



Alcoa: Aluminium Production, Changing Climates and Flooded Forests

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Contents

Summary...2
Alcoa Directors...5
Alcoa and the World Wildlife Fund...7
Australia...7
Suriname...13
Brazil...16
Iceland...21
Jamaica...23
Trinidad and Tobago...24
Sweatshops in Central America...25
Guinea...26
Ghana...27
United States...28
Alcoa and the US Military...30
Alcoa and the Ford Foundation...32
The Mellon Family...33
Alcoa's Involvement in World War II...34
References...35

Summary

This paper examines Alcoa's global operations, with a number of significant findings arising from investigations into operations in Australia, Suriname, Brazil, Iceland, Jamaica, Trinidad and Tobago, Mexico, Honduras, Guinea, Ghana and the United States.

Alcoa are currently involved in bauxite mining and alumina refining operations in Western Australia (Alcoa 2007a, p.1). Alumina produced from these operations is transported to Alcoa's Portland and Point Henry aluminium smelters in Victoria (Alcoa 2007a, p.1). Alcoa also operate the Anglesea brown coal fired power station, which is used to power the Point Henry aluminium smelter (Alcoa 2007a, p.1).

Alcoa is intending to expand the Portland aluminium smelter, increasing aluminium production from this facility by an estimated 140,000 tonnes (Myer 2004, p.1). With aluminium produced in Australia being 2.5 times more greenhouse intensive than the world average for aluminium production (Diesendorf 2004, p.8)(Turton 2002, p.41), expansion of this facility may undermine attempts to lower greenhouse emissions in Australia. Turton states that the aluminium industry consumes 15 per cent of Australia's total power usage (Turton 2002, p.vii). At the same time, subsidies from the Victorian Government allow Alcoa to access power for less than half the market rate for electricity (Turton 2002, p.13).

Bauxite mining operations carried out by Alcoa in Western Australia's Jarrah forest are alleged to have had a damaging impact upon the natural environment of this region (Multinational Monitor 1981). Bauxite mined in this region is of a particularly low grade, therefore requiring substantial inputs in the refining process (Grant and Gardner 2004, p.8)(Alcoa 1999, p.13).

In Suriname, Alcoa operate through subsidiary Suralco, which owns the substantial Bakhuis concession with BHP Billiton (Goodland 2006, p.4). This concession covers 278,000 hectares of primary forest, underneath which lies significant bauxite deposits (Goodland 2006, p.4). As stated by Goodland, "the Bakhuis mine is a classic case of asymmetric power", as powerful companies inflict damage upon poor, largely illiterate indigenous communities (Goodland 2005, p.4). The aluminium smelter accompanying the Bakhuis mine will be powered by the Kabelebo hydroelectric project (Goodland 2005, pp18-19). This dam will require the creation of three reservoirs, flooding 2,460 square kilometres of intact forest and causing the displacement of Indigenous peoples (Goodland 2005, pp20-21). The notorious Afobaka Hydroelectric project constructed by Suralco in 1964 led to the inundation of 1600 square kilometres of "pristine tropical forest" (Goodland 2005, p.23). Furthermore, 6,000 people were displaced as a result (Meredith 2005).

Through subsidiaries such as Alumar and Alcoa Aluminio, Alcoa are involved in bauxite mining and aluminium smelting in Brazil (United States Securities and Exchange Commission 2005, pp5-7). These operations powered largely by the massive Barra

Grande, Machadinho and Tucuruí hydroelectric plants (United States Securities and Exchange Commission 2005, pp10-12)(Feeney 1991, p1). Barra Grande was constructed by Energetica Barra Grande S.A. (42 per cent owned by Alcoa Aluminio) (United States Securities and Exchange Commission 2005, pp10-12). This dam flooded an area of 92 square kilometres, half of which was primary Atlantic Coastal forest (Coughlin 2007, p.1). The World Bank has supported the Machadinho dam, constructed by a partnership that included Alcoa Aluminio (Langeland 2001, p.4)(United States Securities and Exchange Commission 2005, pp10-12). This dam flooded a 30 square mile area, leading to the displacement of 9,000 people (Langeland 2001, p.4). Constructed for the Alumar facility, the Tucuruí dam caused the submergence of 250,000 hectares of rainforest (World Commission on Dams 2000, p.97), drowning several million animals (Secrett 1998, p.3) and leading to the displacement of an estimated 20,000 families (Marcondes 1999, p.2).

The \$1.4 billion Karahnjúk dam has been constructed in Iceland specifically to power Alcoa's Fjardaal aluminium smelter (De Muth 2003, p.1). Critics argue that this project will flood 3,000 kilometres of pristine wilderness areas (Environmental News Service 2002, p.1). Power produced by the project will not be made available for domestic use (Corporate Watch 2005, p.1). Furthermore, the project may in fact cost the Government \$36 million each year, with Lynas pointing out that the situation may arise where the Government is subsidising the activities of a foreign multinational "while destroying its own backyard in the process" (Lynas 2004, p.12).

Alcoa's subsidiary in Jamaica, Jamalco, operates the Clarendon/Manchester mine, which in turn provides bauxite for an alumina refinery that is also owned and operated by Jamalco (United States Securities and Exchange Commission 2005, p.7). This refinery is set to expand to a capacity of 2.8 million metric tonnes per year (United States Security and Exchange Commission 2005, p.7).

Supported by the Government of Trinidad and Tobago, in 2006 Alcoa unleashed plans to construct a 341,000 tonne capacity aluminium smelter in Cape de Ville (Meredith 2005, p.1). This smelter is expected to consume between 4 to 6 per cent of Trinidad's entire gas reserves over a lifespan of 30 years (Meredith 2005, p.1)(Fernandes 2006, p.1).

Alcoa operates sweatshops in Honduras, Mexico and Nicaragua (National Labour Committee 2005, p.1)(Kernaghan 2002, p.3). Thousands of people are employed to work for Alcoa in each of these countries, with workers receiving miniscule wages, whilst working in terrible conditions (Kernaghan 2002, pp3-6)(National Labor Committee 2005, p.1). Kernaghan states that Alcoa workers in Piedras Negras, Mexico, must "sell their blood twice a week to survive" (Kernaghan 2002, p.3).

Alcoa operate in Guinea through subsidiary Halco, which has a 45 per cent stake in the Compagnie des Bauxites de Guinee (CBG)(United States Securities and Investment Commission 2005, p.6). CBG has a 100 per cent interest in the massive Boke mine (Vaccaro 2007, p.1). Operated by Alcoa, this mine closed in early 2007, with workers striking against Guinean President Conte (Northern Miner 2007, p.1). During a week

long strike in which 30,000 workers across Guinea participated, soldiers opened fire on a crowd of unarmed protestors, killing 30 (Vaccaro 2007, p.1).

In Ghana, Alcoa is intending to mine for bauxite in the Atewa forest reserve, which is considered to be one the 8 major biodiversity hotspots in the world (Asdiamah 2006, pp1-2).

Alcoa's operations in the United States are significant, with State and Federal environmental regulators fining the company millions of dollars for discharge violations and the illegal exportation of potassium flouride and sodium flouride, amongst other transgressions (Langeland 2001, p.1)(United States Department of Commerce 1999, p.1). Alcoa has also benefited significantly through US legislation which allows the company to sell electricity, which it receives at a cost well below the market rate, back to the western electric grid (United States Department of Commerce 1999, p.1).

Alcoa has been the recipient of numerous contracts from the US military in recent times, including the US\$31.7 million contract from the US Army's TACOM Life Cycle to provide aluminium armour plate the Rock Island Arsenal (DeWitt 2007, p.1). To assist the Joint Strike Fighter project, Lockheed Martin awarded a \$360 million contract to Alcoa, where the company will provide aluminium die forgings for the project (Lovering 2007, p.1).

Alcoa's actions prior to and during World War II have also received strident criticism (Borkin and Welsh 1943)(Lederman 2000)(Seldes 1943). In May of 1941, then Congressman Pierce stated that Alcoa had sabotaged the American war effort (Bugos 2001, pp1-2). Furthermore, Seldes alleges that that "some of (the United States) biggest monopolies entered into secret agreements with the Nazi cartels and divided the world up among them...Most notorious of all was Alcoa" (Seldes 1943, p.122).

This paper clearly demonstrates that Alcoa is responsible for projects that have caused social and environmental problems of significant magnitude in Australasia, Africa, Europe, North America, South America and Central America. Aluminium production is reliant upon significant power consumption, with Alcoa managing to secure heavily subsidised power to support their operations in countries such as Iceland, Australia and Brazil (Turton 2002, p.40). This paper has clearly identified Alcoa's substantial attempts to expand their global operations in recent times, with plans to increase operations in Ghana, Guinea, Iceland, Australia, Suriname, Brazil, Trinidad and Tobago and Jamaica either recently implemented or on the cusp of implementation. Expansion of a greenhouse intensive industry on such a grand scale will undoubtedly undermine attempts to cut global greenhouse emissions.

Alcoa Directors

Listed below are some of the directors of Alcoa (Information on Alcoa directors taken from http://www.alcoa.com/global/en/about_alcoa/corp_gov/directors.asp unless otherwise stated.)

Alain Belda



Belda has been a director of Alcoa since 1998, and is presently serving as Chief Executive Officer of the company. Formerly, Belda served as President of Alcoa Aluminio in Brazil between 1979 and 1994. Belda is also a director of Citigroup.

Kathryn S. Fuller



When Alcoa donated \$1 million to the World Wildlife Fund (WWF), becoming a member of WWF's 'Corporate Club', Alcoa offered then President of the WWF Kathryn Fuller, a seat on their executive (The Independent 2003, p.1). Fuller resigned from her position as President WWF in 2005, though has maintained has position as a director of Alcoa (The Independent 2003, p.1). Furthermore, Fuller is the Chair of the Ford Foundation.

Franklin Thomas



Franklin Thomas has been a director of Alcoa since 1977. Thomas was also President of the Ford Foundation between 1979 and 1996 and is a director of Citigroup Inc and PepsiCo Inc.

Henry Schact



A director of Alcoa since 1994, Henry Schact has maintained strong associations with Lucent Technologies, Cummins Inc (manufacturer of diesel engines) and Warburg Pincus LLC. Schact is also a board member of the Ford Foundation.

Ratan Tata



According to Alcoa “Mr. Tata is the Chairman of the major Tata Group companies including Tata Motors, Tata Steel, Tata Consultancy Services, Tata Power, Tata Tea, Tata Chemicals, Indian Hotels, Tata Teleservices and Tata AutoComp”. Branching out from his association with his family name, Tata is also a trustee of the Ford Foundation.

