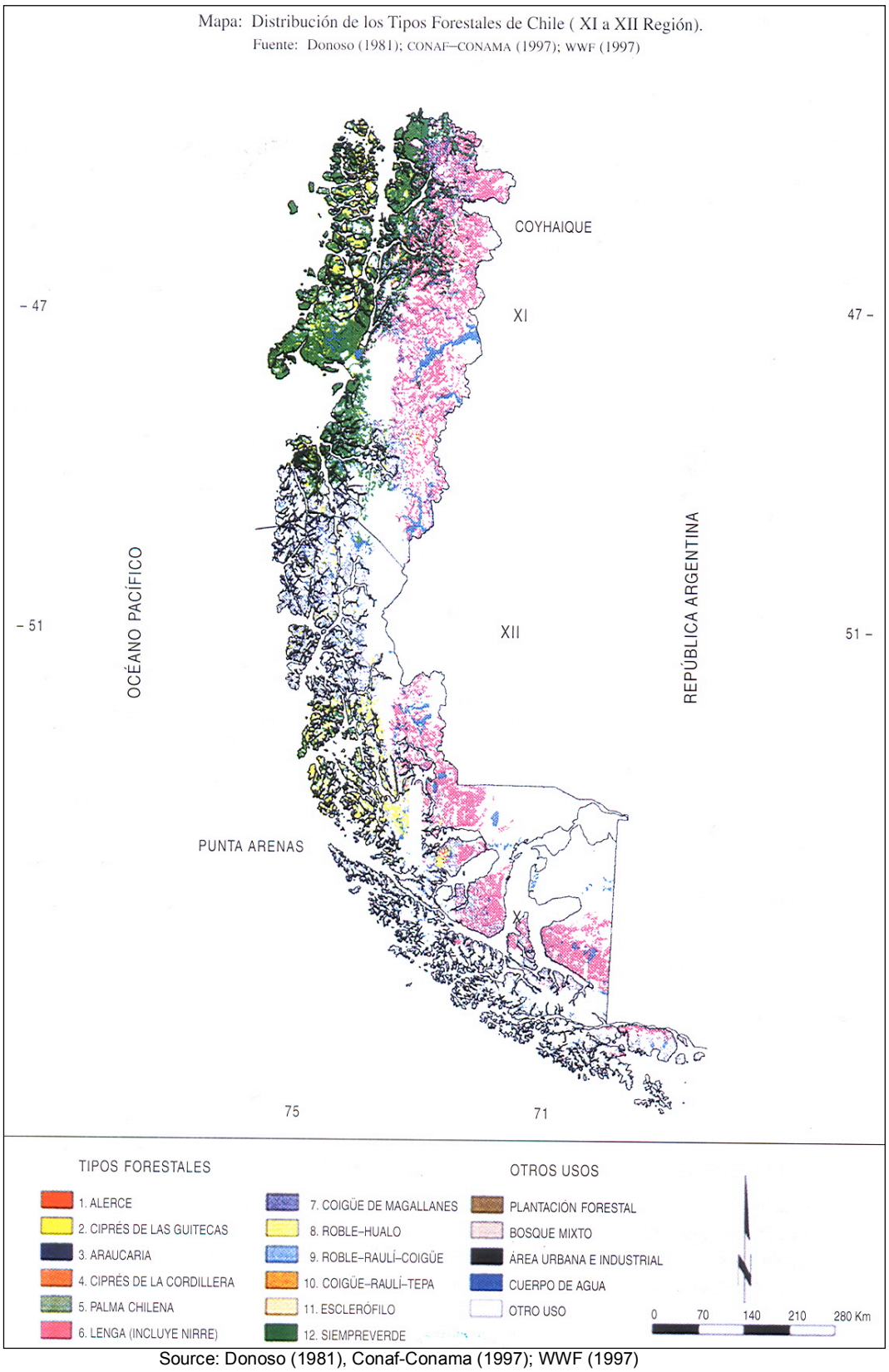
1. PATAGONIA AS A LIFE RESERVE



Source: Donoso (1981), Conaf-Conama (1997); WWF (1997)

The XI Region of Aysen, located in Chile's Central Patagonia (between the 44th and 49th parallels) was not colonized until 100 years ago, and this has helped to keep almost intact some characteristics that nowadays are rare in the world.

- It has a rainy, temperate, cold climate, with the highest rainfall in the country, in some areas reaching over 3,000 mm per year[1].

- It has a pristine ecosystem with flora and fauna native to the temperate forest.

- It is characterized by its clean skies and air.

- It has unpolluted lakes, rivers and glaciers, valued as reserves of fresh water for the planet.

- The population of the region is 86.700[2] inhabitants, with a density of only 0.8 inhabitants per km^2, which helps preserve the region's cultural values and typical traditions.

- These characteristics allow the development of sustainable activities, such as tourism, fishing, and farming/forestry, representing 10%, 17% and 10% respectively of the 1997 National Income and Product Accounts (NIPA)[3]. These are good development alternatives for its young people, considering that the regional NIPA only reaches 5% of the national NIPA.

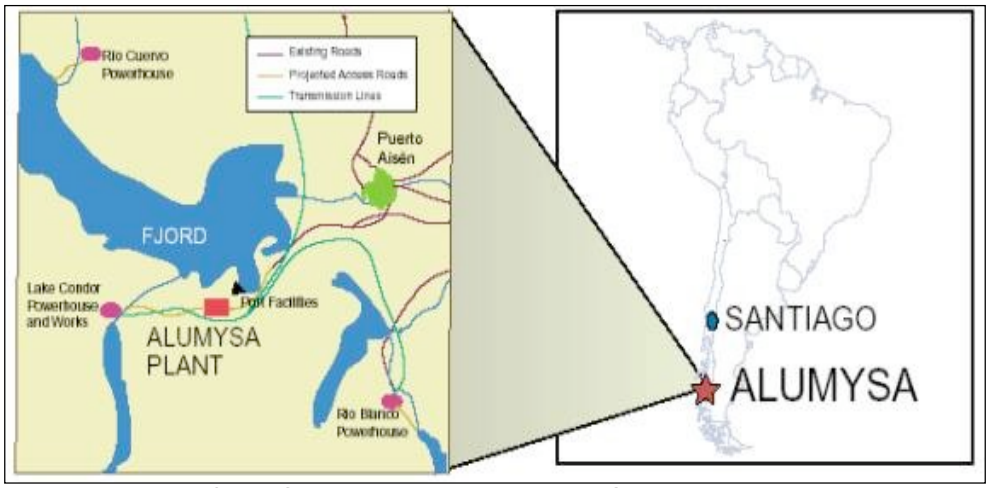
Aysen is one of the 13 regions of Chile with an area of over 11 million hectares (109,000 kms^2) of which 5 million are native forest, 1 million wet lands and 2 million ice-cap. It is the region with the most native forest in the country, of which 2 million hectares (23% of the total) are ancient[4].

Fiords or austral channels are characteristic of the area. These are glacial valleys dug by ice action over more than 10.000 years which were filled with salt water during the inter-glacial period. Therefore the islands are now surrounded by the sea. This channel zone is one of Chile's most valuable tourists resources, both for its scenic beauty and its pure atmosphere and ocean, and also for its pristine, unpolluted landscapes.

For this, the inhabitants have declared Aysén a "Life Reserve" and, with a high consensus, they managed to establish a regional development strategy that should be implemented in the near future.

[1] Cereceda & Errazuriz, 1991.
[2] Censo Poblacional, 2002.
[3] Banco Central de Chile, NIPA
[4] Catastro de Bosque Nativo, 1999.

2.THE ALUMYSA PROJECT, A THREAT TO PATAGONIA[5].



The Alumysa Project, of the Canadian multinational NORANDA, will reduce aluminum with raw materials from Australia, Jamaica and Brazil, using Aysén's hydric resources. Production is potentially for the international market, and will transform Chile into an aluminum producer. The investment is the biggest ever seen in Chile – US$ 2,750 – and the project includes the following:-

- A reducing plant located in Chacabuco Harbour, capable of producing 440.000 tons per year of aluminum ingots. Approximately 850.000 tons of alumina, 150.000 tons of coke and 43.500 tons of tar will be imported every year. Other raw materials are aluminum fluoride, #2 diesel and liquid gas.

- 3 hydroelectric stations:

1. Río Cuervo hydroelectric station of 434 MW will have two dams 66 and 71 mts. high which will flood 5.800 hectares. The water will return to the Aysen estuary leaving the Cuervo river practically without flow. In the Cuervo river area are two active volcanoes: Maca and Cai.
2. Lago Condor hydroelectric station of 44 MW will have three dams 45, 30 and 15 mts. high. 230 hectares will be flooded.
3. Río Blanco hydroelectric station of 280 MW will have one dam 116 mts. high flooding 3.550 hectares. The Claro lake will rise 13 mts. The active Hudson volcano is in this area.

- 80 kms. of 220 KV power cables with 40 mt. towers.

- 95 kms. of access roads for the main centres and the reducing plant.

- A port south-west of Chacabuco Harbour with a 185 mt. long mooring platform for ships of up to 45.000 ton.

- A pier and a floating dock to the west of the Cuervo river estuary.

3.IMPACT OF THE ALUMYSA PROJECT

[5] Basado en el Estudio de Impacto Ambiental, CH2MHILL, Agosto, 2001.

3.1 Ecosystem impacts: The construction of 6 dams will destroy or harm three large lakes (Yulton, Meullín and Caro) and several important streams and rivers. The biodiversity of the whole area will be severely affected although the Environmental Impact Study (EIS) has not yet estimated the full impact of the toxic compounds produced by the plant. Noranda's study puts the minimum area of direct impact at 10.400 hectares and denies any wider environmental damage.

3.2 Solid wastes and toxic gases: According to the EIS the Alumysa Project would generate the following massive and continuous (24 hours, 365 days per year) emissions of toxic gases (sedimentable particled fluorides), organic particled material (highly carcinogenic), greenhouse gases (CO2, perflurocarbons), acid rain sulfuric gases, carbon monoxide, particled material and others, which contribute to the greenhouse effect. Plus the massive storing of wastes charged with fluorides; enriched alumina, cyanide; sodium; arsenic; heavy metals; aluminum slag; metallic wastes; tyres; used oils; industrial lubricants; solvents; refrigerants; paint wastes; filters charged with organic particled material; and others, many of them in unspecified quantities. It is evident that the sheer amount of waste will make any effective treatment impossible to guarantee. For example, just the wastes generated by the recycling of worn cathodes will be almost 5.500 tons per year; aluminum ingot casting 4.800 tons per year; and anode cleaning 450 tons per year. Besides every day Alumysa will import more than a million tons of raw materials from Brazil, Jamaica and Australia for refining the aluminum and for the production and recycling of anodes and cathodes.

The Environmental Impact Study (EIS) of the Alumysa Project does not even mention the production and recycling of cathodes and anodes and the serious negative environmental impact of the resulting gases, liquid effluents and toxic wastes. The process is a completely separate industry, within the industrial complex of the aluminum reducing plant, and is one of the most contaminating processes of the whole project. The EIS itself points out that "*the treatment of the worn cathodes and anodes is responsible for the most important flow of wastes and requires special treatment*". Amazingly, the handling of the worn cathodes is not specified in the EIS. Mention is only made that treatment "*will be selected during the final design stage of the Reduction Plant... and it is probable that it will be based on thermal differences*". In other words, the company not only does not specify the treatment of the worn cathodes but also shows that "***the design of the Reducing Plant presented by Alumysa to CONAMA for its evaluation is not the final design***"[6].

