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Department of Foreign Affairs
and International Trade

Ministère des Affaires étrangères
et du Commerce international

CHILE

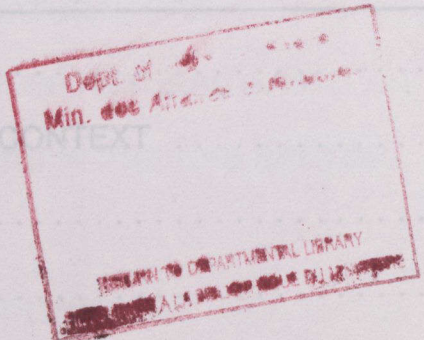
REPORT ON THE OIL AND GAS

SECTOR



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CHILE
REPORT ON THE OIL AND GAS
SECTOR

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CHILE - OIL AND GAS SECTOR REPORT

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1.2 CURRENT GOVERNMENT AND POLITICAL CONTEXT

Chile is reaping the fruits of a process of economic reforms initiated in the mid 1970s, that has now been consolidated and legitimized in democracy. The political consensus about the need to maintain and strengthen the model of free-market economics is a crucial guarantee against policy reversals in the future. In the past, sharp policy swings had hampered Chile's economic development.

Chile's return to democracy was initiated with the election of a transitional government led by President Patricio Aylwin and completed with the successful December 11, 1993 elections, giving current President, Eduardo Frei, 58% of the vote.

1.1 CHILE: The Country

The republic of Chile is a 4,320 km stretch of land along the southwestern coast of South America. Although one of the longest countries in the world, it ranges from only 96 km to 400 km wide, giving a total area of 757,000 km². Chile is situated between the Andes mountains in the east and the Pacific ocean in the west; it borders Peru on the north, and Bolivia and Argentina on the east. Southern Chile is an archipelago with Cape Horn at its tip.

With the most rapidly growing economy in South America, Chile has enjoyed a GDP growth rate of 8.2% for 1995. Its total GDP for 1994 was US\$ 52.2 billion. Inflation has been stabilized at 8.2% for 1995 with a projected decline to 6.5% by the end of 1996. Chile's population is approximately 13.2 million, with 92% "mestizo" or European descent, and 7% Amerindian. The country is predominantly Roman Catholic (89%), with some Protestant, Islamic and Jewish minorities.

Chile has four distinct geographical regions: the northern desert (one fourth of the country's land area); the high Andean sector; the central valley; and the southern lake district and archipelago. In order to decentralize the administration of existing and potential natural resources, the country has been divided into 13 Regions, including the Metropolitan Region, an area that encompasses the capital Santiago and its surroundings.

The northern part of Chile (Regions I to IV), which includes some of the most barren deserts in the world, is rich in mineral deposits such as copper, gold, sulphur, phosphates and nitrates. The fishing industry is also important in this area. The central valley (Regions V to X) has the largest population and contains most industrial and agricultural development. Climatic conditions make forestry and agriculture of considerable importance in this area. The far south of Chile (Regions XI and XII), which includes Tierra del Fuego, the largest island in the southern archipelago, is mostly dedicated to cattle and sheep raising. The area produces some natural gas, but concentrates mainly on petroleum production.

1.2 CURRENT GOVERNMENT AND POLITICAL CONTEXT

Chile is reaping the fruits of a process of economic reforms initiated in the mid 1970s, that has now been consolidated and legitimized in democracy. The political consensus about the need to maintain and strengthen the model of free-market economics is a crucial guarantee against policy reversals in the future. In the past, these sharp policy swings had hampered Chile's economic development.

Chile's return to democracy was initiated with the election of a transitional government led by President Patricio Aylwin and completed with the successful December 11, 1993 elections, giving current President, Eduardo Frei, 58% of the vote.

With his inauguration on March 11, 1994, President Frei and the Concertacion Nacional centre-left coalition were able to retain their solid majority in the House of Deputies. At the same time, the election resulted in a continuity of the basic balance of power in Congress between the government and opposition.