According to Jayaraman, Tata Steel is one of the India’s largest firms, and has been at “the forefront of India's industrialization and an engine of growth” (Jayaraman 2006, p.1). Jayaraman describes the Tata Group as “a prestigious, family-owned Indian multinational with 2005 revenues of \$17.8 billion, the equivalent of about 2.8 per cent of India's GDP” (Jayaraman 2006, p.1).

Jayaraman reports that the Tata Group, in particularly Tata Steel, is linked to numerous projects in India which have led to the displacement of people, repression of demonstrations and subsequent fatalities (Jayaraman 2006). Jayaraman refers to comments made by activist Rajinder Sarangi, who claims that the "Tatas are responsible for the slaughter of the Adivasis in Kalinganagar. They knew the situation was tense and still insisted on going ahead with the construction using police force," (Jayaraman 2006, p.2).

Independent Media reported that on the 2nd of January 2006, State police fired live ammunition into a crowd of protestors, demonstrating against the "takeover and seizure

of their land by a Tata Steel plan in Kalinganar" (Independent Media 2006, p.1). According to Independent Media, 16 people died instantly, with four more people dying later in hospital (Independent Media 2006, p.1). Das argues that Kalinganagar represents just "one of a series of violent repressions of local communities which have resisted Tata Projects" (Das 2007, pp3-4). Furthermore, Das claims that dissenting employees of Tata have been arrested or fired, while trade union officials have been shot during demonstrations (Das 2007, p.4).

In June of last year, Tata Steel signed an agreement with the State Government of Tamil Nadu, whereby the company will seize 10,000 acres of occupied land, for the purposes of mining Ilmenite (Jayaraman 2007, p.1). The project will cause the displacement of thousands of local farmers and small business people (Jayaraman 2007, p.1). Tata Steel is offering \$1,250 per acre for this land; an offer considered by one land owner to be "a joke" (Jayaraman 2007, p.2). Meanwhile, those who are landless receive no compensation (Jayaraman 2007, p.2).

Tata is also offering to establish a fund to pay for the \$23 million clean up of the Union Carbide Bhopal gas disaster in 1984 (Gupta 2007, p.1)(Youth For Social Change 2007, p.1). Dow Chemical, who purchased Union Carbide in 1999, has thus far refused to pay for the clean up, arguing that it should not be forced to pay such costs as it was not responsible for the initial disaster (Gupta 2007, p.1). Andrew Liveris, Chief Executive Officer of Dow has stated that unless the matter is resolved, Dow would be unable to invest in India (Gupta 2007, p.1). Tata is reportedly making this offer to ensure that Dow Chemical maintain their investment in India (Gupta 2007, p.1). Understandably, Tata has upset and angered many people with this gesture (Youth for Social Change 2007).

Alcoa and the World Wildlife Fund

Alcoa has also shared an enduring relationship with the WWF. Interestingly, Kathryn Fuller became conflicted through her dual roles as director of Alcoa and President of the WWF, when she refused to vote against Alcoa's aluminium smelter proposed for Iceland, which WWF had been opposing (The Independent 2003, p.2). Rather than hand back her seat on Alcoa's executive, Fuller resigned from her Presidency with the WWF (The Independent 2003, p.2).

The Alcoa Foundation awarded \$500,000 over three years to the WWF's Russell E. Train Education for Nature Program in the United States (WWF 2002, p.5). WWF Australia recognises Alcoa as a 'corporate supporter' (WWF Australia 2001, p.21), with Alcoa, WWF and the Natural Heritage Trust working together on various initiatives (WWF Australia 2001, p.8).

Alcoa in Australia

Overview

Alcoa's operations in Australia are performed by Alcoa of Australia; which is a part of the AWAC group of companies which is 60 per cent owned by Alcoa and 40 per cent owned by Alumina Limited (United States Securities and Exchange Commission 2005,

p.7). Alcoa of Australia take 100 per cent of the production from facilities which are owned by AWAC entities (United States Securities and Exchange Commission 2005, p.7). Alcoa of Australia own and operate the bauxite mines, alumina refineries and aluminium smelters (Alcoa 2007a, p.1).

The Huntly and Willowdale mines in the Darling Ranges of Western Australian provide the Kwinana, Pinjarra and Wagerup refineries with bauxite (Alcoa 2007a, p.1). These refineries then supply refined alumina to the aluminium smelters of Portland and Point Henry, located in Victoria (Alcoa 2007a, p.1). Part of the energy supplied to the Point Henry smelter is provided by the Anglesea Power Station, owned by Alcoa, which is powered by brown coal (Alcoa 2007a, p.1).

Managing Director of Alcoa of Australia, Wayne Osborn, claims that population growth and urbanisation in countries such as China, India and Brazil, will cause the worldwide demand for aluminium to double by 2020 (Osborn 2007, p.2). The implication being that increasing demand for alumina and aluminium around the world leaves Alcoa in an exceptionally fortunate position. This leads to the expansion of the Portland aluminium smelter, which current Victorian Premier John Brumby claims will increase production from 360,000 tonnes of aluminium to 500,000 tonnes (Myer 2004, p.1). This expansion will follow the recent expansion of the Pinjarra and Wagerup refineries in Western Australia (Alcoa 2006, p.17)

However, increased production will obviously require increasing energy inputs. The aluminium industry is recognised as being particularly energy intensive (Diesendorf 2004, p.8). According to Turton, the electricity consumed by aluminium industry in Australia comprises approximately 15 per cent of Australia's total energy consumption (Turton 2002, p.vii). Furthermore, Turton mentions that "aluminium produced in Australia is around 2.5 times more greenhouse intensive than the world average" (Turton 2002, p.41). At the same time, Turton argues that "the aluminium industry in Australia has been perhaps the most forceful opponent of policies to reduce greenhouse gas emissions" (Turton 2002, p.vii).

There is not overwhelming evidence that indicates Alcoa plans to power their expansions in Western Australia and Victoria with anything other than fossil fuels. Yet in one of the less subtle attempts at corporate green wash, Osborn curiously cites aluminium as being "part of the solution to global warming" (Osborn 2007, p.2). Osborn doesn't elaborate on just which "part" he is referring to.

As well as consuming large quantities of electricity, Alcoa is using astonishingly large amounts of water. As highlighted in their 2004/05 Sustainability Report, in 2004 Alcoa used 30,279,000,000 litres of water across their Australian operations (Alcoa 2005a, p.46). In the West Australia alumina refineries, Alcoa used 24,125,000,000 litres in 2004 (Alcoa 2005a, p.46). The Point Henry and Portland smelters used a combined total of 764,000,000 litres of water, whilst 911,000,000 litres of water was used in the bauxite mining process (Alcoa 2005a, p.46). The Anglesea power station consumed 4,114,000,000 litres and Alcoa Australia Rolled Products used 365,000,000 litres of

water in 2004 (Alcoa 2005a, p.46). A significant percentage of this water was fresh drinking water (Alcoa 2005a, p.46).

Bauxite Mining

Through Alcoa of Australia, Alcoa holds 100 per cent of the mining rights for the Darling Range Mines Project (United States Securities and Exchange Commission 2005, p.6). The Western Australian Government granted this mining lease to Alcoa in 1961 (Grant and Gardner 2004, p.5). The Government has ownership of all onshore minerals in Western Australia, granting individuals or corporations the right to access minerals through granting a mining tenement (Alcoa 1999, p.6). The ISA (One Special Agreement) lease was awarded to Alcoa through an Act of Parliament, known as the Alumina Refinery Agreement Act, covering four 21 year periods (Alcoa 1999, p.6). Alcoa is required to meet certain requirements to resume each new period (Alcoa 1999, p.6). Should Alcoa continue to meet these requirements, the company will be able to mine bauxite in this concession until 2044 (Alcoa 1999, p.6).

Originally, the lease covered 12,619 square km, however was reduced to 7,247 square km in 1984, with Alcoa relinquishing only 1 per cent of available bauxite deposits (Alcoa 1999, p.6). Of the entire area covered by the concession, 4,898 square km is State Forest (Alcoa 1999, p.6). In 2006, 31 million tonnes of bauxite was mined from this concession (Alcoa 2007a, p.1).

When the mining lease in the Darling Range was first developed, the West Australian Government negotiated such a poor agreement that “Alcoa’s legal status amounted to open slather”, according to former Minister for Industrial Development, Andrew Mensaros (Multinational Monitor 1981, p.1). Whereas Charles Court, Minister for Industrial Development at the time of the agreement, claimed that the amount of Jarrah forest logged annually would not exceed 14 hectares, this had increased to 80 hectares by 1969 (Multinational Monitor 1981, p.1). By 1978, 4,000 hectares of forest had been affected, with 400,000 hectares of Jarrah forest expected to be logged throughout the lifespan of the mine (Multinational Monitor 1981, p.1).

For the bauxite mined from this concession, Alcoa pays a royalty which is based on an agreement between the company and the Crown (Alcoa 1999, p.6). For the 7 year period which ended in 2002, Alcoa paid 1.65 per cent on the value of alumina sales (Alcoa 1999, p.6). As Multinational Monitor reports, “In 1975-76, Alcoa exported alumina worth A\$250 million from Western Australia, yet paid only about A\$1million in royalties” (Multinational Monitor 1981, p.2).

Furthermore, in 1981 Alcoa was reported as using 60 per cent of Western Australia’s natural gas production, four times as much as that being used in homes throughout the State (Multinational Monitor 1981 p.2). However, Alcoa received energy very cheaply from the Western Australian Government, at a substantially lower rate than that paid by households (Multinational Monitor 1981, p.2).

Alcoa is also interested in the Cape Bouganville and Mitchell Plateau reserves currently not producing bauxite (United States Securities and Exchange Commission 2005, p.6). Furthermore, Alcoa operated the Jarrahdale mine, which closed in 1998 after supplying 168 million tonnes of bauxite to the Kwinana alumina refinery (Alcoa 1999, p.8).

Mining in the Jarrah Forest

The Darling Range Mines Project consists of the Huntly and Willowdale bauxite mines, the former being the largest producer of bauxite in the world (Grant and Gardner 2004, p.2). This mining occurs in the Jarrah forests, within Perth and regional water catchments (Grant and Gardner 2004, p.2). As Wayne Osborn of Alcoa noted in an address made at Parliament House, “mining in the world’s only Jarrah forest”, presents quite a “challenge” indeed (Osborn 2006c, p.2).

According to Grant and Gardner, the Jarrah forest is an area of great biodiversity, providing habitat for over 780 species (Grant and Gardner 2004, p.2). This forest is part of the South-Western Botanical District, which is recognised as one of the biodiversity hotspots of the world (Grant and Gardner 2004, p.2).