Not only this, but the plant will produce 440.000 tons of aluminum per year, generating the incredible amount of 660.000 tons of solid wastes (33% more than production) which include policyclic aromatic hydrocarbons. The plant will also produce massive and continuous toxic gas emissions including sulfuric gases and 968.000 tons of carbon dioxide (CO2) per year. It is also known that primary aluminum melting is the only man-made source of CFC-14 and CFC-116, possibly the most powerful greenhouse gases emitted in high quantities. Scientists estimate that these gases will remain in the atmosphere for 10,000 years and are equivalent to a contribution to the greenhouse effect of between 15 to 20 tons of carbon dioxide per ton of aluminum.

[6] Megaproyecto Alumysa, De Reserva de Vida a basurero Industrial, Fundación TERRAM.

This means that in 1990, when 18 million tons of aluminum were refined, the aluminum industry produced an equivalent of 270 to 360 million tons of carbon dioxide.

Note: Further reports of the Intergovernmental Panel on Climate Change will include CFC-14 and CFC-116 from aluminum smelters in its evaluation of the major greenhouse gases. *(Alcoa Profile- Greenwash Snapshot # 14, Greenpeace, 1992).*

3.3 Waste treatment plant: The proposed plant does not have any waste treatment facilities. It must be emphasized that the large amount of liquid effluents, both domestic and industrial, will join the rain water and therefore be diluted in the normally pristine streams and rivers and the unpolluted Ford of Aysén. This will have a direct impact on fishing activities on the coast.

3.4 Coastline impact: The impact on the coastal area will be serious. Considerable damage will be caused to small-scale economies such as artesian fishing, salmon farming and ecoturism. The impact will be caused mainly by the increase in the traffic of big ships loaded with raw materials, and the discharge of ballast water. There is also high risk of accidents and shipwrecks in a very complex navigational zone. The quality of the water could be affected by the low quality of the water being discharged from the upstream dams.

3.5 Social impacts: Aysén does not have the infrastructure to deal with the boom in population which will occur during the peak construction period when 8.000 jobs will be created. Only 10% of the jobs will be available to the local people, which contradicts Noranda's proposal. Another problem is the existence of communities living in the affected area whose members work in the traditional activities of agriculture and stock breeding, some of whom were planning to develop ecotourism projects in the future.

3.6 Impacts on the Local Economy: Estimates show that Chile and the Aysén region will lose a great deal economically if the Alumysa project is approved. Of the approximate US$ 290 million per year in direct benefits that the project will generate, only US$13.5 million will remain in the area and only US$ 52 million[7] will go to the Treasury which, if the project is judged to be viable, will have to assume the environmental costs. The remaining profits go to Noranda. This is the cost of the destruction of a pristine ecosystem and the risk of irreversible toxic contamination.
The project also claims to have associated benefits, for example according to the EIS there will be better access to the Lagoon of San Rafael, which it claims will be visited by 30.000 people a year (at present the figure is far less). It is hard to believe that a project which destroys the pristine state of the area will attract this amount of visitors. The impact could destroy the economic benefits of the traditional activities which the inhabitants of the region have developed over a long time and with great effort.

[7] Megaproyecto Alumysa, De Reserva de Vida a Basurero Industrial, Fundación TERRAM.

4. NORANDA´S BAD INTERNATIONAL RECORD

Noranda has a dreadful environmental record with at least 87 environmental violations in Canada and fines surpassing US$ 1.2 million.
In general these violations include:

- Spillings and discharges of toxic substances
- Deficiencies in the warehouses for harmful wastes
- Atmospheric toxic emitions above the allowed limits
- Accidents caused by negligence
- Contamination of coastal waters and fishing activities
- Flaws in the installation of the cleaning and anti-pollution equipment.
- Non compliance to the laws and the environmental authorities.

According to the Canadian Environmental Defense Fund of 1998, Noranda was the second worst company for air and river pollution releasing a total of 290 tons of toxic substances. They had the worst record of arsenic and lead emissions and the second worst record for cadmium, mercury and particled material.

4.1 Record in USA:

- In the U.S the company had to pay over U.S$1.9 million in fines for health damage and pollution. In addition the company was fined almost US$75,000 for the air pollution caused by one of its aluminum production plants in New Madrid, Missouri.

4.2 Record in Canada:

- In 1984 the Abitibi Blue Print production company made the “Noranda” documentary about the contamination effects on the people of Rouyn–Noranda.

- According to the emission ranking of Canadian smeltings, presented by the CDEF, Noranda was in the second place with 630.000 pounds in 1998.

- The emissions include arsenic, mercury, cadmium, lead and nickel compounds declared toxic in Canada and can cause severe damage to human health and the environment. Mercury produces damage to the brain, the kidneys and the developing fetus. Lead is associated with kidney and blood problems and neurologic disorders. Arsenic and nickel (and its compounds) are carcinogenic. Cadmium is a probable carcinogenic and an agent for kidney disease.
-
- In Canada Noranda is the main producer of arsenic and lead emissios (205,000 pounds and 401,000 pounds respectively), the second producer of cadmium, mercury and particled material (400,000 pounds, 1,900 pounds and 4,000,000 pounds respectively) and the third producer of nickel and sulphuric dioxide emissions (4.500 pounds and 365,000,000 pounds respectively).

- In the autumn of 2001 soil analysis revealed an increase in lead and arsenic contamination in the area surrounding the Rouyn-Notranda smelting. According to the public health authorities, concentrations ten times above normal arsenic levels were discovered, the highest in Canada.

- In 1988 a study revealed that 117 children from the area presented high levels of lead in their bodies. Since then, civic pressure has resulted in a US$260 million investment which has reduced these levels and those of SO2 and emissions of particled material.

- In 1999 the Coalition for a Clean Magnola which groups together citizens of the Danville region started an "independent communitary follow-up" to evaluate the impact of Noranda's Magnola smelting plant. The coalition has the support of the popular singer Richard Dejardins, born near the Noranda-Rouyn smelting who said: "We cannot trust Noranda".

- In March 2000, Noranda announced the closure of their unprofitable Gaspe copper smelting in Murdochville with the loss of 300 jobs.

- The announcement was described as "machiavellian" by the union, as although the government in Quebec offered the company financial support to maintain operative the Gaspe smelting, Noranda preferred to invest in the expansion of the Alto Norte smelting in Chile.

- The Commission de la Santé et de la Securité du Travail (Commission of Health and Working Security of Canada) has registered 50 reports of beriliosis cases, a new kind of respiratory disease, within three years. The known cases are mainly located on three Noranda smeltings in Quebec and one in Montreal. There is also concern about the effects on the neighbourhoods surrounding the smelting plants which have not yet been being investigated.

- In June 2002 the 510 members of the Noranda Inc. Horne smelting union in Rouyn-Noranda (Quebec) went on strike for better salaries and work and health conditions. Negotiations broke down when Noranda went ahead with the elimination of seniority benefits and when 28 workers became ill with beryllium and arsenic poisoning. Noranda reacted by closing the Horne plant for 3 weeks as from 21st July.

4.3 Record in Chile

Companies owned partially or fully by Noranda have been accused of the following:-

- Severe environmental damage during the construction of Gas Andes gasoduct in the area of San Jose de Maipo and Pirque, including soil erosion, illegal felling of native forest, illegal rubbish accumulation and blockage of rivers, (COREMA R. M. August 1996).

- The overturn of a truck transporting sulphuric acid to the Inés de Collahuasi mine, on the Pan-American Highway near Pozo Almonte, Ist Region, in November 2000.

- The overturn of a truck transporting sulphuric acid to Collahuasi, near La Tirana, Ist region, in January 2001.

- Sulphurous oxide emissions from the Altonorte smelting (ex- REFIMET) which for four consecutive months exceeded the maximum levels permitted, causing respiratory problems to the people of Antofagasta. In April 2001 the company was fined for this by the Health Service.

- In January 1998 8,000 miners from Inés de Collahuasi, the majority of them sub-contracted, went on strike in protest at their appalling working conditions. About 1,000 workers blocked the Pan-American highway and a construction site at the company port, and several people were arrested or injured.

5. ASSOCIATIONS AND INVESTMENTS IN CHILE

Noranda operates in 23 countries, and owns 4 copper smeltings, 12 metallurgical plants, 11 manufacturing plants and 23 mines. For this reason it is important that we review the company's current projects in Chile and consider the present situation. Below, the main investments in Chile are displayed.

5.1 Noranda in South America.

In order to understand why Chile's Central Patagonia has been chosen for the Alumysa project we must take into account that in the developed countries this type of manufacturing process is highly questioned by the environmental authorities. The first world has established a more rigorous legal framework for foreign investment, which forces companies like Noranda to look to places like Chile, Brazil, Argentina or Peru, which, in their eagerness for economic growth, accept projects of this type that elsewhere would not be permitted. Among Noranda's investment plans, Chile is the "heart of the strategy" for Latin America, which is demonstrated by the following chart published in the company's web site.

Source: www.noranda.com

5.2 ALTONORTE SMELTER

TECHNICAL SPECIFICATIONS[8]

Name: Altonorte Smelter
Proprietor: Canadian Company Noranda (100%)
Location: 25 kms southeast of Antofagasta, km 1.348 on the North Pan-American highway, La Negra, Antofagasta, 2nd region of Antofagasta.
Products: copper and sulphuric acid (the latter being a byproduct delivered to the 1st and 2nd regions for copper processing).
Current Volumes: 160 thousand tons of copper and 250 thousand tons of sulphuric acid.
Production Target: (once the expansion has been completed) 290 thousand tons of copper and 700 thousand tons of sulphuric acid.
Startup: 1993 (production will start the once expansion is finished in 2003)
Other undertakings in the region: NO

Conflict

The company is located in the Black Area, an industrial sector 25 kms. outside Antofagasta, and so called because of its air, the quality of which is never classed better than 'very bad' or 'bad'.

It has been in operation since 1993 when, as Refimet S.A., it produced its first blister copper bar. In March 2000 it obtained from CONAMA permission to double its capacity to 820 thousand tons of copper and 700 thousand tons of sulphuric acid a year, and undertook to improve its pollution record.

However, since February 2001, due to technical problems in the production process of sulphuric acid, emissions of sulphur oxides (SO2) have on several occasions reached emergency levels, and legal action has been taken against the company.

Peak emissions were between 9:00 a.m. and 1:00 p.m. and reached 480 micrograms per cubic meter, the limit being 365 micrograms.

As corrective measures taken by the company proved to be ineffective, and the index of respiratory problems amongst the inhabitants was on the increase, an additional pollution-monitoring station in Antofagasta was required to be installed.

But the situation did not improve because although the original problems were solved, secondary ones persisted, and COREMA imposed a sanction on Altonorte for breach of the Quality of the Environment Act. Consequently the company has now undertaken to eliminate one of the furnaces in an effort to reduce pollution to acceptable levels.

