on an optimistic reading of the calculations made and on the assumption that the government would not have to continue subsidising the smelter after the period. McCrone of course was not so optimistic. Younger was also looking at the situation from a political as well as economic perspective - closure would mean increased and high unemployment amidst outcry. The operation of the Anglesey smelter was foremost in Younger’s mind when considering the closure of Invergordon. The Anglesey smelter was to operate on the same premise as the Invergordon smelter, taking its power from the new Dungeness B AGR nuclear power plant. However, Dungeness B, like Hunterston B, was not completed on time. Moreover, Dungeness B was still not completed by the time Hunterston B had been (it wasn’t completed until 1983 in fact) and as a result the Anglesey smelter continued to draw its power from the state-owned CEGB at a rate much lower than Invergordon had drawn its power from the NSHEB and Hunterston B, allowing it to operate profitably. This is indicated in the same letter with Younger pointing out:

⁹² Letter from Dr RGL McCrone, Scottish Economic Planning Dept., 15/12/81 to Secretary of State, NAS SEP4/4055.

⁹³ Letter from Dr RGL McCrone, Scottish Economic Planning Dept., 15/12/81 to Secretary of State, NAS SEP4/4055.

⁹⁴ Letter from George Younger, Secretary of State for Scotland to the PM Margaret Thatcher, 14/12/81, NAS SEP4/4055.

⁹⁵ Letter from George Younger, Secretary of State for Scotland to the PM Margaret Thatcher, 14/12/81, NAS SEP4/4055.

If closure is decided on, an aspect which is particularly difficult for me is the continuation of much larger subsidies from CEGB to the Anglesey smelter. Because Dungeness B is still not in operation this smelter gets its electricity at about a third of the cost at Invergordon with CEGB meeting the deficit. Invergordon would of course be viable at this price also.⁹⁶

The agreement between the Anglesey smelter and the CEGB was not made public however, just as the agreement between Invergordon and the Scottish boards wasn't. The government then took the decision to close Invergordon on purely economic grounds, advised at length by the Scottish Economic Planning Department and BACo itself: 'The company's attitude provides further information that there is no good economic case for keeping the smelter open.'⁹⁷ However, the company was not aware of the Anglesey arrangement at this point. Indeed Utiger, upon scrutiny of the Anglesey plant's accounts, was particularly dismayed at discovering the Anglesey smelter had apparently enjoyed a cheaper power source than Invergordon, writing in his 1995 book on the subject:

What was outrageous from BA's standpoint was that another state-owned organisation was supporting the Anglesey smelter by a comparable, if not larger amount... If this was so, then it clearly amounted to blatant discrimination between competing companies, despite the verbal assurances given in 1968.⁹⁸

Utiger was of course correct in his assertion, as evidenced by Younger's letter to the Prime Minister - Anglesey did have a more favourable pricing arrangement than Invergordon for power supply from the CEGB. Clearly the government did not wholly reciprocate the good faith shown by the company in agreeing to two different power contracts in 1968 for the new smelters. It would seem that there was an element of duplicity about the government's part in the negotiations throughout the smelter's lifetime, given that it was the purse holder for the generating boards and would surely have had full knowledge of, and indeed influence over, the negotiations that took place between the aluminium companies and generating boards. As Utiger argues

When it suited them, government exercised considerable pressure on the generating boards, particularly in 1967/8 [the year of the negotiations for the power contract]... When it did not suit them... government maintained that the power arrangement was entirely a commercial matter between NSHEB and BA.⁹⁹

The government, BACo and the generating boards had all exhausted each other's patience by the end of the project. The Conservatives were not interested in paying for what they viewed as a Labour error and BACo and NSHEB were threatening each other with legal action in an attempt to settle the Smelter Deficit

⁹⁶ Letter from George Younger, Secretary of State for Scotland to the PM Margaret Thatcher, 14/12/81, NAS SEP4/4055.

⁹⁷ Letter from JR Ibbs to Mr Scholar (departments not specified), 17/12/81, NAS SEP4/4055.

⁹⁸ Utiger, RE, *Never Trust An Expert*, pg 59.

⁹⁹ Ibid.

Account. The idea of closing the smelter became the only real option left when it was made clear that there would be no further intervention on the government's part to keep it running. The final cost however would amount to considerably more than the £37m originally envisaged by the Labour government in 1967. The overall cost of the project can be seen from the table below. The estimated figures for the closure of the Invergordon smelter (in 1981 prices) are as follows:

Table 7 Final Cost of Closure of the Invergordon Aluminium Smelter

Category	1981 Prices in £m
Grant 1969	55.6
Loans 1971-81 (net of interests and repayments)	76.3
Electricity Deficit Repayments:	
1977	122.5
1979	23.8
1980	18.2
1981	9.2
Electricity Capital Addition 1976	20.9
Regional Employment Premium	1.0
Recycling Costs 1981	47.0
Payment to BACo 1981	20.0
Value of NSHEB Surplus Supply	-13.4
Grand Total:	381.1

Source: Scott, A & Cuthbert, M, *Reviewing Industrial Aid Programmes: (I) The Invergordon Smelter Case*, (Edinburgh, David Hume Institute, 1985), pg 10.¹⁰⁰

As the table above shows, the government's initial estimate of a £37m outlay proved to be somewhat short of the actual final cost of the smelter. Indeed, McCrone's estimate of £80m as the cost of closure was not inclusive of the money already spent on keeping the smelter in operation. The final cost of the Invergordon smelter project of £381.1m was the result of various governments throwing good money after bad, paying large chunks of the deficit off instead of amending the contract to give the smelter the chance of survival.