To access the bauxite underneath the Jarrah Forest, the forests are logged, the remaining vegetation is cleared and the soil is removed, before the cemented upper layer of bauxite is blasted with explosives (Grant and Gardner 2004, p.3). The richer deposits of bauxite can then be mined, removed and crushed before being taken to the alumina refinery (Grant and Gardner 2004, p.3).

Environmental impacts of bauxite mining in the Jarrah forest include contamination of ground water, loss of flora and fauna and the spread of Phytophthora dieback disease (Grant and Gardner 2004, p.4). Dieback is caused by a microscopic pathogen which rots the roots of a plant, depriving the plant of nutrients and water (Grant and Gardner 2004, p.4). Furthermore, with Alcoa’s operations lead to increasingly large sections of forest are cut down, salinity is caused by rising groundwater and erosion leads to increasing sedimentation of the water catchments (Multinational Monitor 1981, p.2).

Alumina Refining

Alcoa of Australia owns and operates the Kwinana, Pinjarra and Wagerup refineries. Alcoa takes 100 per cent of the production from these operations (United States Securities and Exchange Commission 2005, p.7). In total, 8,250,000 metric tonnes of alumina is produced by these facilities each year (United States Securities and Exchange Commission 2005, p.7). Managing director of Alcoa of Australia, Wayne Osborn, reports that “Production in Western Australia grew by 25 per cent in 2006 – to a total of \$A 4.6 billion” (Osborn 2006a, p.1). This is largely due to expansions of Alcoa’s alumina refineries. In 2006, the Pinjarra refinery increased in capacity by 17 per cent in 2006 (Alcoa 2006, p.17). As a result of this expansion, Pinjarra has become the largest Alumina refinery in the world (Osborn 2006a, p.1). In the same year, the WA Government endorsed the expansion of the Wagerup refinery, which will increase

capacity to 4.7 million metric tonnes per year (Alcoa 2006, p.17). Alcoa reports that in 2006, these operations produced 8.48 million tonnes of Alumina (Alcoa 2007a, p.1).

According to Wayne Osborn, the alumina produced from the West Australian refineries accounts for 13 per cent of total world production (Osborn 2006b, p.1). This represents just below half of Australia's total alumina production (Alcoa 2007a, p.1). The alumina produced by Alcoa is largely exported to Asia, particularly China (Osborn 2006b, p.1).

However, the process for producing alumina in Alcoa's West Australian refineries requires significant inputs. Bauxite mined within the Darling Range "is the lowest grade ore mined on a commercial scale anywhere in the world" (Grant and Gardner 2004, p.8). Therefore, "to yield one tonne of alumina, 3.5 tonnes of bauxite, 75kg of Caustic Soda, 50kg of lime, 2,500 litres of water and 13,000 mega joules of energy is required" (Alcoa 1999, p.13). Therefore, not only are significant resources required, however these refineries create large volumes of waste which must be disposed of. In particular, the creation of 'red mud' through this process is of great concern (Goodland 2005, p.17)(Multinational Monitor 1981, p.2). The alumina refining process is explained by Goodland:

"Refining hydrated aluminium hydrochloride (bauxite) into aluminium oxide (alumina...means dissolving the bauxite under high temperatures and pressures in concentrated sodium hydroxide. Insoluble impurities of bauxite ore are the filtered out as highly caustic sludge called 'red mud' (which has a pH higher than 13). After filtration, the remaining solution is clarified and precipitated out as crystals of aluminium oxide" (Goodland 2005, p.17).

This 'red mud' is discharged from the Kwinana refinery into nearby storage lakes (Multinational Monitor 1981, p.2). Native birds experience the great misfortune of mistaking these lakes for water; only realising the enormity of their mistake after they have already landed on the surface (Multinational Monitor 1981, p.2). The caustic substance is very difficult to prevent from leaking into groundwater, causing contamination (Multinational Monitor 1981, p.2). Each of the Kwinana, Pinjarra and Wagerup refineries has been responsible for the pollution of groundwater (Department of Industry and Resources 2002, p.27).

Disposal of the 'red mud' is very difficult, as it doesn't dry out (Goodland 2005, p.17). If the substance does seep into groundwater or aquifers, plants and animals can be poisoned downstream (Goodland 2005, p.17). The process of alumina refining also consumes significant volumes of energy (Goodland 2005, p.17).

Portland Aluminium Smelter

As reported by Alcoa, "Portland Aluminium is a joint venture project with partners Alcoa 55%, CITIC 22.5% and Marubeni 22.5% (Alcoa undated, p.1). The interest of the Japanese trading house Marubeni is significant. One of the notorious shogo shosha, in 1989 Marubeni was awarded the "Most Destructive to Tropical Forest Award" by Japanese environmental group JATAN (Kuroda 1997).

The alumina smelting process “consumes more energy than any other industrial process” (Goodland 2005, p.18). Electrolysis is used to split oxygen ions from aluminium oxide to create the aluminium (Goodland 2005, p.18). This process is “highly pollutive”, leading to the creation of 9 pollutants (gaseous hydrogen fluoride, fluoride particulates, alumina, carbon monoxide, volatile organics and sulfur dioxides)(Goodland 2005, p.18). The pollution caused by fluoride and polycyclic aromatic hydrocarbons are “especially damaging to human health in many aluminium smelters” (Goodland 2005, p.18).

Initially, the Portland smelter was challenged by Sandra Onus and Christina Frankland, two Guditj-Mara people, who were concerned that the project would damage Indigenous relics located on the proposed construction site (Lyons 1981, p.1). As mentioned by Lyons, Onus and Frankland appealed to the High Court, from a decision made in the Supreme Court of Victoria by Brooking J (Lyons 1981, p.1). The plaintiffs were seeking “to ensure continued access for Guditj-Mara people to land which by tradition was their ancestors’ and to preserve the relics and sacred sites on the land” (Lyons 1981, p.1).

The plaintiffs believed that Alcoa could possibly contravene section 21 of the Archaeological and Aboriginal Relics Preservation Act 1972 (Victoria), which considers either wilful or neglectful damage to a relic to be a criminal act (Lyons 1981, p.1). In ruling, Brooking J stated:

“[T]he fact (which I am willing to assume for present purposes) that the plaintiffs will have highly disagreeable thoughts and feelings, that their susceptibilities will be grievously offended if the defendant contravenes s.21 in relation to some relic situated on that land gives them no standing to prevent that contravention”(cited in Lyons 1981, p.1).

The appeal to the High Court was also unsuccessful and the aluminium smelter was constructed.

The Portland smelter consumes a significant percentage of the electricity generated by the Loy Yang B coal fired power station (Myer 2004, p.1). The energy consumption of the Portland smelter is substantial, with 14 kilowatt hours of energy used for each kilogram of aluminium produced (Alcoa 1999, p.20).

This energy usage is subsidised by the Victorian Government, with the State Electricity Commission of Victoria wiping \$120 million from Alcoa’s annual power bill (Myer 2004). As mentioned by Turton (2002, p.12), “the SECV supplies electricity to the Portland and Point Henry smelters under a flexible tariff contract established by the Cain Labor Government in 1984, running to 2014”. Referring to the Department of Treasury and Finance (1997, p.19) and the Victorian Auditor General’s Office (1999, section 7.67), Turton reports that “these arrangements” cost the State Government an estimated \$200 million each year in the late 1990s, with this amount reaching \$188 million in the 1998/99 financial year (Turton 2002, pp12-13).

According to Turton (2002, p.13), the Portland and Point Henry smelters “pay between \$13.50 and \$15.50 per MWH for electricity, which is approximately \$17.50 per MWH below the price that would be negotiated in a competitive market”. Former Victorian State Treasurer Alan Stockdale claimed that this “unfairly benefits Alcoa at the expense

of other business and household taxpayers in Victoria” (Stockdale 1995, p.2). That the SECV had been making such a significant loss on electricity sold to smelters operated at Alcoa for a fraction of the market rate indicates the company received significant subsidies for the use of power.

However, the Victorian Government has been subsidising this smelter even before it was operational. In his opening speech to Parliament in 1983, newly elected Member of Parliament David Hawker stated:

“Portland is a town under a cloud — a cloud of uncertainty. I refer to the partly finished Alcoa aluminium smelter. Alcoa has so far spent \$250m in building this smelter — a massive outlay — and it is less than half way. This outlay has been more than matched by the State Electricity Commission of Victoria (SECV) in building a huge power line to service this enormous project. But now all work has ceased at the site. Despite 17 months of negotiation it appears that no agreement can be reached between the Victorian Government and Alcoa on the price that Alcoa will pay for its electricity — 17 months of uncertainty that is sapping the confidence of the people of Portland. For the sake of the nation as well as for the sake of Portland, the Victorian Government can no longer deny Alcoa the opportunity to proceed.” (Hawker 1983, p.2).

This speech highlighted two key points. Firstly, the SECV paid enormous sums of money to construct a power line to provide energy to the Portland smelter. Secondly, Hawker highlights the pressure placed upon the Victorian Government to provide Alcoa with heavily subsidised electricity.

Negotiations are now underway between the Victorian Government and Alcoa concerning the proposed expansion of the Portland smelter (Myer 2004, p.1). As reported by Howarth and Hughes, “the new deal has to be good enough to entice Alcoa to spend the \$A600 million needed to expand the smelter, thus there would have to be subsidies of some kind” (Hughes and Howarth 2006, p.1).

Anglesea Power Station

Alcoa has operated a brown coal mine and power station at Anglesea since 1969 (Alcoa 2003, pp.2-12). The Mines (Aluminium Agreement) Act 1961 gave Alcoa the rights to explore and mine for coal (Alcoa 2003, p.12). This power station provides energy for the Point Henry aluminium smelter, supplying the smelter with 41 per cent of its energy requirements (Alcoa 2003, p.9). For this purpose, 1.1 million tonnes of brown coal is mined, crushed and burned each year (Alcoa 2003, p.9). Every hour, the boiler at the Anglesea power plant consumes 144 tonnes of brown coal (Alcoa 1999, p.19).

Profiting through Subsidised Power

In 2002, Turton reported that Alcoa was negotiating an agreement with the SECV, whereby the company would be able to on sell power that it receives at a drastically reduced rate, back into the grid “at periods of peak demand (and high prices)” (Turton 2002, p.13). The SECV and the Alcoa smelters would share the profits in this arrangement (Turton 2002, p.11). It is unclear what the current state of these negotiations

is, however Alcoa has profited through a similar scheme in the United States, as this paper will now explain.

To ensure that plants could continue to operate in rural areas, the big aluminium companies negotiated new contracts with the Bonneville Power Association, which would allow them “to sell excess power on the western electric grid at market prices” (United States Department of Commerce 1999, p.1). This decision was intended to ensure that employment could be sustained in rural areas. However, the effect was the opposite. As there was no requirement to keep their operations running, “the aluminium companies promptly idled their plants, sent thousands of workers home, and sold their subsidized power to California to capitalise on the skyrocketing rates” (United States Department of Commerce 1999, p.1).