Another alert occurred because the emissions from a sulphur oxide chimney were not only causing throat irritation to the locals, but also visibility difficulties on one of the main highways. Thermal inversion, keeping the smoke hanging low rather than dispersing, was discovered to be responsible for this phenomenon.

[8] Observatorio Latinoamericano de Conflictos Ambientales.

The idea of decreeing the region to be 'saturated' was rejected as the area is not urban. However, COREMA has raised legal action against the company for its unacceptable levels of SO2 emissions.

All this has given rise to doubts concerning the company's genuine commitment to environmental protection. People are concerned about the length of time it takes for any complaint to be processed - particularly in the present economic situation - and are worried about how many crises they will have to endure before they see any improvements.

At present Altonorte's electronic chips smelting project is being questioned by COREMA because it is unclear how toxic the process is, what the atmospheric emissions are and how far the affected area extends.[9]

Background

After Noranda became the property of Altonorte in 1995 the company made an environmental plan in the hopes of improving the situation and also their reputation. But in spite of this, a series of incidents have made the inhabitants increasingly concerned about their long-term health prospects as the atmosphere in the region is becoming almost impossible to breathe.

Altonorte owns 44% of Doña Ines de Collahuasi, and also Noranda Explorations, Altonorte Smelting (ex- Refimet) and El Pachón, on the border between Chile and Argentina.

Since improvements were due there have been so many conflicts that the regional authorities are beginning to doubt the company's good intentions. For example, in April 2001 they requested an analysis of the environmental impact which would result from a possible 'once-off' burning of 1,000 tons of Orform SX12 solvent mixed with bunker oil

The address of Altonorte Smelter is:
Av. Antonio Rendic 5032
P.O. Box 740
Antofagasta, Chile
Phone: 011-56-55-630-103
Fax: 011-56-55-630-143
General Manager: Mark Petersmeyer

Labour relations
There are 2 internal unions that are not affiliated to national or international unions.

[9] El Mercurio de Antofagasta, March, 2003.

5.2 COPPER MINE LOMAS BAYAS

TECHNICAL SPECIFICATIONS

Name: Copper Mine Lomas Bayas
Proprietor: Falconbridge (59.5% Noranda)[10].
Location: 120 kilometers from Antofagasta. II region.
Products: copper in cathode.
Current Volumes: 59.304 tons of copper in cathode.
Production Target: 60.000 tons of copper in cathode.
Estimated Production Time: 16 years
Proven reserves: 77.91 million tons of 0.37% pure copper.
Measured resources: 13.75 million tons of 0.27% pure copper

Mine Type: Open pit
Other plants in the region: NO

In July 2001, Falconbridge (59.5% Noranda) purchased 100% of the Lomas Bayas property from Boliden[11] Limited. The terms of the agreement included a payment by Falconbridge of US$175 million plus cash balances (US$2.1 million), less outstanding third-party debt obligations (US$112.7 million). Falconbridge will also pay US$15 million if it decides to exploit the adjacent abandoned Fortuna de Cobre copper deposit before the fifth anniversary of its closure.

Lomas Bayas in northern Chile is an open pit copper mine and a solvent extraction and electrowinning (SX-EW) plant. Employing 466 people, the mine has steadily increased production since it opened in 1998. Current resources should sustain operations for 16 years. The mine has a very low strip ratio and short hauling distances and will provide between 25 million and 30 million tons of mineral per year over most of its life.

5.3 DOÑA INÉS MINE AT COLLAHUASI

COMPANY'S TECHNICAL DATA[12]

Name: Doña Inés Mining Company of Collahuasi SCM.
Shareholders: Falconbridge (59,5%) Noranda (44%), Group Anglo American PLC, Luxembourg (44%) and a group of Japanese companies headed by Mitsui & Co. Ltd. (12%).
Location: 180 kms. to the southeast of the town of Iquique, in the Chilean altiplano at an average altitude of 4,200 Mts. above sea level. Pica, Iquique, 1st region of Tarapacá
Products: Copper concentrate and copper cathodes.
Present volumes: 350,000 tons of copper contained in concentrates and 50,000 tons of cathodes per annum.
Production Target: 400,000 tons of refined copper per annum.
Initiation of activities: 1998. Expansion planned for 2004.
Estimated production period: 25 years.

[10] www.noranda.com
[11] Boliden Limited is a Canadian company, with installations in Toronto, that dealt toxic remainders to Chile, with the result of the poisoning with lead of around 800 people in Arica. This company acquired Lomas Bayas and Cobre Fortuna when acquiring previously Westming Resources.
[12] Observatorio Latinoamericano de Conflictos Ambientales.

Other activities in the region: Filter plant and embarkation terminal in Punta Patache, about 65 kms. to the south of Iquique.
Investment: 1,869 million dollars.
Financing: credits from financiers and foreign banks, and investments by shareholders.
The commercial offices of the Doña Inés Mining Company of Collahuasi SCM are at Edificio del Pacífico, Avenida Andrés Bello 2687, Piso 11, Las Condes, Santiago.
Tel. (56)(2) 3626556 (Santiago)
Fax. (56)(2) 3626569 (Santiago)
The Branch Office in Iquique is at Avenida Baquedano 902, Iquique.
Tel. (56)(57) 417777.

Conflict

The company's managers have cultivated close ties with the regional authorities, and scant information about the construction of detractors has been divulged to the public who have been informed that the mine is set to become one of the most important copper plants in the world.

Perhaps for this reason accidents at or related to the plant have been given a very low profile. Twice in 2001, events occurred which alerted residents to the environmental costs and the health hazards to which people are exposed who live near the roads which are used to truck toxic materials to the mine. In January a truck carrying sulfuric acid turned over near the village of La Tirana in the First Region, and a similar accident had occurred previously on the Panamerican highway near Pozo Almonte. As a result, Intercede, the company responsible, was fined US$12,700 by the COREMA in Tarapacá.

Nevertheless, the agricultural sector has objected strongly to the proposed extension of the mine's concentrator plant, planned for 2004. This is because, apart from its impact on the geomorphology and relief of the adjacent area, the location of the low grade and sterile mineral deposit will affect the drainage network and augment the Rosary crack.

But the main concern for industrialists and farmers alike is the use of underground water supplies which could affect the flow of the springs in the salars of Coposa and Michincha. The company insists that it will mitigate the impact by adding water to the springs artificially, but the threat is certain and the company is well aware of its seriousness. The matter was not mentioned in the mine's approval of the Environmental Impact Study, in spite of the community of Pica's expressed fear of the consequences that this investment will have on the oasis.

The construction of a new mine-duct in the vicinity of the National Reserve Pampas del Tamarugal is also planned, without a full evaluation of its possible impact on the reserve.

Background

The expansion of the Collahuasi Concentrator Plant will increase the rate of extraction and processing of sulphurated minerals and the production of copper concentrates, and affect the region quite considerably. The extension of the sterile dumps near the Rosario Crack, and a new deposit of low grade mineral are two particular points of concern for ecologists and settlers. They also object to the company's demands for water, and feel that the archaeological sites should be protected.

Among the groups that question the project are the Agricultural Proprietors Association Resbaladero, Banda y Animas of Pica and the Ecological Initiatives Council (Ciede) of Iquique. They made fifteen observations on the mine's Environmental Impact Study for presentation to CONAMA, but these were rejected by COREMA. They claim that the Michincha valley, from where the company will source some of its water requirements, lies partly in the 1st and partly in the 2nd region, and should therefore be discussed on a national level, whereas COREMA claims that the whole of the valley lies within the 1st region. So the regional authority is doing nothing to assuage the environmental concerns of the local communities of Pica and Pozo Almonte.

6. LEGAL PROCEDURES OF SEIA

Chilean legislation establishes that investments can only be executed after an evaluation of their environmental impact, so the Alumysa project, which includes hydroelectric power stations, a port, and industrial buildings, needs to be evaluated in accordance with the law.

The project holder (Noranda) is required to present an Environmental Impact Study for scrutiny by both the public and the private sector, before the project can be carried out. This was done and the following subjects were considered:-

a) Description of the project or activity

b) Foundation

c) A detailed explanation of the activities covered in article 11 which make the study necessary

d) A prediction and evaluation of the project's environmental impact, including risk situations

e) Measures for minimizing the project's adverse effects and how to deal with any should they occur

f) A follow-up plan of the relevant environmental concerns discussed in the Environmental Impact Study

g) A plan for proper compliance with environmental legislation

Alumysa's environmental study filled 24 volumes, and was written obtusely to prevent its easy comprehension. Moreover, it omitted important information about flora and fauna, landscape, the social environment, etc.

CONAMA of XI Region rejected the first version of the document, so Noranda had to prepare it again through an Addendum. As this was also rejected they must now prepare a 2do Addendum to be presented to CONAMA on 30th November, 2003.

7. THE VISION OF THE PARTIES INVOLVED

The project has the support of the Chilean government, according to Jorge Rodriguez, the Minister for the Economy and the Governor of Aysén. But several environmental and union organisations have rejected the government's position as they consider that it unethical to support a project before the final results of the EIA.

Most of the public services that have participated in the evaluation process have submitted objections, so Noranda is now preparing a second document (Addendum) in answer to the observations. This has to be submitted by late November 2003 or at the beginning of 2004. Meanwhile, Noranda Chile is lobbying the government for the project's approval.

The approval, in accordance with the Environmental Law, will be determined by the Regional Environmental Commission (COREMA), via its Administrative Council whose president is the Supervisor of the region of Aysen. If the project is rejected an appeal can be brought to the Directive Council. This body has greater political power than the Administrative Council, because it is made up of government ministers. If the project is approved, environmentalist organisations could exert legal pressure to try to obtain its rejection.

Some members of the House of Representatives and the Senate, after listening to the various issues at stake, are now beginning to show their concern about the Alumysa project. Although members of parliament cannot stop a project from going through, they can influence those who take the final decision so that they do so considering the well-being of the whole country and not only Noranda's financial interests.

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SUMMARY EVALUATION OF THE ENVIRONMENTAL IMPACT OF THE ALUMYSA PROJECT
PROCESS STAGE: CHECKING 1ST ADENDDUM

This document summarizes the main observations carried out by government agencies with environmental competence. To the Research Addendum of Environmental Impact of Alumysa Project.

1. PROJECT DESCRIPTION:

1.1 The subprojects of Alumysa are in a developing stage hard to evaluate (some cases impossible) according to the information of EIA and its Addenda. There exists 9 main projects which present certain developing, but there exits other 11 subprojects which have been barely described. Even the holder argued that "... in the conceptual design stage, it is only possible to establish the commitment of mitigation and restoration measures". (See pag.V-1 *Addenda*).

1.2 Industrial Plant

1.2.1 Respect to the diffusion / dispersion model of atmospheric pollutants:

- It is unresolved the model of weather information about the site-zone of the plant.

- The holder evaluates that with the entered information to the model, there would not be sensitivity to the height of the pollutants mixture. However, the PUC Consultancy showed that there will exist the mentioned sensitivity.

- According to the previous statements, the impact identification and assessment, likewise the accreditation of the norms performance.

1 2.2 Plant technology. The holder indicates that they will utilize the most advanced technology to control the pollutants emissions. However, the PUC Consultancy indicates that the emissions evaluated by the holder respect to the more important parameters, PM10 and SO2, are not solid according to the values of the most advanced technology in the world.