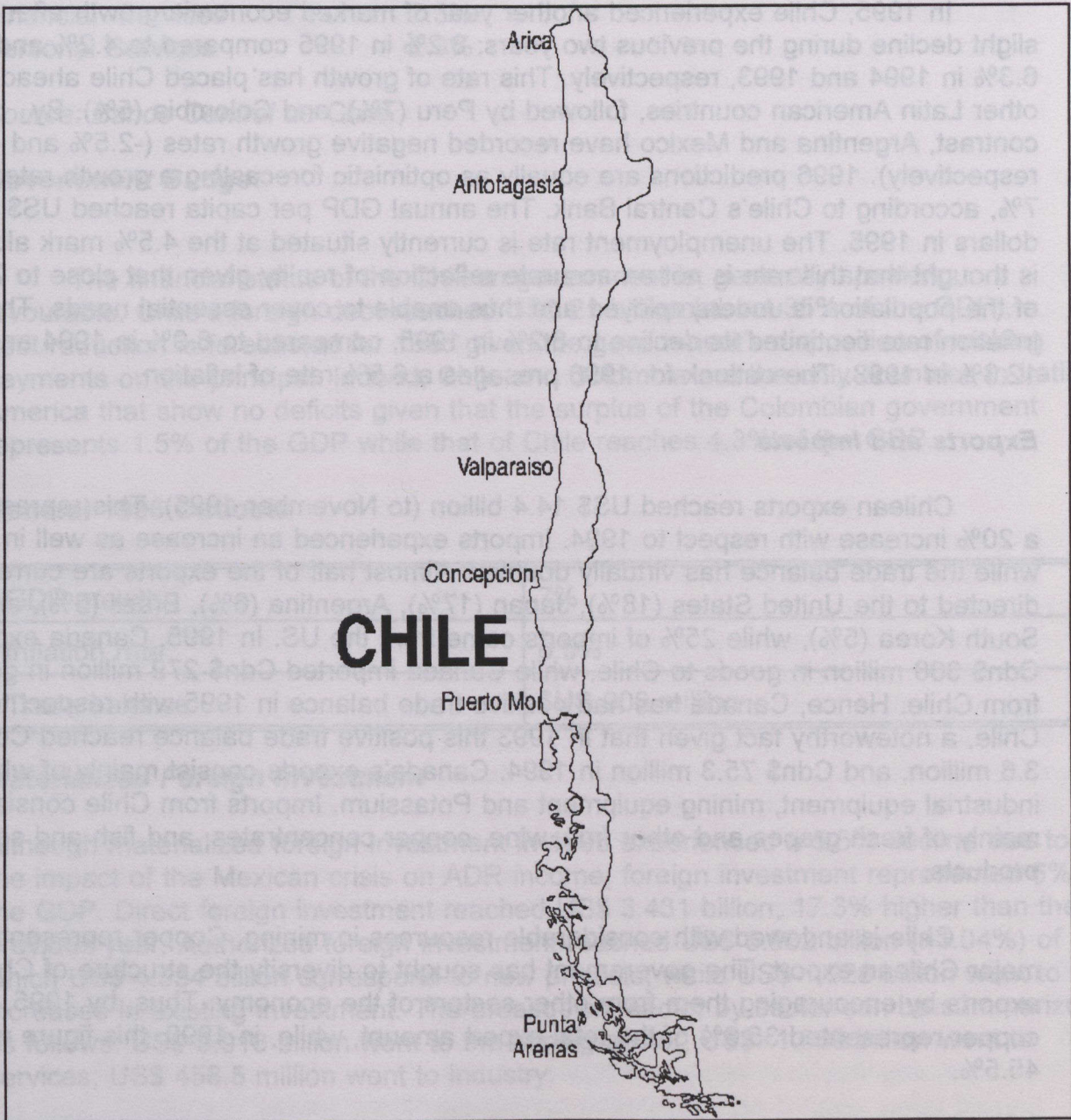
The constitutional framework set forth in 1980 during the former military regime has established the fundamental ground rules for political and economic life. The Constitution maintains the traditional separation of powers among the Executive, Legislative and Judicial branches of the State (albeit the Executive branch is marked by greater power in certain forms of legislation, such as taxation). The Constitution also establishes the ground rules in the areas of private enterprise, taxation and the role of the Central Bank, placing a premium upon free-market principles as the guiding force in the development of economic life.

The Frei administration's government policies continue to underscore the economic policies of the Aylwin administration. Frei, a businessman somewhat more to the centre than Aylwin, actively promotes his promise to lead the campaign against poverty. Major domestic issues currently addressed include education, health care, and improved infrastructure. Overall, President Frei has indicated that he will seek a broad consensus on major issues which bode well for continued stability during his six year term in office.

In sum, over the last six years Chile has had a very successful experience of political transition. Both democracy and free markets are consolidating fast, with all major segments of society cooperation in this effort. Competing forces, both in the government coalition and in the opposition have made significant attempts at cooperation, and, in several cases such as tax and labour reforms, broad consensus has been reached. In the final analysis, both political stability and free-market policies have served as a pillar for internal economic prosperity, have strengthened Chile's performance in world markets, and have made it an attractive area for foreign investment.

1.2 CURRENT GOVERNMENT AND POLITICAL CONTEXT

1.3 MAP OF CHILE



2.1 ECONOMIC OVERVIEW 1995

General Statistics

In 1995, Chile experienced another year of marked economic growth after a slight decline during the previous two years: 8.2% in 1995 compared to 4.2% and 6.3% in 1994 and 1993, respectively. This rate of growth has placed Chile ahead of other Latin American countries, followed by Peru (7%), and Colombia (5%). By contrast, Argentina and Mexico have recorded negative growth rates (-2.5% and -5%, respectively). 1996 predictions are equally as optimistic forecasting a growth rate of 7%, according to Chile's Central Bank. The annual GDP per capita reached US\$ 4,500 dollars in 1995. The unemployment rate is currently situated at the 4.5% mark albeit it is thought that this rate is not an accurate reflection of reality given that close to 25% of the population is underemployed and thus unable to cover essential needs. The inflation rate continued its decline to 8.2% in 1995, compared to 8.9% in 1994 and 12.3% in 1993. The outlook for 1996 presages a 6.5% rate of inflation.