Aluminium companies such as Alcoa made enormous profits through this exercise, where power was purchased for \$25 per megawatt hour and sold for \$200 and \$1,000 per megawatt hour (United States Department of Commerce 1999, p.1). In one year, Alcoa profited to the tune of \$210 million through this exercise (United States Department of Commerce 1999, p.1).

Alcoa in Suriname

Alcoa operate in Suriname through subsidiary Suralco (United States Securities and Exchange Commission 2005, p.6). Suralco is owned by Alcoa World Alumina and Chemicals, of which Alcoa has a 60 per cent interest (Business Wire 2003, p.1).

Bauxite Mining

Suralco (55 per cent) and BHP Billiton (45 per cent) operate the Lelydorp project and the Coermotibo project; while Suralco is also interested in the Kaimangrasi, Klaverbad, Bronsberg, Coermotibo DS, Lely Mountains and Nassau projects, which are not currently producing bauxite (United States Securities and Exchange Commission 2005, p.6).

Furthermore, Goodland reports that BHP and Suralco also own the substantial Bakhuy's concession, which is recognised as Suriname's biggest development project (Goodland 2006, p.4). A Memorandum of Understanding was signed by BHP Billiton, Suralco and the Surinamese Government in January 2003, for the companies to prospect for bauxite in the concession, which covers 278,000 hectares of primary forest (Goodland 2006, p.4).

The project is expected to be an environmental and social disaster. As Goodland mentions:

“The Bakhuy's bauxite mine is a classic case of asymmetric power. Unsustainable mining confronts sustainable traditional societies. Rich and powerful multinationals will impose potentially severe impacts on inexperienced, weak, largely illiterate and poor indigenous peoples” (Goodland 2005, p.4)

As stated by Goodland (2005, p.6), estimating the size and location of bauxite deposits has major environmental consequences. During the initial phase of this project, 330 km of roads and bridges were constructed through primary forest, to assist with the exploration process (Goodland 2006, p.4). BHP Billiton and Suralco failed to complete an Environmental and Social Impact Assessment, prior to initiating this process (Goodland 2006, p.4).

Between 2003 and 2005, over 7,700 boreholes were dug in the forest, ascertaining that the concession contained 307 million tonnes of ore (Goodland 2006, p.5). To enable mobile drilling rigs and all terrain vehicles to access the bauxite deposits, 1000 km of drill lines (paths for machinery) have also been cut through the forest (Goodland 2005, p.6).

Once the bauxite deposits have been located, the forest above these deposits is logged, with all vegetation removed (Goodland 2005, p.7). The problem is further compounded, as the mining companies would like the forest to be logged by the timber companies; however the most valuable trees are not found on the bauxite deposits (Goodland 2005, p.7). Nevertheless, the construction of such a vast network of roads into primary forest attracts the timber companies to the area, leaving the forest further exposed to exploitation (Goodland 2005, p.7). Once the forest has been cut down above the mining site, bulldozers remove the remaining vegetation, which leads to high levels of erosion (Goodland 2005, p.7).

A 24 hour rail and barge operation will transport bauxite from the Bakhuy's mine, with the rail running 75km to the port at Apoera (Goodland 2006, p.9). As mentioned by Goodland, "the impact of the proposed railroad on the Indigenous Zandlanding Trio is possibly the most worrying social impact of the Bakhuy's bauxite project" (Goodland 2006, p.9). According to Goodland, the rail (which is to be fenced on both sides) will sever the link between Zandlanding and Apoera, leading to the inevitable displacement of the Indigenous Peoples (Goodland 2006, pp.9-10).

Afobaka

Alcoa has a long history with hydroelectric projects in Suriname. In 1964 the Afobaka Dam was completed by Suralco, with a massive reservoir which drowned 1600 square km of what Goodland describes as "pristine tropical forest" (Goodland 2005, p.23). This dam was constructed on the Suriname River, with the specific purpose of providing power for the Suralco smelter in Paranam (Langeland 2001, p.1). This project inundated seven Maroon villages, forcing the displacement of about 6,000 people (Meredith 2005, p.2). The Maroons, who are descendents of escaped African slaves, were not given prior warning, while survivors received a paltry US\$3 in compensation (Langeland 2001, p.1)(Meredith 2005)(Mckay undated, p.1). As stated by Goodland, the maroon communities displaced by this project are now dysfunctional, despite 43 years elapsing since the commencement of the project (Goodland 2005, p.23).

No vegetation was removed prior to the inundation; the remaining vegetation has since started to decay, reducing oxygen levels in the water which has poisoned fish and led to the proliferation of water weeds (Goodland 2005, p.23). Nevertheless, Alcoa proudly state on their website that Suralco is participating in a venture to now remove the trees from the Van Blommestein Lake, created by the Afobaka dam (Alcoa 2004a, p.1). According to Alcoa, this activity will not encroach upon the primary forest in Suriname (Alcoa 2004a, p.1).

Alcoa is now proposing to divert flows from the Tapanahoni and Jai Kreek Rivers into the Surinamese River, in order increase the power provided by this dam (Goodland 2005, p.23). Critics such as Goodland claim that this diversion will lead to further displacement of Indigenous Peoples and maroons (Goodland 2005, p.22).

Kabalebo

The Kabalebo dam, which is to be situated adjacent to the Bakuys bauxite mine, is planned to power an aluminium smelter which will accompany this mine (Goodland 2005, pp.18-19). The size of this dam will be significant, with approximately 2,460 square km of land to be inundated as a result (Goodland 2005, p.20). This land is considered to be relatively intact rainforest; traditionally home to Indigenous Peoples dependent upon these forests (Goodland 2005, p.21).

Kabalebo will require the creation of three reservoirs; Corantijn-Lucie, Tjiger and Avanavero (Goodland 2005, p.21). Furthermore, the flow of the Kabalebo will be supplemented through the diversion of 89 per cent of the Upper Corantjin and Lucie Rivers (Goodland 2005, p.21).

Trees with a commercial value will be logged prior to inundation, however this does not account for the majority of biomass in the area (Goodland 2005, p.21). Alcoa claim that vegetation will be removed before the area is 'impounded', however this would undoubtedly be a massive undertaking over such a vast area (Goodland 2005, p.21). As with Afobaka, the vegetation that does remain will create problems in terms of water quality and methane emissions from rotting plant matter (Goodland 2005, p.21). However, the majority of organic matter occurring within tropical forests occurs in topsoil, mulch and litter (Goodland 2005, p.21).

Indigenous Captains of West Suriname

Referring to the company policies, principals and values preached by companies such as Alcoa and BHP Billiton, Weitzner states, "these look good on paper, but remain exercises in rhetoric and public relations if they fail to be implemented in practice" (Weitzner 2007, p.70). According to Weitzner, BHP and Alcoa have failed to meet their own commitments to Corporate Social Responsibility and human rights (Weitzner 2007, p.70).

Weitzner refers to an exchange where Indigenous Captains of Western Suriname wrote a letter, addressed to Alcoa and BHP, where they cited BHP's 2005 policy to respect "traditional rights of Indigenous Peoples" (Weitzner 2007, pp.48-49). The Captains called on the companies to join them in the negotiation "of a protocol on traditional rights as well as consultation and consent procedures" (Weitzner 2007, pp.48-49). However, the response received by the Captains claimed that until the rights of Indigenous Peoples in Suriname were recognised by law, recognition of these rights by BHP Billiton and Alcoa "would be premature" (Weitzner 2007, pp.48-49).

Gold Mining

Alcoa World Alumina LLC has formed a partnership with Newmont, where the latter will explore for gold on concessions held by Alcoa (Business Wire 2004, p.1). Exploration will take place on the Witlage and Merian exploration concessions, which cover 65,000 hectares (Business Wire 2004, p.1).

Alcoa in Brazil

Overview of Aluminium Production

Aluminium production commenced in the Amazonian region in the late 1970s (Marcondes 1999, p.1). Alumar (54 per cent controlled by Alcoa), Alunorte and Albras dominate the aluminium industry in Brazil (Marcondes 1999, p.1).

As in Australia, Alcoa enjoys significant subsidies care of the Government. For example, in 1997 State owned utility Electronorte subsidised Alcoa subsidiary Alumar "to the tune of US\$200 million" (Turton 2002, p.40). Furthermore, the introduction of the 'Kandir Law', introduced with the intended of stimulating exports, has reduced the amount of taxes paid by Alumar to the State of Maranhao from \$22 million to \$5 million (Marcondes 1999, p.1).

Alcoa has substantial interests in bauxite mines, alumina refineries, aluminium smelters and hydroelectric projects, all situated within Amazonia.

Subsidiaries

Alcoa is interested in the following companies involved in bauxite mining, aluminium refining and aluminium production in Brazil:

Alcoa Aluminio, Abalco SA, Alcoa World Alumina LLC (AWA LLC), Mineracao Rio Do Norte (MRN), Alumar.

Alcoa Aluminio is wholly owned by Alcoa. Prior to August 2003, Alcoa Aluminio had been 59.1% owned by Alcoa, with 40.9% controlled by Camargo Correa SA (United States Securities and Exchange Commission 2005, p.7). This shareholding was acquired

by Alcoa, which now controls 100 per cent of the company (United States Securities and Exchange Commission 2005, p.7). Abalco and AWA LLC are both part of the AWAC group of companies, of which Alcoa has a 60 per cent interest and Alumina Limited (formerly WMC) has a 40 per cent interest (United States Securities and Exchange Commission 2005, p.7).

Alcoa is interested in MRN through Abalco (4.6 per cent), Alcoa Aluminio (8.6 per cent) and AWA LLC (5.0%)(United States Securities and Exchange Commission 2005, p.7). Together with these companies, MRN is jointly owned with the Brazilian Government through Mineracao Rio Norte (46%), affiliates of Alcan Inc (12%), Companhia Brasileira de Aluminio, Companhia Vale de Rio Doce, BHP Billiton (14.8%) and Norsk Hydro (United States Securities and Exchange Commission 2005, p.7)(de Paula 2006, pp.3-4). MRN is based on the Trombetas River in Amazonia (World Commission on Dams 2000, p.104).

Alumar is a joint venture between Abalco (18.9 per cent), Alcan (10 per cent), Alcoa Aluminio (35.1 per cent) and BHP Billiton (36 per cent)(United States Securities and Exchange Commission 2005, p.7).