1.2.3 Plant emissions. There have no been delivered precedent of characteristic parameters of similar projects. Carbonyl Sulfur, COV, Nox from fuels burning.

1.2.4 Treatment of Industry Sewage. The holder declares an effluent of 13,500 M3/year. In consequence and considering, the consumption of 100 l/d/person, the suggested plant will have capacity for treating an equivalent of 400/p. According to the capacity of declared drinking water supply (equal 72,000 m3) should emit 57.600 m3/year of sewage (factor 0.8). Therefore, emerge the doubt, if the plant sewage capacity will supply the requirements of 1,100 workers.

1.3 Hydroelectric power station:

1.3.1 It has not been examined or checked, if the proposed ecological caudal (resolution DGA), really can maintain environmental conditions of the involved water.

1.3.2 The power station description does not give any information about extreme hydrological conditions (drought and flooding).

1.3.3 According to the previous statements, it has been minimized the examination and checking of the impacts, and, consequently, the suitable measures.

1.4 Other Subprojects of great magnitude. Virtually, there are not any descriptions about the Subprojects of Concrete Plant 1 and 2, and the 4 Subprojects of Extraction and Process of dry goods, and underwater emissary. The impacts have not been identified and valued, consequently, the suitable measures have not been suggested.

1.5 Stage of Project Ending. The given data of the disposal plan of domestic and industrial solid wastes and Hydroelectric power station is inadequate (For example, the plan for the ending of the dumping site just has two paragraphs in the EIA, it was consulted the *Consolidado*, the *Addendum* just describes the information presented in the Research).

2 FOUNDATIONS

2.1 Description of the flora and fauna ecosystems. The presented description, differences between forest, grasslands and meadows, is inadequate because it has not identifies the impacts on flora and fauna, consequently, the suitable measures have not been suggested.

2.2 About given information of socio-economic means, it is limited (to local and no local scale, about cultural, social, occupation and other parameters); therefore, it has not given any information about the quality of life of affected communities.

2.3 About given information of quality of continental waters, it was detected a mistakes in the presentation of this data, which provokes a wrong analytic and inconsistent reading. For example, it was mentioned negatives values of concentration in certain parameter of water.

2.4 It was determined that the detection limits, of certain parameters of water, are exceeded, for example, cyanide is exceeded respect to the norms of reference.

2.5 About the aquatic flora and fauna, it was considered that the given precedents in the Addendum are insufficient for establishing foundations, it means in space and temporal representation. There still are mistakes in figures and location of the power station in the lakes; there are just

inferences about a limited data, and they present diversion almost of 100%, this confirms the low reliability of this information.

2.6 About foundation description of hydro-biological resources and quality of water, it has not given any satisfactory answer in the following cases:

- There exist limited foundations of aquatic world sampling (of fresh water): The holder affirms that the executed campaigns since 1996 are enough to fulfil with Art.12, literal f, of D.S. N" 30/97 (Chilean laws), also they carried out new campaigns in 2002. However, it was sampled just certain zones of water in one station. (Chart 3.1.23.1) In 3.1.23, it admitted that the achieved results are not comparable, in some cases, quantitative methodology. Fishes were not described, it was argued that there would not have migrations due to the river slopes.

- In despite of two campaigns (February and June – 2002); Not all stations were sampled in both periods.

- The number of stations is not enough, it is not possible to describe stationary. For example, in the Lake Yulton, it was returned just one sampling station at superficial stage.

- The sampling methodologies were not explained or they are inadequate. It is a mistake to collect phytoplankton with nets of 110 microns, a great part of this components are not kept (mainly, size ranges from 20 to 100 microns).

- About mammals and sea birds, the holder carried out new campaigns, where there were found five species of mammals and twenty eight species of sea birds. Nine of this species present problems of conservation. The main resources are concentrated in the zone of the river *Aysén*. In answer 3.1.24, the holder does not explain what are this species or where are living the species with problems of conservation.

- It was not described species that could be used in monitoring plan. It is a very important issue, because it could allow to measure the quantity of wastes in the fjord (bio-storage). It is no clear, the point of effluents discharge or what will be the effect of them, and the influence of the acid rain. Many analysis of quality of water (Appendix C) are considered invalid, because they present a diversion almost of 100%.

- Moreover, they do not analyze what will be the final deposit of named heavy metals.

3 IDENTIFICATION AND EVALUATION OF IMPACTS

3.1 General Aspects

3.1.1 SO2 Synergy effects and Organic substances.
It was not evaluated possible synergy effects, which represent the most important contribution of organic substances from reservoirs, its raising in

the DBO and sulfured compounds to the fjord and its deep water. The concentration of oxygen could be very low, because the limited change of water, this situation can trigger anaerobic process. More organic substances and more sulfured compounds raise the possibilities of this situation, and they could provoke concentrations of sulphhydric acid in this water, which is highly toxic for aquatic life and represents a risk for aquaculture and traditional fishing.

3.1.2 In the *Aysén* fjord there exist a moraine, which provokes a less rate of changing water, it is more vulnerable to changes in its quality due to the addition of exogenous compounds to the system. For that reason, it is necessary to know what is the volume of water mass under this moraine, explaining what is its pH and quantity of oxygen in representative zones to establish the available water and its capacity for diluting sulfured compounds. This situation has not been evaluated.

3.1.3 Mass removal risks.
About the establishment of all installation of this project, especially, the location of the industrial plant, it has not been measured adequately the mass removal risks. For that reason, there exist uncertainty respect to the management in case of eventualities.

3.1.4 Air and Emissions.

- It does not exist a complete weathering foundation for predicting and modeling the quality of air. It has not been identified or evaluated the plant emissions impacts. In fact, it has not been considered topography, action of sea breeze, continental-fjord air movement, and profiles of height winds in the establishment zone of the industrial plant, which can change the dust emissions of gases and particles of HF. It has not been quantified the effect on surrounding waters, vegetation and populated zones.

- The Project may be carrying out the regulations of emissions, according to atmospheric models, but it is possible to deduce that sulfured compounds and fluorides would rain on basins that flow into the *Aysén* fjord.

- About loading, it will be loading of 318 ton/year of fluoride and 700 ton/year of sulfured compounds (probably, sulfuric acid). Due to this figures, it is essential to design a monitoring and vigilance system of space and temporal effects on the aquatic world.

- It is not clear, what is the complete period of launching the aluminum plant (included all cells). Also, it is not clear, the plan for launching the aluminum plant. This information is necessary to evaluate the impact of excesses fluoride emissions in this stage and its control measures.

- About the information of excesses fluoride emissions during launching the aluminum plant. It is not specified the estimates for

establishing this values; argumentation is weak. It was given a 25% of raise during the year, but there is no manner to know where that value came from. Moreover, it was said that the rest of emissions do not increase, and this explanation is not enough, there are not information about the process that state that statement.

- To evaluate possible impacts of fluoride emissions on the vegetation in the project zone, it was not used other regulations as reference, for example, the regulations used in crops in Washington, monthly average (0,84 ug/m3) and annual regulation (0.5 ug/m3), which is consigned in Chapter V, B-7.1 of EIA.

- About acid rain, it is used the argument that if they carry out regulations for SO2 quality, the acid rain would not happen. It is not effective, due to this regulations have to protect people or vegetation against SO2 effects (trough air). This does not mean that SO2 could be dissolved by rains or cloud and acidify waters. It is not a scientific argument, it is qualitative and it has not validity. It is important to know the quantity of the emission effects of SO2, HF and Nox in rains. Moreover, it is important to know the sum of quantity of these pollutants and not only their effects by themselves.

- It is said that reduction cells do not produce CO, however, in the description process, there appear emissions as part of this process. Moreover, CO2 is carried out as product of this process; it is in contact with aluminum hot steams and sodium and it produces an oxidation of metals, and they produce CO, Al2O3 y Na2O, gases which are not mentioned as emissions of the process.

- It is said that emission of CO2 and Nox are low (mixed information about emissions quantity according to SO2 concentrations). To proportionate Nox concentrations, it is used the same parameters, it is not correct due to SO2 and Nox physic and chemical conducts are very different. Moreover, it was evaluated emissions just from chimneys and not from reduction cells.

- Arguments also point out COV (Volatile Organic Compound), which are not identified in the EIA and its Addenda.

- There are other emissions to air produced at the reduction cells, they are not very important as fluorides, but there are other very important such as NOx, COs, CO, H2S and CS2, and they have not been considered.

3.2.- About inhabitants health risks, established at letter a) of Article 11 of Law N° 19,300, Chilean Laws. (Letra a. Artículo 11 de la Ley N° 19.300)

Due to it is unresolved the model (before mentioned), it is not possible to state the impacts that would suffer the health of inhabitants. For that reason, it was not established the measures for this potential effects.

3.3.- About quantity and quality of important effects on renewable natural resources, mentioned at letter b) of Article 11 of Law N°19,300, Chilean Laws. (Letra b. Artículo 11 de la Ley N° 19.300)

3.3.1 Air and emissions. There are not technical justification for no- rain of fluorides due to the high rainfall in the plant location, also there exist a high compatibility of HF through the aquatic matrix. Moreover, it was not quantified the atmospheric emissions which will be transferred to the available aquatic matrix in the location of the project. (Water which come from fresh water and Bay of *Chacabuco* and *Candelaria*).

3.3.2 Hydroelectric Power Stations

- Exportation of organic substances as a result of flooding of large wooded areas in different basins to be dammed up. It is true that would be an increase of organic importation in the fjord, which could originate a raise of potential flowering supplies which are based on the sea depth; also, it is possible that will generate potential effects on harmful seaweed flotation and negative effects on sea fauna, it will depend on magnitude contribution. This last information has not been evaluated.

- The impact on the aquatic world, decomposition of organic substances from flooding of forest, has not been evaluated. There are not proposals to minimize changes of supplies levels in the dams waters.

- Fluctuation analysis of dams levels presents partial results. Energy request has not many changes, the hydrology presents very important variations, energy research, figure 3, appendix P, which will produce serious variations on flooding areas in the River *Cuervo* and *Blanco*. Impacts have not been evaluated.

- The established time for filling dams, considering an average hydrology, is 65 years. It does not know filling time of dry or humid.

- About Lake *Cóndor*, this values represent its conduct according to maxim fluctuations of 5 m.

- About Dam in River *Cuervo,* it is pointed out a monthly average variation of 0.59 m and annual average variation of 2.51 m. However, at appendix P - figure 3, it can be observed that it would produced maxim variations of 41 with periods of 15 to 20 years between height above sea level of 486 and 5266 msnm.

- About River *Blanco*, it was pointed out a monthly average variation of 1.68 m and annual average variation of 3.32 m. However, the most interesting thing is the frequency curve of this variations, which can be observed at appendix P - figure 3; there, it is pointed out , approximately, that in average every 2 years there will be

variations over 10 m, and every 20 years will be variations over 20 m, and every 50 years will be variations of 48m.

The impact that this variations will generate over natural resources have not been not evaluated.