The Invergordon aluminium smelter closed its doors for the final time on the 31st December, 1981. By the time of its closure the smelter had been taking almost a quarter of all electricity sold in NSHEB's region. George Younger argued that for the smelter to remain open it would have required 60% of the board's full hydro capacity to meet its power needs on a continuous basis.¹⁰¹ (It's not clear what he thought Hunterston B's contribution to Invergordon's supply would be in this case.) Central to the story are the mistakes made in the planning stage. First of all, the promise of nuclear power supplying cheap electricity was an empty one. Had a bespoke power station (non-nuclear) supplying electricity specifically for the smelter been

¹⁰⁰ The figures are estimates as they are compiled from BA's accounts and NSHEB's accounts, as well as governmental accounts. There has been no official release of the actual financial cost of the smelter project.

¹⁰¹ Young, A, 'Industry' in Hetherington, A, *Highlands and Islands*, pg. 103.

constructed, as the Alcan smelter at Lynemouth (which is still in operation today) operates on, then there is every possibility that the Invergordon smelter would still be in operation today. Of course that wouldn't have fitted in with Labour's modernity drive of the 1960s. Alternatively, had an arrangement been found to supply Invergordon with electricity at a competitive price, as Anglesey received, then there would have been a greater likelihood of success. As successful as the planning and implementation stage was in constructing and running the smelter on time and within budget, it was a false success. The hurried nature of the negotiations of the power contract meant that the company effectively signed a blank cheque to the generating boards for its power supply. The government was eager to begin production to offset its balance of payments problem and prove its status as the party of modernity; the company was eager to start operations at Invergordon to start making money. However, the increases in the power price coupled with the drop in the world price for aluminium led to the company incurring unsustainable losses of up to £2m per month on the smelter. This inevitably led to its closure.

Conclusion

Aluminium smelting on a large-scale in Britain was simply uneconomic from the beginning. It could not be done without some form of subsidy from the government or favourable pricing arrangement for power supply. The Invergordon smelter was capable of operating with some degree of efficiency, but was profitable only when the power price was competitive, just as the Anglesey smelter was. The belief in nuclear power as a source for cheap electricity turned out to be a false hope. The real problem for Invergordon however lay in the agreement of the power contract with the Scottish boards, particularly the NSHEB. The contract contained no provisions for protecting the smelter from power price escalations, delay in the construction of the power station it was designed to rely on - Hunterston B - and was wholly insufficient in the price set from the outset. The unit price agreed was too expensive to begin with and was not guaranteed. This meant that the smelter was starting off at a disadvantage from other operations in the same field so when escalations in the price of power occurred the smelter fell further behind and eventually got to the stage where it became too expensive to run as a viable operation. Fault lies on all sides for this. The company was at fault for entering such an agreement in the first place, the generating boards for their inflexibility, but most of all the government for not taking a more active role in the negotiations for the power contract. As the purse holder for the generating boards the government was the only body that could ensure that the smelter could have a competitive power price, free from escalation that would have allowed it to continue operations – just as the Anglesey smelter enjoyed. Instead, the government took the line that the agreement was a commercial one solely between the company and the generating boards. The fact that it was based on a government-sponsored idea seemed to be of little consequence. Of course there was a concern over EFTA, but this was not insurmountable. After all, the Anglesey smelter was effectively being subsidised by the CEGB, another government owned organisation.

The story of the smelter projects is a valuable illustration of the failure of the British government in the 1960s and 70s to plan effectively for the British economy. The cost to the Government of the Invergordon smelter project alone outstripped the planned cost for both smelters combined. The role of the generating boards in the

story cannot be underestimated. The NSHEB, SSEB and CEGB all played critical roles in the eventual outcome for the Invergordon and Anglesey smelters. Invergordon closed its doors in 1981. Anglesey lasted until 2008, enjoying subsidies from the CEGB up until the end. The other smelter at Lynemouth is instructive of the failure of the AGR technology to provide a cheap and workable power source for aluminium smelting in the UK – it is still in operation and powered by coal-fired electricity through an agreement with the old National Coal Board. The failure of nuclear power and the differing approaches to interacting with industry by the generating boards combined to offer up two very different outcomes for the Wilson smelters. Invergordon on the one hand, operating for less than 10 years and closing amidst much outcry and bitter recriminations and Anglesey, operating for over 30 years with subsidies from the CEGB until its privatisation in the 1990s then through British Nuclear Fuels, then the Nuclear Decommissioning Authority. Indeed, AAM have recently announced its intention to close the smelter if it cannot negotiate a new power contract as its supply from the Wylfa nuclear power plant is due to end in 2009 before the nuclear plant is decommissioned in 2010.¹⁰² The Invergordon smelter has been replaced by a business park. As Edmund Dell writes: ‘The aluminium smelters are the most original product of the Labour Government's industrial policies. But originality has not in this case tempted imitation.’¹⁰³ It is little wonder.

¹⁰² <http://www.bloomberg.com/apps/news?pid=20601087&sid=aJUXqSIESJOA&refer=home>

¹⁰³ Dell, E, *Political Responsibility and Industry*, pg 121.