Pocos de Caldas

Alcoa Aluminio holds 100 per cent stake in the Pocos de Caldas bauxite mine, with the lease set to expire in 2020 (United States Securities and Exchange Commission 2005, p.6). According to Brazilian Mineral Legislation, the concession will hold until the deposit has been completely exhausted (United States Securities and Exchange Commission 2005, p.6).

Trombetas

Mineracao Rio Do Norte SA (MRN) has a 100% stake in the Trombetas bauxite mine, which is leased until 2046 and is expected to be mined until this time (United States Securities and Exchange Commission 2005, p.6). There is the option of extending this lease (United States Securities and Exchange Commission 2005, p.6). Abalco SA, Alcoa Aluminio and AWA LLC all purchase bauxite from MRN under long term supply contracts (United States Securities and Exchange Commission 2005, p.6).

The licensing of this mine was delayed for a time (Draffan undated, p.1). Communities in the Trombetas basin expressed concern, as ten dams would be constructed to support a hydroelectric plant; which would in turn provide energy for the mine (Draffan undated, p.1). Furthermore, Draffan mentions that “the head of Brazilian environmental agency IBAMA was fired after her refusal to allow Alcoa to clearcut part of the Saraca-Taquera National Forest, where the mine is (now) located” (Draffan undated, p.1).

Juruti

The Juruti bauxite mine is owned by Alcoa Aluminio, located in the Para State in North Brazil (Reuters 2004, p.1). It is estimated that Juruti has bauxite reserves of 350 million

tonnes, with the capacity to produce up to 6 million tonnes of bauxite annually (Reuters 2004 p.1). Juruti would supply the expanding Alumar alumina refinery and smelter complex in the Maranhao State (Reuters 2004, p.1). Alumar is a joint venture between Alcoa, BHP Billiton and Alcan (Reuters 2004, p.1). Alcoa's investments in the Juruti mine will cost \$300 million (de Paula 2006, p.4).

The Juruti project also consists of a port located on the Amazon River and a railway (Alcoa 2006, p.11). The bauxite which is to supply the Juruti mine lies underneath 8,000 hectares of forest, which will be cut down so this bauxite can be mined (Reuters 2004, p.1). This has angered local communities (Reuters 2004, p.1).

The Juruti project was criticised further by the Sema and Para State's Public Ministry, after an outbreak of Hepatitis A was connected with water pollution caused by the mine (Ewing 2007, p.1)(Reuters 2007, p.1). This is despite the fact that the mine is only 38 per cent complete and not expected to commence production until midway through 2008 (Alcoa 2006, p.11)(Reuters 2007, p.1).

Alumar

The Alumar facility, situated in Sao Luis, is jointly owned by Abalco (18.9 per cent), Alcan (10 per cent), Alcoa Alumínio (35.1 per cent) and BHP Billiton (36 per cent)(United States Securities and Exchange Commission 2005, p.7). The Alumar facility produces refined alumina and primary aluminium. Commencing operations in 1984, \$1.7 billion has been invested in the Alumar facility (de Paula 2006, p.3).

The Alumar refinery is supplied with bauxite from the Trombetas mine (de Paula 2006, p.3). Furthermore, the Juruti bauxite mine will provide Alumar with bauxite (de Paula 2006, p.4). Bauxite from MRN also provides raw material for the Alumar refinery (de Paula 2006, p.4).

In 2005, Alcoa announced a \$1.6 billion expansion of Brazilian operations, which include the expansion of the Alumar refinery (United States Securities and Exchange Commission 2005, p.8). The capacity of this refinery will increase from 1.4 million tonnes per year to 3.5 million tonnes per year (United States Securities and Exchange Commission 2005, p.7)(Alcoa 2006, p.10). It is estimated that \$1.1 billion is being invested in the expansion of this refinery (de Paula 2006, p.3).

Pocos de Caldas

The Pocos de Caldas alumina refinery is wholly owned by Alcoa Alumínio (United States Securities and Exchange Commission 2005, p.7). This refinery is supplied with bauxite from the Pocos de Caldas mine (United States Securities and Exchange Commission 2005, p.7).

Alumar

Part of the Alumar facility, the Alumar aluminium smelter is controlled by Alcoa Aluminio (54 per cent) and BHP Billiton (46 per cent)(United States Securities and Exchange Commission 2005, p.8). This smelter has a capacity of 376 kt/year, however this will rise by 63 kt/year following investment of \$130 million by Alcoa Aluminio (de Paula 2006, p.4). Following this expansion, Alcoa Aluminio's share in the smelter will increase to 60 per cent (United States Securities and Exchange Commission 2005, p.8). This smelter is provided with power by Electronorte (United States Securities and Exchange Commission 2005, pp.10-12)

Pocos de Caldas

The Pocos de Caldas aluminium smelter is wholly owned by Alcoa Aluminio (United States Securities and Exchange Commission 2005, p.8).

Barra Grande

The 708MW Barra Grande hydroelectric plant has been constructed in Southern Brazil, providing power for the Pocos de Caldas smelter (United States Securities and Exchange Commission 2005, pp.10-12). This plant was built by Energetica Barra Grande S.A., which is 42 per cent owned by Alcoa Aluminio (United States Securities and Exchange Commission 2005, pp.10-12). This project cost \$400 million, and is located on the Pelotas River in the southern state of Rio Grande do Sul (Coughlin 2007, p.1).

As reported by Coughlin, "only after 80% of the Barra Grande Dam had been built was it discovered that the original Environmental Impact Assessment (EIA) was fraudulent" (Coughlin 2007, p.1). The initial Environmental Impact Assessment submitted to support the project, claimed that the 92,000 sq km of land that was to be flooded was degraded land "without significant environmental value" (Coughlin 2007, p.1). Energetica Barra Grande S.A conducted a second EIA which found that "roughly 50% of the land to be flooded was actually primary Atlantic Coastal forest (Mata Atlântica) or secondary forest in recovery" Coughlin 2007, p.1). Furthermore, this area contained large stands of the native pine tree Araucária, a protected species in Brazil (Coughlin 2007, p.1).

Eventually, approval for this project was granted in 2005 (Coughlin 2007, p.2).

Machadinho

Alcoa Aluminio joined a partnership in 1995 to construct the 1,140 Machadinho hydroelectric plant, located in Southern Brazil (Langeland 2001, p.4)(United States Securities and Exchange Commission 2005, pp.10-12). This project has forced the displacement of 9,000 people (Langeland 2001, p.4). Over 30 square miles (7,700 hectares) of forested land has been flooded as a result of this project, which is believed to be supported financially by the World Bank (Langeland 2001, p.4).

Tucuruí

The Tucuruí hydroelectric project is constructed across the Tocantins River and has been constructed to provide electricity for the aluminium industry (Marcondes 1999, p.2). More specifically, this dam was built to supply the massive Greater Carajas program, including the Alumar facility (Feeney 1991, p.1). Greater Carajas was financed by the World Bank (World Commission on Dams 2000, p.104).

The fourth largest dam in the world, the dam itself is two miles wide (Secrett 1988, p.2). Tucuruí has submerged an area of 250,000 hectares of rainforest (World Commission on Dams 2000, p.97). It is estimated that several million animals were drowned as a result of this flooding (Secrett 1988, p.3).

The construction of this project forced the relocation of an estimated 20,000 families (Marcondes 1999, p.2). In particular, the dam directly affected the Indigenous Parakana and Gavião de Montanha, who lost their land as a result (World Commission on Dams 2000, p.92)(Feeney 1991, p.2). One of the Parakana tribes whose land was flooded were moved to Marudgewara, which is over 100 miles from their home (Secrett 1988, p.3).

As stated by the World Commission on Dams, “the negative impact of Electronorte’s actions on Indigenous communities living in the affected areas is beyond calculation” (World Commission on Dams 2000, p.94). One of the settlement towns established to house displaced people is called Repartimento (Secrett 1988, p.1). Secrett describes this town as “little more than a refugee camp”, where there are no jobs and malaria, dysentery and pneumonia “are rife” (Secrett 1988, p.1). The communities concerned have since experienced the disintegration of their culture, losing “a sense of rootedness” (Marcondes 1999, p.2).

In 1991, 250 people occupied the offices of Electronorte (the State owned company that constructed the dam), protesting against the companies inability to quell a mosquito plague, which created “intolerable” living conditions for the 8,000 people living on the shores of the Tucuruí reservoir (Feeney 1991, p.3). The plague was found to be attributable to environmental factors caused by the dam, such as erosion and the proliferation of water plants (Feeney 1991, p.2).

Despite the magnitude of this project, power is essentially generated to support the mining and metallurgical industries; in particular the aluminium industry (World Commission on Dams 2000, p.109). Inexplicably, the dam has failed to provide energy for local communities (World Commission on Dams 2000, p.101). Of the total power produced by Tucuruí in 1991, Alumar consumed 32 per cent (5573.4 Gwh)(World Commission on Dams 2000, p.102).

Hydroelectric projects in the works

Alcoa is interested in the following hydroelectric projects which are yet to be completed:

***Belo Monte Plant - 11,182 MW:** This plant is predicted to be the largest in Brazil, and will be located on the Xingu River in Para State (Amazonia)(de S. Paula 2004, p.1).*

***Pai Quere – 292 MW:** Located in Southern Brazil, this plant is 35 per cent owned by Alcoa Aluminio, and will provide energy for operations in which Aluminio has an interest (United States Securities and Exchange Commission 2005, pp.10-12).*

***Estreito – 1,087 MW:** Estreito is found in Northern Brazil and is 19.08 per cent controlled by Alcoa Aluminio (United States Securities and Exchange Commission 2005, pp.10-12).*

***Serra do Facao – 210 MW:** Alcoa Aluminio has a 39.74 per cent interest in this project, which is found in Southeast Brazil (United States Securities and Exchange Commission 2005, pp.10-12).*

Alcoa and Iceland

Karahnjukar Dam

The Karahnjukar dam has been constructed to power Alcoa's Fjardaal smelter (De Muth 2003, p.1). Flooding large sections of Iceland's most pristine wilderness, the project is estimated to have cost \$1.4 billion (De Muth 2003, p.1)(Lynas 2004, p.12). Construction of the dam has been paid for by Landsvirkjun, which is partly owned by the Government of Iceland (De Muth 2003, p.1). The face of the dam is 190 metres high and 780 metres wide, creating the huge Kalslon Reservoir that will cover 57 square km (De Muth 2003, p.1). Two glacial rivers will be dammed as a result of the project (Associated Press 2006, p.1).

The Environmental News Service refers to WWF, who claim that the dam will negatively impact upon 3,000 kilometres of Iceland's wilderness area (Environmental News Service 2002, p.1). WWF claim that the dam will cause the flooding at 500 nesting sites for the rare pink footed goose (The Independent 2003, p.1). The dam will also destroy the "staging areas for tens of thousands of barnacle and greylag geese that stop off in Iceland en route to Britain from Greenland" (Meredith 2005, p.1).