3.3.3 Flora and Fauna

- Considering that proposals have not given positive answers to the identification an description of relocating flora, which will be recovered in the stage of flooding, or changes of vegetation and, for that reason, the loading capacity respect to the species that could be relocated has not been determined. Moreover, it has not been quantified the negative impact of wild fauna due to displacements in this area, also, it has not been quantified or calculated the amount the terrestrial vertebrates that can be really relocated with good expectancy of life. It is the same with areas that naturally will be receptors of displaced fauna.

- Inadequate statements were found in the EIA and Addendum, they can not establish suitable foundations of hydrological resources and local biodiversity. The given information can allow to predict what will be the effects of this project that affect resources and, mainly, fishing and aquaculture activities.

- It was carried out a good research of fish in the fjord. It was found a high rate of adult species of commercial importance to traditional and industrial fishing. Probably, it is an area of reproduction. However, it has not been evaluated the effects of chemical substances on this species.

- About the fluoride effects on fish and sea invertebrate, it is important to point out that the holder carried out researches in the sea, where fluoride is not toxic, but in the area of the project there exist important amount of fresh water, where fluoride is toxic. Moreover, the fjord is *mixhoalino* water, and the holder did not evaluate this effects.

- Considering that oil spills are permanent risks very hard to revert in aquatic life, it is essential that this project evaluates all and every possible spot of risk in the aquatic areas.

- The research about water currents presented in the Addendum is suitable. However, results point out a low action of currents in loading areas. One example of that situation is the area of river *Cuervo*, there the speed is less than 1 cm /s to the 84% of time and almost 100 % of time the speed is less than 4 cm/s. Moreover, there exit a low volume of flow and a raise of organic substances that are dragged by flows, what can produce local *eurtoficación* with fall concentration of oxygen. This situation can affect wild

hydrological resources and aquaculture activities, however, it has not been evaluated in the EIA and its Addendum (1).

- It have been identified mistakes in the description of species in the conservation category. In fact:

    - The holder affirms that in *Cóndor* area there are species of *Galaxias Maculatus (Puye),* and "other species of flora and fauna in the conservation category are not in that area". However, in the appendix C pages 71 and 74, there are species such as *Aplochiton Taenlatus (Peladilla)* in the vulnerable category in XI Region, *Galaxias Platei (Big Puye)* is vulnerable in its range of distribution, and *Aplochiton Zebra* is vulnerable in XI Region (according to Campos 1998). Therefore, the statements about this species in the Addendum are not consistent and they compromise the evaluation of effects.

    - About Lake *Blanco*, the holder affirms that "*Galaxia Maculatus* y *Galaxia Platei* are in this area, this species according to Campos (1998) are not in the vulnerable category of XI Region". In fact, according to Campos (1998), the specie *Galaxias Platei* is vulnerable in its range of distribution. Therefore, impacts evaluations have been carried out under a wrong supposition.

3.4.- About resettlement of inhabitant or important alteration of their system of life and costumes, described in letter c) of Article 11 of Law Nº 19,300. Chilean Laws. (Letra c. del artículo 11 de la Ley N° 19.300)

- About impacts evaluation methodology, it was privileged an evaluation according to macroeconomic theory, this proposal is not suitable. The social sciences provides with suitable methodology to evaluate this environmental constituent.

- *Consolidate* research included questions about identify and evaluate the impacts, however, the Addenda does not answer this questions, in some cases it evaluates impact as positive issues or under evaluates negatives impacts. For example:

    - About effects of floating population, especially male one, the holder affirms "... this situation could provoke triggering of social problems such as a raise of prostitution, streets fights, alcoholism, drugs abuse, crimes, etc. This situation could disturb social security. This social problems are currently presented in the Region of Aysén, some of them are public such as at least 12 missing or dead persons, probably, related to drug trafficking. This kind of problems heighten in periods of salmon harvest, when most of the foreign workers are hired..." About this issues, the holder has not identified impacts and its measures.

- It has not been identified impacts and its measures, and what kind of problems will provoke, in the local socio-economic environment, the contingent population of persons (peak) that will work during the building stage.

- It has not been evaluated impacts that will generate in the local socio-economic environment the 1,100 operation stage workers and the 2,800 immigrant population. It is unknown how *Puerto Chacabuco* and *Puerto Aysén* will integrate this new population.

- The local hiring will be privileged, operation stage 400 local labor persons, it has not been proposed measures to cover that issue.

- It has not been identified clearly the communities impacts. About the flooding of *Central Rio Blanco*, the holder affirms " it is important to point out that housing in hard access areas and remote one to another, and without any identification of community relations and cultural differences to other rural groups of this zone".

- The impacts in the access of local communities to their basic services have not been identified. As measures, an elaboration of Health Plan, Housing and Education is mentioned; however, this plans have not been described and less how they will be negotiated.

- There exist uncertainty about the effects of this project in the local community and its measures.

- The holder mentions as a positive impact the improvement of fluvial access in *Dam Rio Blanco* area, but that situation is not sure due to the lake fluctuation.

3.5.- About the important changes of the landscape and tourist value, established in letter e) of Article 11 of Law N° 19,300. (Chilean Laws). Letra e. del artículo 11 de la Ley Nº 19.300.

- About the impacts of electrical tracing (wiring), the holder has not given an answer about the impact of this issue, for that reason, measures of mitigation are not enough.

- The impact in tourist area in *Puerto de Chacabuco* has not been evaluated, the project just considered a number of vessel and not their magnitude.

- The loss of landscape value of *Lago Caro* has not been evaluated, the holder has not considered in its evaluation the maxim fluctuations of lake height above sea level.

- The holder has not answered the questions about the synergy impacts evaluation about tourism image of that Region.

3.6.- About monument changes, sites with anthropological, archaeological, historical value, and cultural heritage, established in letter f) Article 11 of Law N° 19,300. Chilean Laws. (Letter f. del artículo 11 de la Ley Nº 19.300).

- There are not enough information about the possible affected areas in the archaeological researches, for that reason, the identification of impacts have not been justified.

4. ABOUT MEASURES OF MITIGATION, COMPENSATION OR REPARATION AND PLANS OF EVENTUALITY.

4.1.- Measures of Mitigation, Compensation or Reparation

- The holder does not promise to point out total of the measures of mitigation, compensation or reparation for this project. The holder agues that the level of developing of engineering project does not allow to define with precision measures of mitigation, restoration and its location, there is just one possibility of establishing a promise of mitigation and restoration measures; to design strategies of control to assure that task will be carried out; to establish a regulation where effectiveness of this measures and signs of performance will be explained.

- It was not included topographic dimension to know the real surface that will be affected for every project work, particularly, flooding areas and ecosystem which will be altered. Measures proposed have not considered the real impact on this component.

- Considering that there are not any satisfactory answers to identification and description of this areas to relocate recovered fauna from flooding or vegetation changes, and capacity of loading respect to species that could be relocated, measures of compensation have not been sufficiently justified.

- There are not precedents of compensation measures for an area of biological preservation proposed by the holder, equivalent to negative impact in the biodervisity and ecosystem that will be affected by this project such as: criterion of area selection, description of foundations, owners, program of ecological preservation and investigation, executors and sources of program funding.

- The holder will not compensate (compensation measures) for irreversible changes in lakes *Yulton* and *Meullin*, and in river *Blanco*, because this actions will produce “benefits” such as new habitat in river *Cuervo*, access to new tourist and spare-time activities, leisure fishing in *Blanco*, economic and social development, quality of life improvement, etc., "...this actions have far exceeded all estimates for natural resources” (Pto. 5.1.21). Considering deficiency of foundations, until now, it is not possible to state what kind of species will be excluded of this ecosystems, and to define the respective measures of compensation.

- About river *Cuervo*, under the Dam's water will be a high development of new species that were found in this river and new species of salmonids that live in the fjord of *Aysén*, it must be presented measures to avoid and prevent this species in the lakeside area (lake Yulton and Meullin) which just presented a population of native species that live in that area.

- About migrations, the situation is quite clear in river Cuervo; however, in river Cóndor and, particularly, in river Blanco, the situation, in EIA and Addendum 1, is not clear, therefore, it must be justified this situation with more precedents (hydrology, natural accidents, species features, etc.). If it does not happen, the measures of mitigation for this impact must be analyzed, which can be presented due to dams or new "naturals" barriers that can appear due to low flows in both rivers and water under dams' walls. This situation that has not been evaluated.

- Measures of compensations, biotic resources affected by fluoride, do not consider changes in population or ecosystem community in which live this species. The proposal of just replacement of damage species is considered inadequate.

- It has not been proposed any plan of resettlement for 8 housing/families that will be affected in the Central Dam of River *Blanco* area.

4.2.- Contingency Plans

- Contingency plans presented for possible catastrophic events, in stages of building, work operation, and project activities, are inadequate and do not exist in many cases.

- It has not been proposed a contingency plan in case of fluoride exceeding emissions.

5.- ABOUT ENVIRONMENTAL REGULATION AND LOCAL ENVIRONMENTAL LICENSES

5.1. Environmental Regulation

- Second regulation for SO2 in the south of Chile is 700 ug/m3 hour, and the project presents figures of 694 ug/m3, which are in the limit of regulations. Considering the project model mistakes, it is possible that this figures will be exceeded. At least, it can be said, this figures represent a real risk.

- PM10 will reach 143 ug/m3, which is a real risk. If this average will be maintained, annual regulation of primary quality will be exceeded, due to it has a value of 50ug/m3.

- Meteorology foundations for predicting and modeling air quality have not been presented completely, this aspect has been admitted by the holder (Addenda, point 3.2.1.) "...when we have that required information, we will give the results of the required model".

- Respect to D,S. 90/2000 de MINSEGPRES, it has not been presented all precedents in compliance (Related to underwater emissary and control temperature in the effluent of Bay *Candelaria*).

5.2.- Local environmental licenses

- It has not been authorized local environmental licenses. The Alumysa project has to carry out 10 local licenses, without considering it will be required licenses for use of grounds for 7 installations. Licenses of environmental character have not been authorized. Considering the new Regulations of SEIA, this projects requires 7 additional environmental licenses.

- "Article 68: License to settle terrestrial installations of oil mixture reception in harbor and maritime terminal of country ".

- It was not asked in *Consolidado* as license, it was asked to project description (SEC). It is uncertain, that this authorization will be accepted, because there are not any Service's (DIRECTEMAR) pronouncement.

- Article 70: License to install and operate a maritime terminal, and drive chain to transport pollutant substances.

- The holder presented some precedents, but there still exist uncertainty about them, because maritime authority has not declared about it (Maritime Government). It was asked as license in the *Consolidado*.

- Article 71: License to mix and unload in water submitted to national jurisdiction, materials, energy, harmful or dangerous substances of any kind, which can cause damages to this water, flora and fauna.

- Technical oceanographic precedents have not been presented to support the statement that proposed emissary for Bay Candelaria will unload out of Coastal Protected Zone. No appendix or chapter in Addendum Nº 1 are presented the calculation methodology, data and modeling to be evaluated in the proposed zone for Maritime Authority.

- The installation of an emissary in Bay *Candelaria* must be authorized by D.S.Nº660/88 of Ministry of Defense (Maritime Undersecretaryship). It must be authorized the processing of CC.MM. by Harbormaster of *Puerto Chacabuco*.

- It has not located the emissary (coordinates) and its justification.