Lynas refers to the Environmental Impact Assessment report which accompanied this project, which found that researchers had identified 280 species of small animals, as well as two previously undiscovered species of insect (Lynas 2004, p.7). The project will submerge unique geological features, have a significant impact on fish populations and also cause substantial erosion problems (Lynas 2004). According to Lynas, "Karahnjukar's impact on wildlife could be so negative that Birdlife International, WWF and several other groups are campaigning for a case to be opened against Iceland under the Bern Convention on the Conservation of European Wildlife and Natural Habitats" (Lynas 2004, p.8).

Alcoa has negotiated a contract to purchase electricity from this project for 50 years (De Muth 2003, p.1). Meanwhile, Corporate Watch report that “not a single kilowatt of energy produced by the dams will go for domestic use” (Corporate Watch 2005, p.1). It is not clear how much money Alcoa is paying for this power, however De Muth reports that Alcoa is shutting down two smelters in the United States and relocating operations to Iceland to take advantage of cheaper production costs (De Muth 2003, p.1). The United States Securities and Exchange Commission (2005, pp.10-12) describes the energy provided to Alcoa by this project as being “competitively priced”. As exclaimed by Peter Bosshard, author of ‘Karahnjúkar: a project on thin ice’, “It’s crazy to start destroying large tracts of wilderness just for cheaper aluminium” (Lynas 2004, p.11). As stated by Lynas:

“One Icelandic economist has calculated that rather than being profitable the scheme will instead lose around \$36m a year. In essence, the government of Iceland may find itself using taxpayers' money to indirectly subsidise aluminium production by a foreign multinational while destroying its own backyard in the process” (Lynas 2004, p.12).

Fjardaal Smelter

Alcoa’s Fjardaal smelter is one of the most controversial projects that the corporation has been associated with. The \$1.1 billion facility is located in East Iceland and will have a production capacity of 322,000 metric tonnes of aluminium per year (Alcoa 2004b, p.1).

This smelter will emit large volumes of sulfur dioxide, however the Icelandic Government has permitted Alcoa to expel 12 kilograms of the gas into the atmosphere for every tonne of aluminium that is produced (De Muth 2003, p.1). This drastically exceeds the expectations of the World Bank, which demands modern smelters limit their sulfur dioxide emissions to 1 kilogram per tonne of aluminium (De Muth 2003, p.1).

Jobs for the Community

The Iceland Government claims that this project will provide 1,000 permanent jobs (Lynas 2004, p.12). However, as Lynas point out, with over \$2.5 billion invested in this project, that amounts to \$2.5 million spent on the creation of each job (Lynas 2004, p.12).

Alcoa in Jamaica

Alcoa Minerals of Jamaica LLC (part of the AWAC group of companies) has substantial interests in bauxite mining and alumina refining within Jamaica (United States Securities and Exchange Commission 2005, p.6)

Bauxite Mining

Alcoa Minerals of Jamaica LLC have a 50 per cent interest in the Clarendon/Manchester bauxite mine, situated in the Mocho Mountains of Jamaica (United States Securities and Exchange Commission 2005, p.6). This mine commenced operations in the late 1960s,

with the mining lease set to expire in 2042 (Ruud 2002, p.131)(United States Securities and Exchange Commission 2005, p.6).

Since 2004, Alcoa has been searching for bauxite in the region known as Cockpit County (ENS 2006, p.2). The prospecting license was granted to the company without any consultation with the public (Brooks 2006, p.2). Stretching across 173 square miles, Cockpit County is the largest wet limestone forest remaining in Jamaica (Environmental News Service 2006, p.1). Furthermore, Cockpit County is of great ecological significance, with over 101 plant species endemic to this region (Environmental News Service 2006, p.2). The Black Billed Parrot, the Yellow Billed Parrot, the Ring Tailed Pigeon all live within this area, and are all classified as being at risk (Environmental News Service 2006, p.1). The endangered Jamaican Yellow Boa is also found in Cockpit County; as is the Giant Swallowtail Butterfly, which is endemic to the area (Walker 2006, p.8).

Agriculturalist Fernandez 'Bingy' Smith, claims that many plants found within this area are rich in medicinal values (Hines 2006, p.2). Moreover, Smith states that 33 per cent of Jamaica's fresh water is provided by Cockpit County (Hines 2006, p.3). The significance of the area is recognised by environmentalists in Jamaica, who have argued that Cockpit County should be recognised as a World Heritage Area (Walker 2006, p.4).

Alumina Refinery

The Clarendon/Manchester mine provides bauxite for an alumina refinery which is owned and operated by Jamalco (United States Securities and Exchange Commission 2005, p.7). Alcoa Minerals of Jamaica LLC and Clarendon Alumina Production Ltd both have a 50 per cent interest in Jamalco (United States Securities and Exchange Commission 2005, p.7). Clarendon Alumina Production Ltd is wholly owned by the Jamaican Government (United States Securities and Exchange Commission 2005, p.7).

Expansion of this refinery was approved by the Alcoa board of directors in 2005, doubling the capacity of the refinery to 2.8 million metric tonnes per year (United States Securities and Exchange Commission 2005, p.7). When complete, this expansion will increase Alcoa Minerals of Jamaica LLC's interest in the project to 77 per cent (United States Securities and Exchange Commission 2005, p.77). Given this refinery is undergoing such a substantial expansion, it is clear that Jamalco anticipate that bauxite will be mined within Cockpit County.

Alcoa does not operate a smelter in Jamaica. Instead, alumina produced at the Jamalco refinery is largely exported to Alcoa facilities in Canada (ENS 2006, p.3).

Alcoa in Trinidad and Tobago

In February of 2006, the Government of the Republic of Trinidad and Tobago and Alcoa signed an Agreement in Principle for Alcoa to construct a smelter in Cape de Ville (United States Securities and Exchange Commission 2005, p.8). Costing US\$1.5 billion,

the project will include an aluminium smelter, an anode plant and a cast house (Fernandes 2006, p.1).

According to Reynolds, Alcoa's decision to shift aluminium production from Europe and North America to locations such as Trinidad is based upon cheaper and more accessible energy (Reynolds 2006, p.2).

With a production capacity of 341,000 metric tonnes of aluminium per year, this smelter is expected to consume between 4 to 6 per cent of Trinidad's entire gas reserves over a lifespan of 30 years (Meredith 2005, p.1)(Fernandes 2006, p.1). Alcoa estimates the gas to be used by this smelter will be in the vicinity of 26 to 32 trillion cubic feet (Meredith 2005, p.1).

The power that will be required by this smelter (570 MW), constitutes nearly half the power currently provided by the national grid (Meredith 2005, p.1). Over 1,500 acres of forest land will have to be logged in preparation for the smelter site (Meredith 2005, p.1).

In July of 2006, Alcoa selected Bechtel as the "primary partner in conducting feasibility studies for the smelter (Fernandes 2006, p.3).

Fernandes (2006, p.1) estimates that 20,000 local residents would have been directly affected by this smelter. Following protests by residents, farmers and fisherman, the Government "pulled the plug" on the Cape de Ville aluminium smelter (Reuters 2006, p.1)(Reynolds 2006).

However, the aluminium smelter is not being scrapped altogether, only moved to the planned Otaheite Bank Industrial Park (Reuters 2006, p.1). This has created fresh concerns about the plight of the fishing industry in that region (Reuters 2006, p.1). Suresh Seepersad of the Otaheite Fisherman's Association confirms that the new proposed location of the smelter will be challenged, stating "as fisherman and residents in the area, we will be ready to die for this cause" (Reuters 2006, p.1).

Sweatshops in Central America

Honduras

Alcoa operates three sweatshops in Honduras, all located within the ZIP Porvenir Export Processing Zone (National Labour Committee 2005, p.1). Due to this location, Alcoa are "exempt from all income, provincial and municipal taxes, as well as import and export duties" (National Labour Committee 2005, p.1).

In total, it is estimated that these plants employ 2,900 workers, with the two largest plants employing 1,300 workers each, and a third plant employing 300 people (National Labour Committee 2005, p.1). These workers receive US\$0.68 per hour, amounting to \$30.10 each week (National Labour Committee 2005, p.1). The workers are not supported by a Union; rather, they are clearly told that they don't have the right to organise collectively (National Labour Committee 2005, p.2). Furthermore, women who have been recently employed to work at the Alcoa plants "must submit to a mandatory pregnancy test after

their first two months, at which point, if they test positive, they are fired” (National Labour Committee 2005, p.1).

Mexico

Alcoa Fujikura Ltd. operates a number of sweatshops in Mexico, “just a few hundred yards” from the United States border (Kernaghan 2002, p.3). The sweatshops are considered to be quite high tech; however the working conditions are deplorable (Kernaghan 2002, p.3).

In the cities of Acuna and Piedras Negras, Alcoa operates 13 factories which employ 15,600 workers (Kernaghan 2002, p.3). The 11 factories in Acuna employ 11,000 workers, while there are two factories in Piedras Negras employ 4,600 workers (Kernaghan 2002, p.8). Earning a base wage of \$1.20 per hour, the workers assemble automotive electrical systems which are then exported to car manufacturers in the United States (Kernaghan 2002, p.3).

As in Honduras, the Alcoa operations do not incur any income tax, property tax, tax on assets, sales tax and there are no import or export tariffs (Kernaghan 2002, p.8). The plants in Acuna are found within the “Friendship Free Trade Zone”, owned by Roman Valdez, who unequivocally states that “I’ve always managed the situation so that there are zero unions” (Kernaghan 2002, p.9). Under these conditions, it can be ascertained that the “Friendship Free” aspect of this zone relates directly to Valdez.

The workers and their families exist in terrible conditions, living in tiny, dirt floored huts, without potable water, sewers or garbage collection (Kernaghan 2002, pp.5-6). Kernaghan reports that in Piedras Negras, “Alcoa workers must sell their blood twice a week in order to survive” (Kernaghan 2002, p.3).

In response to the poor conditions experienced by workers in Acuna, the workers organised in protest (Kernaghan 2002, p.3). However, this led to the firing of 236 workers, with 80 police called in to evict the workers, with the assistance of teargas, clubs, shields and weapons (Kernaghan 2005, p.5).

As stated by Kernaghan, the exploitation of poor, desperate communities is one of the more insidious aspects of corporate globalisation (Kernaghan 2002, p.3). Kernaghan argues that Alcoa pits workers in the US against workers in countries such as Mexico, “in a race to the bottom over who will accept the lowest wages and least benefits, the most miserable living and working conditions” (Kernaghan 2002, p.3).