- It was asked as license in the *Consolidado*, but there are not all precedents and locate justification. Connected processing D.S. 90, Directemar gives this license.

- Article 87: License to extraction of ballast and sand in river's bed and estuaries. There exist uncertainty about this processing, it is because the

service does not give its authorization (Office of Public Works , *Dirección de Obras Hidráulicas MOP*). It was not asked as license in the *Cosolidado*, it was just asked as general questions in the documents; moreover, it is an observation to the Addendum in the Services emitted reports. The presentation of information is weak, because in the Report and Addenda , it appears as extraction in quarries; however, in the EIA, it appears as environmental license.

- About dry goods, it is necessary that the project specifies the location, management, amount of extractions, measures for not changing water's flows, etc.

- Article 90: About the installations for drinking water supplies, the required precedents to this license are authorized (DPA).

  Deleted license in new Regulations.

- Article 91: About evacuation installations and treatments or disposal of industrial wastes. The holder must describe the effluent of humid scrubber, it is the income and exit of the treatment plant (DPA). It was not asked as license in the *Consolidate*, it was just asked as additional information in the documents.

- Article 92: About installations for evacuation, treatment or disposal of sewage. Domestic sewage under treatment in ECOJET plants must fulfill the bacteriology quality to be evacuated into fresh water (D.S. 9012001, MINSEGPRES). In general, treated sewage in this kind of plants do not fulfill bacteriologic parameters (fecal), effluents without any previous disinfecting treatments. The holder must cover this parameters, including techniques of disinfecting.

- It has not been measured associated domestic sewage flows, which come from camps from all Centrals of this project. (Number 2.1.9).

- It was not asked as license in the *Consolidate*, but it was asked as information in the rest of the document.

- Article 94: About installations for treatment plan and final disposal of domestic and industrial wastes, the given precedents are enough to authorize this process according to the Service. However, in this summary document there exist observations made by the same Service (DPA) respect to the solid wastes, including the established requirements in the new Regulation (D.S.9512002), for example, the End Plan and other observations as dangerous wastes disposal (cathodes).

- Article 95: About license of industries installations, by previous local patent, it is not possible to talk about this license until the company has carried out the new air modeling, and it will be authorized into the project evaluation stage, and all necessary measures have been taken to control and mitigate all associated environmental risks to this project, for example, emissions of PM10, SO2 and Fluorides.

Deleted license in new Regulations.

- Article 97:
  - 6.2.3. and 6.1.10. There are not technical precedents about local environmental licenses in the Art. Nº 97 of D.S. Nº 30 of Minsegpres, which are consigned to "Procedures guideline for authorization of to changing ground use", of Ministry of Agriculture in 1999 (planimetric or topographic maps, according to the regulations, and Agronomic Reports), to the plant building area and other works, installations and associated equipment of the project, pointed out in the *Consolidado*, requests of clarifying, corrections of the E.I.A., due to this has not been added in the Addendum N°1.

  - 6.2.3. It has not been answered the question about the local environmental license in Article 97 of Regulations of SEIA, related to letters d), f), g).

  - 6.1.10, 6.2.3 To complement observations carried out as answers in the Addendum 2.1.4 and 2.1.5, the holder must enclose all precedents "technical precedents established for every work in the *Consolidado* of observations to the EIA (letter a) to g) of observation 6.2.3).

  - The holder has not added in the Addendum the precedents of owner to obtain the license for changing ground use. It must present the precedents relative to the local environmental license in the Art. 97 of D.S. Nº 30 of Minsegpres, included in the "Procedures guideline for authorization of ground use" of Ministry of Agriculture, to building areas, other works, installations and associated equipment of this project, included in the *Consolidado,* in requests of clarifying, corrections of the E.I.A.

  - It has not been asked the appropriateness of this license, respect to the dry goods extraction works.

Asked in the *Consolidado* as license.

New licenses according to the D.S. 95/2002.

- Article 94: Description of factories or storage in the Article 4.14.2. of D.S. N° 47/92, Ministry of Planning, General Ordenance of Planning and Building (Ministerio de Vivienda y Urbanismo, Ordenanza General de Urbanismo y Construcciones).

- Article 95: Licenses for investigative fishing, that will be necessary to monitor hydrological species population in the first year environmental monitoring plan, in the Title VII of Law N° 18,892, General Law of Fishing and Aquaculture (Ley General de Pesca y Acuicultura) and its modifications, revised, coordinated and systematized text in the D.S. Nº

430, in 1992 of Ministry of Economy, Promotion and Rebuilding (Ministerio de Economía, Fomento y Reconstrucción).

- Article 98: License for collecting eggs and young species with scientific or reproduction purposes in the Article 51 of Law Nº 4,601, about Hunting.

- Article 99: License for hunting or capturing protected animals in Article 9º of Law Nº 4,601, about Hunting.

- Article 10: License for building installations in Article 294 of D.F.L. Nº 1.122 in 1981, of Ministry of Justice, Code of Waters (Ministerio de Justicia, Código de Aguas).

- Article 101: License for cutting or exploitation of native forest, any land, or plantations located in favorable fields forest, in Article 21 of Law-ranking decree Nº 701 in 1974, about Forest Promotion (Fomento Forestal), which cutting and exploitation are necessaries for any project or activity pointed out in Article 3 of the new Regulation, except projects related to letter m. 1.

- Article 106: License for regularization of works and defense of natural flows, in second paragraph of Article 171 of D.F.L. Nº 1,122 in 1981,of Ministry of Justice. Code of Waters (Ministerio de Justicia, Código de Aguas).

6.- ABOUT MONITORING PLAN

- Environmental monitoring plan is inadequate for some environmental components, and in other cases, it does not exist. It does not assure to have suitable tools to monitor this project during its construction, operation and end.

- Monitoring plan for water quality proposed in Pto. 7.19. (page VII-18) must be carried out every three months in the building stage and it must be carried out every six month in the operation stage. It must be identified and analyzed all macro-elements and heavy metals. It must be evaluated the number of stations for waters, because, in some cases, it is considered only one station.

- Monitoring plan of aquatic world is incomplete, considering other aspects, referred to precedents presented in the EIA, without new precedents calculated in the Addenda.

- About flora, it is not enough a monitoring yearly frequency to describe, adequately, the variability of this system, and with enough statistical information, a project potential effect of this component.

- It has not been evaluated the constant monitoring of operation for humid scrubbers, this an important aspect, because this equipment captures 95% of SO2 emissions.

- It has not been evaluated the monitoring implementation of fluoride and acid rain effects on the vegetation, this monitoring has to be carried out previously to

the operation of this project for describing foundations which will be useful as reference.

- It has not been presented a monitoring plan for human being environment, which allows to monitor social, economic and territorial human environment, where it will be inserted this project.

NOTES:
(1): Two years ago, approximately, the Commission of Environment and Natural Resources of Chamber of Deputies (Comisión de Medio Ambiente y Recursos Naturales de la Cámara de Diputados) asked for measures for recovering Bay Chacabuco, in this frame it has been achieved that companies have fitted systems of tertiary treatment of their industrial liquid wastes.

ANNEXE 1:

NORANDA IN THE WORLD.

a) Global Aluminum Markets

The current global aluminum market is oversupplied[13], with China scheduled to account for approximately 50% of the world's increase in aluminum smelting (production of aluminum from alumina) capacity in each of 2002 and 2003. (The net increase in annual world smelter capacity is projected to be close to 0.9 million tons. These increases could keep production running ahead of demand in the short term[14], and stocks would then rise to uncomfortable levels. The industry is facing the prospect that in each of 2004 and 2005, world smelting capacity will also post "*in excess of market needs*" increases based upon current expansion plans.)

The Global alumina (granular, intermediate form of aluminum, produced from bauxite) market is also currently oversupplied, with 2001 production of 55.0 million tons and an excess to the smelting sector and non-metallurgical users of 3.4 million tons. Increasing surpluses and falling alumina prices in the second half of 2001 led some producers to shut their refineries.
World refining capacity is projected to increase by just under 10 million tons per year between 2001 and 2006, with the principal additions to refining capacity expected to be in Australia, India and Brazil. Unless there is a considerable slowing of the forecast refinery construction programme, alumina oversupply will mean more idling of capacity at the higher-cost end of the industry and the perpetuation of low prices for alumina.

NOTE: Rexam (www.rexam.com), the world's largest aluminum beverage container manufacturer (provides aluminum beverage containers to Coke, among others) purchases aluminum from a mixture of several different aluminum producers (in the form of individual 11.36 tonne "coils") that changes on a monthly basis (though their largest aluminum provider for their eastern facilities -within 1000 km of Norandal USA's facilities- is ALCOA (Aluminum Company of America). I have <u>not</u> found proof that Rexam is currently purchasing aluminum from Norandal USA.

b) Noranda's Current Aluminum Operations

Noranda's US aluminum operation, Norandal USA, operates three aluminum rolling mills (-transformer windings for the power distribution industry, -fin stock for the air-conditioning, refrigeration and automotive industries, - converter foil used in flexible packaging for the food, juice and tobacco industries, -and household foil) in the US (employing 774 workers) located in: Huntingdon, Tennessee (produces light gauge sheet and foil for the packaging, household foil and the HVAC -heating, ventilation and air-conditioning markets); Salisbury, North Carolina (produces light gauge sheet and foil products primarily for the flexible packaging markets); and Newport, Arkansas (processes reroll material into light gauge coated and uncoated foil for the flexible packaging markets, -a new US$240 million aluminum foil plant, in Brentwood, Tennessee will be operational in late 2002-).

[13] www.ame.com.au/guest/al/strategic
[14] Modine's fiscal 2002 Annual Report, page 29, www.modine.com

These rolling mills (foil and sheet) constitute the 2nd largest production facilities for aluminum foil and and light-gauge aluminum sheet in North America (current annual production of approximately 112 thousand tonnes, increasing to 255 thousand tonnes of capacity by 2005 via Brentwood, Tennessee facility). Most of Norandal USA's production is sold to manufacturers of air- conditioners and automotive parts.

Norandal USA's primary aluminum reduction smelter (New Madrid, Missouri) has a capacity of 255 thousand tonnes per year, with >80% of its production sold in value-added form such as extrusion billet, foundry ingot and rod for the construction and transportation industries (automotive components, building products and electrical wire and cable). This facility is within one day's drive of the majority of its customers[15].

c) Current Noranda Aluminum Customers (Direct and Indirect)

A current aluminum customer of Norandal USA is Modine Manufacturing Company (www.modine.com). Modine specializes in thermal management (heating and cooling products used in light, medium, and heavy- duty vehicles, HVAC -heating, ventilation and air- conditioning-equipment, industrial equipment, refrigeration systems, fuel cells and electronics).

Modine provides components to the world's largest original equipment manufacturers to produce heating and cooling products.

Modine operates more than 35 manufacturing facilities around the world (>7,500 employees) and has annual sales in the fiscal year 2002 >US$1 billion.

Modine's "359" (Modine's internal facility designation), "Nuevo Laredo" manufacturing facility in Mexico purchased US$4,469.81 of aluminum from Norandal USA on 20/09/2002, via invoice # "09979802" and Modine's "322" (Modine's internal facility designation) "Joplin, Missouri" manufacturing facility in the US purchased US$3,089.67 of aluminum from Norandal USA on 25/09/2002, via invoice # 13002.

In fiscal 2002, the largest portion of Modine's sales (30% = approximately US$300 million) were to world- wide original equipment manufacturers of passenger cars and light trucks. Overall, 47% (= approximately US$470 million) of Modine's sales (including auto, industrial and consumer components) were generated outside the US (30% = approximately US$300 million from Europe)[16].

Modine's world-wide facilities (Total of 188 facilities) - contact information below:

Europe = 37 Total facilities
Austria = 3
Belgium = 1
Denmark = 1
France = 7
Germany = 10
UK = 3
Hungary = 1

[15] Noranda's Annual General Report, fiscal 2002, page 12
[16] Modine's Annual Report fiscal 2002, page 14, www.modine.com

Italy = 3
Netherlands = 3
Poland = 1
Spain = 3
Switzerland = 1

Asia = 13 Total facilities
Japan = 9
Korea (South) = 2
Taiwan (ROC) = 2

North America = 137 Total Facilities
Mexico = 3
USA = 134

South America = 1 Single facility
Brazil = 1

In Europe, Modine currently supplies various components to automobile manufacturers DailmerChrysler (www.daimlerchrysler.com), BMW (Modine's Annual Report 2001/2002, page 14, www.modine.com), Mazda (www.mazda.com), Ford (www.ford.com), VW(www.vw.com) and www.generalmotors.com ({HYPERLINK "http://www.chamberofcommerce.lawrence.tn.us/Industrial_New s.htm"} {HYPERLINK \l "20011207"} December 7, 2001 - Modine Unveils New Furnance). Bayerische Motoren Werke (www.bmw.com) accounted for approximately 10.5 percent and 10.8 percent (approximately US$100 million in each fiscal year) of Modine's total company revenues in fiscal 2002 and fiscal 2001 (Modine's fiscal 2002 Annual Report, page 36).
In North America, Modine currently supplies various components to automobile manufacturers such as Ford ({HYPERLINK "http://www.chamberofcommerce.lawrence.tn.us/Industrial_New s.htm"} {HYPERLINK \l "20011207"} December 7, 2001 - Modine Unveils New Furnance).

NOTE: I have not attempted to trace the Norandal USA aluminum recently purchased by the two Modine production facilities (Nuevo Laredo, Mexico and Joplin, Missouri, USA) to any specific manufactured components, nor the specific companies that, in turn, purchased these specific components.

d) Predicting Alumysa's Future Customers

Although "Global Response"[17] indicates that Alumysa's aluminum will be shipped to customers in Japan and the USA, it is difficult (if not impossible) to predict specific customers, a minimum of 5 years into the future (Noranda predicts 5 years of construction to complete the shipping, smelter and power generating facilities).

In this currently over-supplied aluminum market, attempting to predict potential customers of Alumysa's aluminum, at least five years into the future, would be so highly speculative as to be of no useful value.

[17] www.globalresponse.org/gra/current

e) Noranda's[18] Aluminum Products

There is no certainty on what will be the products that the projected aluminum plant will generate in Alumysa project, nevertheless, it can be assumed that this plant will produce just the same the aluminum plant pertaining to Noranda in New Madrid, Missouri, USA, which currently produces 220.000 tons of the following articles:

a) **Aluminum Foil:** Semi rigid container stock for the food and bakery industries; Light gauge rolled aluminum, ranging in thickness from 0.635 mm to 0.508 mm and in width from 101.6 mm to 1,841.5 mm, used as flexible packaging for the food industry, household foil, and as fin stock for residential, commercial and automotive heating and air conditioning; Transformer windings for the power distribution industry.

b) **Aluminum Sow:** 675 kg units of unalloyed aluminum, to be re-melted by customer for varying uses.

c) **Aluminum Billet:** Log-shaped aluminum products of various lengths and diameters, ranging from 13.0 cm to 28 cm in diameter and 40.64 cm to 762 cm in length, used as feed material for extrusion presses.

d) **Aluminum Rod:** Long strings of aluminum wound on spools (2250 kg coil), used in electrical conductivity and de-oxification applications.

e) **Aluminum Foundry:** Alloyed aluminum tee ingot, ranging from 675 kg to 900 kg and 13.5 kg ingot, used primarily in automotive wheel production.

f) **Aluminum Automotive wheels:** Sold directly to the automotive manufacturer and to consumers to use as replacement wheels.

g) **Aluminum Extrusions:** Extruded aluminum products in a wide variety of shapes and sizes used primarily in the building and construction industry (e.g. aluminum window frames, 3" wide.)

[18] www.noranda.com

ANNEXE 2:

CHRONOLOGY OF ALUMYSA PROJECT

- **July 12th, 1987:** In Santiago, the closed joint-stock company under the name of *Projectos de Aysén* S.A." is constituted. This will be able to act before third parties and public authorities with the abbreviation *Proaysen S.A.* They appear as shareholders: Marcos Echenique Celis, commercial engineer, (50 shares); Francisco Walker Prieto, architect, (fourty shares); Raul Valdivia Ojeda, lawyer (ten shares). This society intends the investment, installation, operation, distribution and sale of industrial, fishing, mining and commercial establishments, energy and mineral treatment plants, its smelting and refinement, including forest activities and sawmills, among others. Capital: $2.000.000 peso, divided in 100 shares.

- **March 21st, 1988:** It is constituted the right for no-consumption-use of Condor Lake stopped superficial water, of permanent and continuous exercise, for a flow of 24.5 m^3/s, in the commune of Aysen, XI Region, in favour of *Proyectos de Aysen S.A*., according to Decision N°99 of Water Head Office.

- **December 22nd, 1988:** It is constituted the right for no-consumption-use of Cuervo river stopped superficial water, of permanent and continuous exercise, for a flow of 60 m^3/s, in the province of Aysen, XI Region, in favour of *Sociedad Proyectos de Aysen S.A*., according to Decision N°465 of Water Head Office.

- **December 26th, 1989:** It is constituted the right for no-consumption-use of Cuervo river stopped superficial water, of permanent and continuous exercise, for a flow of 29 m^3/s, in the province of Aysen, XI Region, in favour of Proyectos de Aysen S.A., according to Decision N°498 of Water Head Office.

- **February 7th, 1990:** By means of **Decree Nº119**, the Ministry of National Goods celebrates a contract of conditional direct sale of 16,123 hectares corresponding to the lots a, b, c, d and e, located in a place denominated *Lake Yulton*, in XI Region, to Sociedad Proyectos de Aysén S.A. (PROAYSÉN S.A.), for the sum of $40.312.000 peso. For an average price of $2.500 per hectare. Water bodies were excluded. This contract was conditioned to the accomplishment of a Hydroelectric Power station project, with clause of resolution in case of breach, in addition to the constitution of a series of mortgages on property buildings of the buyer, destined to guarantee the fulfillment of the obligation. The commitment was not fulfilled, therefore, the acquisition was not achieved.

- **June 18th, 1990:** By public writing, Chile Treasury sold the lots a, b, c, d and e of the place denominated *Lake Yulton*, commune and province of Aysen, XI Region, with a total surface of 16,123 hectares, to "Proyectos de Aysen S.A." (PROAYSEN S.A.) for the sum of $53.242.26 – equivalent, in that date, to 0.55 UF per hectare. 30% was paid at once and the balance in 4 annual quotas. The sale was holds, among others, to the following conditions:

    - First Mortgage in favour of the State treasury, to guarantee the price unsolved balance;

- Construction, within the counted term of 36 months from the deed of sale, of the Hydroelectric Power station denominated *Central Meullín*, which included the initiation of the construction of the *Fjords Aysén - Central Meullín* road in a term of 6 months;

- Hiring of manual labour, at the average rate of 105 men/month for the 6 stages in which the work was divided.

- The buyer was also committed to fulfil clauses of environmental protection.

- **April 11th, 1991:** Resolution Nº151 of the Water Main Management modifies D.G.A.[19] Resolutions Nº465 of 1988 and Nº498 of 1989, which constituted water rights in favour of Proyectos Aysén S.A., in *Cuervo river*, Province of Aysén, XI Region. That is how the restriction is eliminated, by the exercise of the right, to force to let pass a flow of 5 m^3/s, waters underneath the dam opening.

- **May 2nd, 1991:** In order to obtain the external financing necessary to take ahead their projects, Proyectos de Aysén S.A. offered to pay the unsolved balance of price in return of raising the mortgages that guaranteed it, plus a surcharge equal to 10% of the price. In the same presentations the abolition of the restrictions was asked for, exigencies and specific conditions referring to the protection of forests, flora and fauna, in exchange for a commitment of the buyer to respect and to make respect the conservation and handling of forests and the preservation of natural resources included in the alienated lands.

- **September 4th, 1992:** D.G.A. Resolution Nº381 constitutes right for consumption-use Cuervo river superficial and running water, of possible and continuous exercise, for 29 m^3/s, in favour of Sociedad Proyectos de Aysén S.A., province of Aysen, XI Region.

- **September 4th, 1992:** D.G.A. Resolution Nº379 constitutes right for consumption-use of Cuervo river superficial and running water, of permanent and continuous exercise, for 60 m^3/s, in favour of Sociedad Proyectos de Aysen S.A., province of Aysen, XI Region.

- **October 9th, 1992:** With Proyectos de Aysén S.A. fulfilling nothing of the agreement, DS Nº411 was dictated, where several environmental clauses of the original decree dictated in 1990 (Nº119) are invalidated, modified and replaced. All the established restrictions, conditions and prohibitions are abolished because, according to Alumysa, these prevented it to choose to international financing for a hydroelectric power station of greater power and a reducing aluminum plant. The State Treasury was compensated by an amount of UF 3,564.96 and the original project was invalidated. Specially serious is the stipulation according to which **in case of breach of the referred environmental clauses, the purchaser commits itself to the payment of an indemnification that will be fixed by the competent court, based on the caused environmental damage.** Decree Nº119 established that the total or partial breach gave the State Treasury right to request the resolution of the contract, with indemnification for losses. Environmental clauses of limited nature subsist.

[19] D.G.A. (Water Head Office)

- **January 8th, 1993:** D.G.A. Resolution Nº5 constitutes right for consumption-use of Cuervo river superficial and running water, of possible and continuous exercise, for 50 m^3/s, in favour of Sociedad Proyectos de Aysén S.A., province of Aysen, XI Region.

- **January 25th, 1994:** Ministry of National Goods celebrates a direct and nonconditional sale to Proyectos Aysen S.A. (Supreme Decree Nº82), of the flood zone of the dam that forms part of the Meullín Hydroelectric Power station, including the Sectors A, B and C, located respectively in sectors *Los Coigües*, *Las Tepas* and *Los Riscos,* with a total surface of 4,538.75 hectares, in the sum of UF. 9.233,57, which is equivalent to UF. 2,03 per hectare. The price was paid at once.