Nicaragua

Kernaghan reports that Alcoa is in the process of constructing a factory in Nicaragua, where 5,000 workers will work for as little as US\$0.38 per hour (Kernaghan 2002, p.3).

Alcoa in Guinea

Of the world's known bauxite reserves, 30 per cent are found in Guinea (Samb 2007, p.1). AWA LLC (part of the AWAC group of companies) has a 45 per cent stake in Halco, which owns 51 per cent of Compagnie des Bauxites de Guinee (CBG)(United States Securities and Exchange Commission 2005, p.6). The Guinean Government owns the other 49 per cent of CBG (United States Securities and Exchange Commission 2005, p.6).

CBG has a 100 per cent interest in the Boke mine, which a lease set to expire in 2038. This lease covers an area of 10,000 square miles in North Western Guinea (United States Securities and Exchange Commission 2005, p.6). AWA LLC has a supply agreement with CBG that will ensure Alcoa is supplied with Bauxite from this mine until 2011 (United States Securities and Exchange Commission 2005, p.6). Alcoa operates the Boke mine, which produces between 13 and 14 million tonnes of bauxite annually, making CBG the world's largest exporter of bauxite (Vaccaro 2007, p.2)(Northern Miner 2007, p.1).

Production at the mine ceased for a period in 2007, with Unions and striking workers calling for President Lansana Conte to be stood down from office (Northern Miner 2007, p.1). In the capital of Conakry, approximately 30,000 protestors participated in the week long strike which escalated when the military opened fire on unarmed people, killing 30 (Vaccaro 2007, p.1). Dr Ibrahima Fofana of the Guinean Workers Union met with President Conte during the first week of the strike (Dunkel 2007, p.3). According to Fofana, President Conte said during the meeting "I am considering having all of you killed. I have already killed, I am still capable of killing but I do not know when I am going to do it" (Dunkel 2007, p.3).

Alcan and AWA LLC have also initiated planning for an alumina refinery with a capacity of 1.5 million metric tonnes per year, signing a Basic Agreement with the Government of Guinea (United States Securities and Exchange Commission 2005, p.7)(Alcoa 2006, p.12).

Alcoa in Ghana

In January of 2005, Alcoa and the Government of the Republic of Ghana announced the signing of a Memorandum of Understanding, concerning the investigation of an integrated aluminium industry in Ghana (United States Securities and Exchange Commission 2005, p.7). This development would include bauxite mining, alumina refining, aluminium production, with rail transportation and infrastructure upgrades (United States Securities and Exchange Commission 2005, p.7).

In 2006, Asdiamah reported that information received by Public Agenda suggested that approval could be given to Alcoa to mine for bauxite in the Atewa forest reserve (2006, p.1). The Atewa Forest Reserve is considered to be one of the eight major biodiversity hotspots in Africa, providing habitat for many rare and unique species of flora and fauna

(Asdiamah 2006, p.2). Bauxite mining occurring within this area is likely to have very severe consequences (Asdiamah 2006, p.2).

At the request of Alcoa, Conservation International commissioned a team of 22 scientists to conduct a survey of the biodiversity of this region (Asdiamah 2006, p.1). As stated by Asdiamah, the purpose of the survey was to “determine the right technology to be used for future exploration” (2006, p.1). Nevertheless, the study found that the area was indeed rich in biodiversity, containing many species of “great significance (Asdiamah 2006, p.1). The research was presented in a report made public on December 6, 2007, which confirmed that discovery of significant populations of new, rare and threatened species” (Bruce 2007, p.1). Among the discoveries are “a critically endangered frog species (*Conraua derooi*) whose presence in Atewa may represent the last viable population in the world (Bruce 2007, p.1). Furthermore, 22 species of large mammals, six species of primates, 17 rare butterfly species, 6 bird species of global conservation concern (155 bird species in total) and nine species new to science (Bruce 2007, p.1).

Asdiamah notes, with some curiosity, that the “local and international scientists categorically failed to tell the Government not to allow mining in the reserve” (2006, p.1). This is of great interest, as Conservation International is the recipient of large amounts of funding from the Ford Foundation (ActivistCash 2001). The Ford Foundation has particularly strong links with Alcoa, with four directors of Alcoa also directors of the Ford Foundation (ActivistCash 2001).

However, the final report does call for this area to be given National Park status (Bruce 2007). Yet the report also calls for the development of a management plan including “economic development strategies compatible with conservation goals” (Bruce 2007, p.2). It remains to be seen whether or not Alcoa can achieve economic development through mining for bauxite in a biodiversity hotspot, while at the same time conserving the habitat of numerous species of plants and wildlife.

Alcoa in the United States

Throughout the past century, Alcoa has mined significant bauxite deposits in the United States; however the majority of the deposits are now exhausted (Ruud 2002, p.155). Therefore, the bauxite required to supply alumina refineries and aluminium smelters in the United States is sought from operations in Central and South America (Ruud 2002, p.155).

AWA LLC own and operate the Point Comfort alumina refinery in Texas (United States Securities and Exchange Commission 2005, p.7). Alcoa wholly owns smelters in Evansville, Badin, Massena West and Massena East, Alcoa, Rockdale and Wenatchee (United States Securities and Exchange Commission 2005, p.7). The Eastalco smelter in Frederick is 61% owned by Alcoa and 39% owned by Mitsui and Co. Ltd (United States Securities and Exchange Commission 2005, p.7). The Intalco smelter in Ferndale is 61%

owned by Alcoa and 39% owned by Mitsui and Co. Ltd (United States Securities and Exchange Commission 2005, p.7).

The power needs for these smelters is immense, with Alcoa Power Generating Inc (APGI) providing for 25 per cent of these requirements (United States Securities and Exchange Commission 2005, pp.10-12). To assist in power generation for smelters in Alcoa, Tennessee and Badin, APGI wholly owns and operates the Tapoco and Yadkin hydroelectric projects, which consist of 8 dams in total (United States Securities and Exchange Commission 2005, pp.10-12).

There is a long list of instances where Alcoa has been fined, breached environmental regulations or been required to pay large clean up bills in the United States. According to Langeland, over 47 Alcoa facilities have fallen foul of State and Federal environmental regulators since 1987 (2001, p.2). A list of some of these transgressions is compiled below.

Massena, New York:

In the early 1990s, Alcoa commenced a US\$50 million clean up operation at its Massena smelter, located in New York (Draffan undated, p.1). This was to take place over an 8 year period, including “the disposal of treated soil and sludge, landfill and lagoon closure, and the restoration of streams and wetlands” (Draffan undated, p.1).

Prior to the clean up, Alcoa was ordered to pay a criminal fine of US\$3.75 million for discharge violations in Massena, plus a US\$3.75 million civil penalty for this transgression (Langeland 2001, p.2).

Ohio River, Indiana:

Alcoa was charged with the illegal discharge of substantial amounts of inadequately treated wastewater directly into the Ohio River (Langeland 2001, p.2). In 2000, Alcoa agreed to a US\$8.8 million settlement with the Environmental Protection Agency (Langeland 2001, p.2).

Rockdale, Texas:

Alcoa operate an aluminium production facility in Rockdale, which is powered by a coal fired power plant (Environmental Protection Agency 2003, p.1). Following a settlement with the Environmental Protection Agency, Alcoa agreed to spend \$330 million to lessen the environmental impact of this power plant, which had been recognised as the country’s largest non utility emitter of nitrous oxide and sulfur dioxide (Environmental Protection Agency 2003, p.2).

The power plant powers a facility which also includes two aluminium smelters and a strip mining operation to provide fuel for the coal fired plant (Environmental Protection Agency 2003, p.2). The Rockdale power plant was due to be retired in the 1980s; however Alcoa spent \$63 million supposedly to lessen the environmental impact of this plant (Environmental Protection Agency 2003, p.2). The deceptively named “Betterment Project”, didn’t quite have the desired effect, as emissions produced by the plant

increased by 13,000 tonnes as a consequence (Environmental Protection Agency 2003, p.2).

As a part of this agreement, Alcoa will pay a civic penalty of \$1.5 million, \$2.5 million on projects to offset the impact of emissions, which includes the purchasing of conservation easements and the retrofitting of school buses in the area (Environmental Protection Agency 2003, p.3).

Port Allen, Louisiana:

Similar to the incident in Ohio River, Discovery Aluminas Inc., a subsidiary of Alcoa, agreed to pay over US\$1million in fines after pleading guilty to discharging untreated wastewater into waterways (Langeland 2001, p.1).

Illegal Shipments:

Alcoa was found to have illegally exported potassium fluoride and sodium fluoride from the United States to Jamaica and Suriname between 1991 and 1995 (United States Department of Commerce 1999, p.1). The company was found to have breached 100 violations of US export regulations concerning the shipment of potassium fluoride and sodium fluoride and was subsequently fined US\$750,000 by the Commerce Department's Under Secretary for Export Administration (United States Department of Commerce 1999, p.1).

Alaska

In 1952, Alcoa announced plans to construct an aluminium smelter and two power plants near Skagway, close to the Canadian border (Time 1952, p.1). At the time, the US\$400 million cost of the facility was the largest investment to be made at the one site by US private industry (Time 1952, p.1).

To support the facility, Alcoa constructed a dam across the Yukon River deep in Yukon Territory, requiring the tunnelling of 21 miles through mountains and “under the fabled Chilkoot Pass to bring the water down through penstocks to the turbines” (Time 1952, p.1).

Alcoa and the US Military

2007

Business Wire (2007.49, p.1) reports that Alcoa has received a contract from **U.S. Army TACOM Life Cycle Management Command (LCMC)** “to supply a need for aluminum armor plate to support the new MRAP armored vehicle program”. The contract is worth \$31.7 million (Business Wire 2007.49, p.1).

Infamous defence contractor, **Lockheed Martin**, awarded Alcoa a \$360 million contract for the supply of parts for stealth fighter jets, known as the Joint Strike Fighter (Lovering 2007, p.1). Alcoa will provide alloy aluminium die forgings to assist with the project (Lovering 2007, p.1). **RMIT University** are involved in the Joint Strike Fighter project,

with students from the Melbourne University working in India to design and manufacture the GE Rolls Royce F136 fighter engine (RMIT University 2007, p.1).

Furthermore, **Lockheed Martin** has invited Alcoa to work on the development of “light military trucks known as the Joint Light Tactical Vehicle” (Alcoa 2007c, p.1). According to Alcoa, these vehicles are being developed for the US Army and the US Marine Corps and are “designed to carry mission payloads, survive multiple threats and still remain readily transportable by heavy lift helicopters and cargo aircraft” (Alcoa 2007c, p.1).

Alcoa also report that the company has been awarded a contract from **Lockheed Martin** to provide fasteners and advanced installation systems for military aircraft until 2010 (Alcoa 2005b, p.112).

In 2007, the **Pentagon** announced that Alcoa had been awarded an US\$8.3 million contract, as part of the **US Navy’s Littoral Combat Ship Program** (Cavas 2007, p.1). Alcoa will “provide engineering services in support of the redesign of existing aluminium structures” (Cavas 2007, p.1). Interestingly, Cavas mentions that the money was not requested by the US Navy, yet was still awarded by **Congress** (Cavas 2007, p.2). According to Alcoa spokesperson Kevin Lowery, Alcoa has a “burgeoning defence element” to the company (Cavas 2007, p.1).

The Littoral Combat Ships are being built by Austal Ltd, a Western Australian Company (Cavas 2007, p.1). Lockheed Martin has also had a substantial involvement in this project (Cavas 2007, p.2).

The **Naval Surface Warfare Center’s Carderock Division** awarded Alcoa a contract for design and engineering services, which will support US Navy vessels including the Littoral Combat Ship (Alcoa 2007b, p.1). In particular, Alcoa will be involved in the development of smaller vehicles capable of moving at fast speeds through shallow waters (Alcoa 2007b, p.1).

2006

Alcoa was also the recipient of \$1.3 million from the **United States House of Representatives** (Foundry Management and Technology 2006, p.1). This money was provided to support Alcoa’s production of titanium structural castings (Foundry Management and Technology 2006, p.1). As mentioned by US representative, Alcoa’s development of titanium in the use of military equipment improves the ability of the Armed Forces “to effectively respond to threats wherever in the world that they arise” (Foundry Management and Technology 2006, p.1).

2005

The **US Army** has also awarded a contract to Alcoa to supply aluminium plate for the Army’s Skyker Interim armoured combat vehicle and sheet plate for the High Mobility Multi Purpose Wheeled Vehicles (Alcoa 2005b, p.19).

Alcoa received a US\$12.5 million contract from the **US Army Tank-Automotive and Armaments Command** to “develop lightweight aluminium structures for military ground combat and tactical vehicles” (Business Wire 2005, p.1). This contract follows up the \$1.2 million provided to Alcoa by the **US Army** in 2004, and it a part of Alcoa’s Army Lightweight Structures Initiative (Business Wire 2005, p.1).

2005

Alcoa has also signed a US\$30 million contract with **Klune Industries** to provide “aluminium structural castings for the **US Navy’s Tactical Tomahawk missile program**” (Alcoa 2005, p.19).

Pratt & Whitney, a division of **United Technologies Corporation**, award a contract to Alcoa Fastening Systems, where Alcoa will supply the “Weld-Stud Fastening System for the F119 engine nozzle assemble used on the F/A-22 Raptor fighter aircraft” (AZOM undated, p.1).

As mentioned by Hoerster and Boulet, “we are all aware of the cost to military and civilian lives if firepower is not the right position at the critical time” (Hoerster and Boulet 2004, p.22). The **M777 Howitzer** is a “self propelled or towable cannon artillery that can fire at both high and low angle trajectories” (Hoerster and Boulet 2004, p.22). Alcoa subsidiary, Alcoa Howmet Castings provide titanium castings for the production of the M777 howitzer, which is described as “the **US Army’s** new generation of medium force weapons” (Hoerster and Boulet 2004, p.24).

Alcoa and the Ford Foundation

According to Petras, The CIA uses foundations such as the Ford Foundation as a covert source of funding, who share a common interest in strengthening US hegemony (Petras 2001, p.1).

As stated by Petras, “from its very origins there was a close structural relation and interchange of personnel at the highest levels between the CIA and the Ford Foundation” (Petras 2001, p.3). Past Ford Foundation Presidents Richard Bissell, John McCloy, McGeorge Bundy and Franklin Thomas have all been closely associated with the CIA (Petras 2001, p.2)(Kifner 1996, p.2). McGeorge Bundy was the National Security Advisor to the Administration of John F. Kennedy (Kifner 1996, p.1). Bundy is reported to have said “nothing is more dangerous to peace than weakness in the ultimate deterrent strength of the United States” (Kifner 2006, p.6). Bundy was also a member of the notorious ‘Skull and Bones’ secret society (Kifner 2006, p.1).

Petras claims that the connections between officials of the Ford Foundation and the US administrations are “explicit and continuing” (Petras 2001, p.5). It is interesting to note, that former Chief Executive of Alcoa Paul O’Neill was appointed by George W. Bush as Treasury Secretary, following his election as President of the United States in 2000 (Vulliamy 2002, p.5). O’Neill was last seen “touring the globe” with Bono (Vulliamy 2002, p.5).

Franklin Thomas, a former President of the Ford Foundation and is currently a director of Alcoa (Business Week undated). However, fellow directors of Alcoa, Alain Belda, Kathryn Fuller, Ratan Tata are all trustees of the Ford Foundation, while Alcoa director Henry Schact is a board member of the Ford Foundation (ActivistCash.com 2001).

The power held by the Ford Foundation is quite significant, with the foundation recording a total of \$10,837,178,622 in assets in 2001 (ActivistCash.com 2001). Among the recipients of donations from the Ford Foundation is the World Wildlife Fund, who received \$3,925,000 between 1993 and 1999 (ActivistCash.com 2001).

The Mellon Family

Throughout much of the first half of the Twentieth Century, Andrew Mellon was one of the United States most influential figures. Mellon was a man of great wealth, owning large shares in the Aluminium Corporation of America (later to become known as Alcoa), the Mellon National Bank, Carborundum (which is now known as the Industrial Insulation Producer, Uni-frac), Koppers (producer of fuels), Gulf Oil and the Aluminium Corporation of America; later to become known as Alcoa (Sanders undated, p.1).

Andrew’s son, Paul Mellon held the high ranking position of Station Chief for the Office of Strategic Services in London and liaison to British Intelligence during World War II (Sanders undated, p.1). Sanders cites Lee and Schlain, who in their book *Acid Dreams*, stated that “after the war, certain influential members of the Mellon family maintained close ties with the CIA” (Sanders undated, p.1).

Furthermore, Lee and Schlain claim that the Mellon family foundations have “been used repeatedly as conduits for Agency funds” (Sanders undated, p.1). This leads to Richard Mellon Scaife, “the reclusive heir to the Mellon banking fortune” (Kirkpatrick 2007, p.1).

Richard Mellon Scaife is the great grand nephew of Andrew Mellon, who has made significant donations to conservative organisations for a period exceeding three decades (Jackson 1998, p.1). According to Kaiser and Chinoy of the Washington Post, Scaife’s philanthropy has had a “disproportionate impact on the rise of the right” in the United States (Kaiser and Chinoy 1999, p.2). Newt Gringrich, former whip for the United States House of Representatives claims that Scaife’s ideologically driven donations played a key role in the rise of modern conservatism (Jackson 1998, p.2).

Kaiser and Chinoy estimate that Scaife has given out a total of \$1.4 billion (figure adjusted for inflation), with approximately half of that money directed towards

conservative individuals and conservative institutions (Kaiser and Chinoy 1999, p.2). In 1972 Richard Mellon Scaife donated \$1 million to the presidential campaign of Richard Nixon (Jackson 1998, p.2).

Aizenman states that Scaife donated \$20 million to conservative think tanks in 1995 (Aizenman 1997, p.2). Recipients of these donations included The Heritage Foundation (over \$1.5 million), the American Enterprise Institute (\$465,000), the CATO Institute (\$100,000), the Manhattan Institute (\$125,000) and the Centre for Strategic and International Studies (\$485,000) (Aizenman 1997, p.2).

A good friend of Ronald Reagan, the Reagan administration included many people with strong connections to Scaife-funded think tanks (Jackson 1998, p.2)(Aizenman 1997, p.9). Furthermore, Scaife has poured substantial sums of money into campaigns against former President Bill Clinton and Presidential hopeful, Hillary Clinton. Recently, Scaife has spent over \$2million “investigating and publicising accusations about the supposed involvement of Hillary Clinton and former President Bill Clinton in corrupt land deals, sexual affairs, drug running and murder” (Kirkpatrick 2007, p.1).

Alcoa’s Involvement in World War II

Alcoa’s operations were massive during the Second World War, to the extent that the company operated a substantial fleet of ships used to transport bauxite from South America to the United States (Gorman 2006, p.24). Alcoa incurred substantial losses, with 8 ships and 13 bauxite carriers lost in this effort (Gorman 2006, p.24).

However, it is the aluminium that Alcoa did not provide for the United States military that has sparked the greatest controversy. In May of 1941, then Congressman Pierce stated that Alcoa had sabotaged the American war effort, costing the US “10,000 fighters or 1,655 bombers”, due to Alcoa’s attempt to protect their “monopolistic position” (Bugos 2001, pp.1-2).

George Seldes, in his 1943 book *Facts and Fascism*, claims that Alcoa was “largely responsible for the fact America did not have the aluminium with which to build airplanes before and after Pearl Harbour, while Germany had an unlimited supply” (cited in Bugos 2001, p.2). Seldes elaborates, writing that:

"Thurman Arnold, as assistant district attorney of the United States, his assistant, Norman Littell, and several Congressional investigations, have produced incontrovertible evidence that some of our biggest monopolies entered into secret agreements with the Nazi cartels and divided the world up among them...Most notorious of all was Alcoa" (cited in Bugos 2001, p.2).

Supporting this statement is former US Ambassador to Germany William Dodd, who in 1937 made the following comment about the likes of the Mellon Family:

"A clique of U.S. industrialists is hell-bent to bring a fascist state to supplant our democratic government and is working closely with the fascist regime in Germany. I have had plenty of

opportunity in Berlin to witness how close some of our American ruling families are to the Nazi regime. . . They extended aid to help Fascism occupy the seat of power, and they are helping to keep it there." (cited in Seldes 1943, p.122).

The relationship between Alcoa and German company IG Farben is of great significance. IG Farben was an extremely powerful company prior to and during World War II, providing much material support for the Third Reich throughout the duration of the war (Borkin and Welsh 1943, p.19). Alcoa and IG Farben signed the Alig Agreement in 1931, which "became the charter for the magnesium industry in the United States" (Borkin and Welsh 1943, pp.227-228). The two companies formed the Magnesium Development Company, which became a patent holding company for IG Farben, with many of these patents being transferred to the German company (Borkin and Welsh 1943, pp.227-228). Furthermore, during World War II, Alcoa and IG Farben negotiated a deal whereby Alcoa would make available much of its aluminium to IG Farben (Lederman 2000, p.1). Then Secretary of the Interior, Harold Ickes stated on the 26th of June, 1941, "If America loses this war, it can thank the Aluminium Company of America" (Lederman 2000, p.1).

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