- **January 20th, 1995:** In Santiago, limited liability company under the name of "*Project Alumysa Ltd."* is constituted, being able to operate for commercial and banking aims under the name "Limited Alumysa". They appear as associates: Noranda Holding Limited, George Town, Great Cayman Island, Cayman Islands, represented by Jaime Irarrázabal Covarrubias and Alumysa Joint Venture Limited, George Town, Great Cayman Island, Great Cayman Islands, British Western India, represented by Jaime Castro Boiser, lawyer. The society intends the development of the Alumysa Project, that includes the accomplishment of the studies and/or projects related to the construction of an electrical energy producing hydraulic power station, an aluminum reduction plant, harbour facilities and all the constructions and facilities related to the previous thing, in the Eleventh Region, for the hydraulic generation of electrical energy and aluminum production, and/or the construction and/or operation of all it. Capital: US$ 5.000.000 of which Alumysa Joint Venture will contribute U$4.999.500 and Noranda Holding Limited will contribute U$500. It was written down in the Repertoire with Nº9428 and was registered in the Registry of Commerce to folio 1769 Nº1423. Notary's office 42-A.M. of Gloria Acharán Toledo.

- **January 27th, 1995:** By public writing dated on January 27 of 1995, registered on April 10 of 1995, "Proyectos de Aysén S.A." sells to *Project Alumysa Ltd.,* the 16,125 hectares acquired from National Goods in 1990, for $153.277,925, equivalent to UF 0.82 per hectare, and 1,234 hectares bought to individuals for $281.623.279 pesos, that is to say, $228,201 per hectare. Being contemplated also that more than a half of lands of Alumysa enjoy exemption of contributions. *Project Alumysa Ltd.* also acquires right for Cuervo river superficial and running waters consumption use, of 60 m^3/s, of permanent and continuous exercise, (D.G.A. Resolution Nº379 of 1992), for the price of $20.000; right for Cuervo river superficial and running waters consumption use, of 29 m^3/s, of possible and continuous exercise, (D.G.A. Resolution Nº381 of 1992), for the price of $20.000; right for Cuervo river superficial and running waters consumption use, of 50 m^3/s, of permanent and continuous exercise, (D.G.A. Resolution Nº5 of 1993), for the price of $20.000. *Project Alumysa Ltd.* also acquires the Alumysa trademark.

- **November 8th, 1995:** Minister of National Goods, Adriana Delpiano Puelma, informs in Ordinary Nº4303, that the fiscal lands were sold apparently to low prices, but the State Treasury did not have, in the right time, the antecedents and evidence necessary to take legal actions and that, to this date, all the actions would be prescribed. In the same document minister Delpiano informs that the Regional

Council financed, through F.N.D.R.[20] a study to define the terms of reference of the Alumysa Project Environmental Impact Study, in charge of Catholic University of Chile. The company accepted these terms of reference, corresponding to the Regional Environmental Commission of the XI Region to pronounce on the Study itself. (it does not indicate exact date of the reference terms).

- **January 20th, 1997:** D.G.A. Resolution Nº381 constitutes right for consumption-use of Condor lake superficial and *running* water, of permanent and continuous exercise, for 25,5 m^3/s, in favor of *Proyectos Aysén S.A.,* province of Aysen, XI Region.

- **April 11th, 1997:** The cession of the Rights of Proyectos de Aysén S.A. to *Project Alumysa Ltd.* is made. In the 4th Notary's office of Santiago, Ignacio Walker Shell, in representation of *Proyectos de Aysén S.A"* and Robert Biehl del Río, in representation of "*Project Alumysa Ltd.* celebrate the contract of cession of rights that includes rights of Blanco river water use.

- **April 17th, 1997:** D.G.A. Resolution Nº218 rectifies D.G.A Resolution Nº36 of January 20 of 1997, in the sense to say exactly *that PROYECTOS DE AYSÉN S.A.* is who requested and to whom constitutes the right for use.

- **May 26th, 1999:** D.G.A. Resolution Nº418 constitutes right for no-consumption-use of superficial and running water in Blanco River, in favor of "Project Alumysa Ltd.", province of Aysen, XI Region, by the following volumes and modalities:

Month	**Continuous Permanent** (m^3/s)	**Possible Continuous** (m^3/s)
January	123,9	160,1
February	90,1	193,9
March	90,5	114,0
April	102,8	158,0
May	111,4	172,6
June	66,2	217,8
July	93,2	100,7
August	83,5	107,8
September	70,5	162,3
October	89,3	161,0
November	127,7	156,3
December	151,7	132,3

- **January 7th, 2000:** D.G.A. Resolution Nº27 constitutes right for consumption-use of Candelaria inlet superficial and running water, of permanent and continuous exercise, for 50 Lt./s, in favor of *Proyectos Alumysa Ltd.,* province of Aysen, XI Region.

- **August 29th, 2001:** *Sociedad Chilena Alumysa Ltd.* presents Study of Environmental Impact of the Alumysa Project before COREMA[21] XI Region.

[20] F.N.D.R. (National Regional Development Fund)
[21] COREMA (Regional Environmental Comission)

- **September 1st, 2001:** By means of Resolution 222/2001, XI Region of Aysen COREMA admits for procedure, for aims of the Environmental Impact Evaluation System, the Environmental Impact Study of Alumysa Project. The project holder is *Sociedad Proyecto Alumysa Ltd.,* R.U.T. N° 78.607.980-2. The society is constituted by Alumysa Joint Venture Limited and Noranda Holdings Limited, with a participation of the property of 99.9 % and 0.01 % respectively. The Alumysa Project is under the direction of Alumysa management committee of Noranda Aluminum Inc., company located in Nashville, Tennessee, U.S.A. and pertaining to the companies group of the Canadian company Noranda Inc. (Source: Section A: Project Alumysa General Antecedents. Chapter I: Description of the Project: 0003 CHAPTER 0001/SEC 0004/SEC Page 3)

- **September 7th, 2001:** COREMA XI Region of Aysen publishes in the newspaper "the Newspaper of Aysen" the "Extract of "Alumysa Project" Environmental Impact Evaluation, being indicated that this extract has been approved by the Regional Environmental Commission for XI Region. It is indicated that according to article 29 of Law 19,300, the citizen organizations with legal personality, by means of its legal representatives, and the natural people directly affected, will be able to formulate its observations properly based within the term of 60 working days, counted from the date of the publication. Signs the publication Millaray Hernandez Erazo, Regional Director of CONAMA and Regional Environmental Commission Secretary of XI Region of Aysen.

- **September 8th , 2001:** Publication of the extract in Official Newspaper.

- **October 29th , 2001:** Hierarchic Appeal Lodging of Law 18,575 on the part of Peter Hartmann, by himself and in the name of the National Committee Pro Defense of Fauna and Flora-Aysén (CODEFF); Patricio Branches, by himself and in the name of the Citizen Committee for Aysen Reserve of Life; Jenia Jofré, by herself and in the name of the National Committee Pro Defense of Fauna and Flora (CODEFF); Gonzalo Villarino, by himself and in name of GREENPEACE; Manuel Baquedano, by himself and in name of the Politic Ecology Institute (IEP); Alvaro Gomez, by himself and in name of the National Network of Ecological Action (RENACE A.G.); Marcel Claude, by himself and in the name of TERRAM Foundation and Fernando Dougnac, by himself and in the name of Environmental Public Prosecutor Office (FIMA); all members of "The AYSEN ALLIANCE, LIFE RESERVE". By virtue of what was established in articles 2, 9 and 10 of Law 18,575 on General Bases of State Administration; the article 19 Nº14 of the Political Constitution of the Republic; articles 26.27.28 and 29 of Law 19,300 hierarchic administrative appeal of Law 18,575 is lodged against what was determined by the Environment Regional Commission - XI Region when approving, by means of its endorse, the extract of the "Alumysa Project" put under the SEIA[22], admitted for procedure last September 1, 2001.

- **November 22nd, 2001:** Last day of Citizen Participation in the evaluation process of the "Alumysa Project" Environmental Impact Study.

- **November 10th, 2001:** Protection Appeal Lodging in the Court of Appeals of Puerto Montt, presented by Don Andrés Pincheira Stambuck, representing the Union of

[22] SEIA (Environmental Impact Evaluation System)

Artisan Fishermen - Shellfish Divers of Aysen, against the members of the Regional Environmental Commission of the XI Region of Aysen, represented by Mrs. Regional Supervisor and Mrs. Millaray Hernandez Erazo, Regional Director of CONAMA and Regional Environmental Commission Secretary of the XI Region that endorsed the Extract of "Alumysa Project" Environmental Impact Evaluation, resolution that in opinion of the recurrent ones threatens its rights guaranteed in the Nº1,8 and 21 of the Political Constitution of the Republic of Chile.

- **November 21st, 2001:** Court of Appeals of Coyhaique declares inadmissible the protection appeal presented by the Union of Artisan Fishermen - Shellfish Divers de Aysen, against the members of the Regional Environmental Commission of the XI Region of General Carlos Ibáñez del Campo, that endorsed the Extract of "Alumysa Project" Environmental Impact Evaluation, for being considered *untimely*.

- **December 19th, 2001:** Regional Environmental Commission of XI Region evacuates the Consolidated Report of the Alumysa Project, of 108 pages.

- **December 24th, 2001:** Representative of the Alumysa Project sends letter to XI Region COREMA asking for the suspension of the procedure of Environmental Impact Evaluation in order to answer the observations formulated during the process of Citizen Participation, of the environmentalist alliance "Aysen, Reserve of Life", the Medical Association, and the salmon industry, that are totally against the installation of Alumysa. In addition, representatives of the Alumysa Project will have to respond to the objections made by 33 public services and external consultants of the Catholic University.

- **December 24th, 2001:** COREMA XI Region accedes to the request of suspension of the procedure of Environmental Impact Evaluation conducted by representatives of the Alumysa Project and fixes this suspension to eight months counting from December 31, 2001, with the object that Alumysa responds to the objections against its Environmental Impact Study (EIS).

- **January 18th, 2002:** Exempt Decision Nº013/2002 of the Executive Direction of National Environmental Commission declares inadmissible Hierarchic Appeal of Law 18,575 presented against the Exempt Decision Nº0222/2001 of Regional Environmental Commission, Region of Aysen, based, among other arguments, in the fact that the superior authority of COREMA XI Region would be the Executive Direction of CONAMA and not the Directive H. Council of the National Environmental Commission (CONAMA), organism before which was presented the mentioned Hierarchic Appeal.

- **August 31st, 2002:** Date in which the suspension of the evaluation terms of the Environmental Impact Study (EIS) of megaproject Alumysa finalizes. Noranda company asks for a new prorogation to give its answers to the observations formulated within the process of the Environmental Impact Evaluation Study of its project.

- **October 30th, 2002:** Noranda presents its Addendum to give answer to the observations made within the process of the EIS of the Alumysa project, within the new term granted by COREMA of Aysen.

- **November – December, 2002:** The different public services with jurisdiction in environment and health matters make new observations to the Addendum presented by Noranda.

- **January 6th, 2003:** COREMA XI Region asks for a new Addendum to Noranda in order to clarify, rectify and complete the information presented in its first report, considered insufficient by the public services.

- **March 17th, 2003:** Date given by COREMA of Aysen for Noranda to give its second Addendum to the EIS of the Alumysa project. Nevertheless, Noranda asks for a new prorogation to present the clarifying report, getting 8 additional months to complete the study.

- **November, 2003:** New date given by COREMA of Aysen for Noranda to present the second Addendum to the EIS of the Alumysa project.