Exports and Imports

Chilean exports reached US\$ 14.4 billion (to November 1995). This represents a 20% increase with respect to 1994. Imports experienced an increase as well in 1995, while the trade balance has virtually doubled. Almost half of the exports are currently directed to the United States (18%), Japan (17%), Argentina (6%), Brazil (5%), and South Korea (5%), while 25% of imports come from the US. In 1995, Canada exported Cdn\$ 368 million in goods to Chile, while Canada imported Cdn\$ 279 million in goods from Chile. Hence, Canada has had positive trade balance in 1995 with respect to Chile, a noteworthy fact given that in 1993 this positive trade balance reached Cdn\$ 3.6 million, and Cdn\$ 75.3 million in 1994. Canada's exports consist mainly of wheat, industrial equipment, mining equipment and Potassium. Imports from Chile consist mainly of fresh grapes and other fruit, wine, copper concentrates, and fish and seafood products.

Chile is endowed with considerable resources in mining. Copper represents a major Chilean export. The government has sought to diversify the structure of Chilean exports by encouraging them from other sectors of the economy. Thus, by 1995, copper represented 35.6% of the total export amount, while, in 1990, this figure was 45.5%.

The Chilean economy is composed essentially of 9 sectors. Their respective contribution to the GDP in 1995 was as follows:

Fishing Industry	5.8%
Mining	4.9%
Manuf. Indust.	6.1%

Elec., Gas, Water	8.8%
Construction	9.2%
Businesses, Hotels, Restau.	10.6 %
Transp.& Communications	11.1%
Financial Services	7.3%
Personal Services	2.3%

Source: Banco Central de Chile

Government Budget

The financial status of the Chilean government is, generally speaking, favourable. Chile's foreign debt reached US\$ 21 billion (about 35% of the GDP), a debt reduction is forecasted for 1996 given the government's disposition of making payments on the principal. Indeed, Chile and Colombia are the only countries in Latin America that show no deficits given that the surplus of the Colombian government represents 1.5% of the GDP while that of Chile reaches 4.3% of the GDP.

General 1996 Outlook

GDP growth	7%
Inflation rate	6.5%
Trade balance	\$US 900 million

Materialized Foreign Investment

Although materialized foreign investment in 1995 experienced a 5.5% decline due to the impact of the Mexican crisis on ADR income, foreign investment represented 6% of the GDP. Direct foreign investment reached US\$ 3.431 billion, 17.3% higher than the previous year. Authorized foreign investment reached US\$ 5.962 billion (+1.04%) of which US\$ 4.034 billion correspond to new projects, while US\$ 1.928 billion went to increases in existing investment. The breakdown, sector by sector can be summarized as follows: US\$ 3.916 billion went to the Mining sector; US\$ 1.069 billion went to services; US\$ 458.5 million went to industry.

Additionally, investment sources were distributed in the following manner: North America materialized US\$ 1.935 billion (via DL 600 in 1995), 29.8% higher than the previous year: U.S. generated US\$ 1.534 billion (+53.7%), and Canada generated US\$ 401.2 million (-18.7%). Authorized investment from this region amounted to US\$ 3.128 billion, 37.4% less than in 1994. While Canada increased its authorized investment by 199.4% (US\$ 2.013 billion) mainly in the areas of energy and mining, the United

States decreased its authorized investment by 74.2% (US\$ 1.114 billion). Latin America and the Caribbean generated US\$ 207.7 million (+47.3%), and an additional US\$ 518.9 million were authorized, a sum 222% greater than the US\$ 161 million in '94. The EEC decreased investment in Chile by 6.6%: from US\$ 573.9 million to US\$ 535.9 million. However, authorized investment rose by 52.3% reaching US\$ 525 million. The European continent as a whole materialized a total of US\$ 576 million (-14.8%), and obtained authorization for US\$ 556.5 million (+25.4%).

2.2 FOREIGN INVESTMENT REGULATIONS

The Chilean constitutional definition of the role of private enterprise and of the state is based on the principle of freedom of enterprise. In Article 19 number 21 of the Constitution, the Freedom of Enterprise is expressed as "*the right to develop any economic activity that is not against ethics, not against public order nor against domestic security, and that is respectful of the norms by which it is governed*".

The Foreign Investment Statute: Decree Law 600

Chile's dedication to an open free market economy is reflected in its foreign investment statute DL600 which promotes the inflow of foreign capital. Decree Law 600 is a very simple piece of legislation based on the principles of non-discrimination between foreign and local investors, and non-discretionary processing of investment applications. It guarantees foreign investors access to the Formal Market for repatriation of capital and profits and grants them special franchises relating taxes and custom duties.

Pursuant to this Law, foreign individuals, corporations or entities may bring capital into the country in the form of freely convertible foreign exchange, tangible assets, technology that can be capitalized, and loans tied to foreign investment projects. The authorization of foreign investment in accordance with this Law is contained in a contract entered into by the investor and the State of Chile, which may not accept capital contributions representing less than 30% of the total investment nor associated credits representing more than 70% of it.

Since the rights and guarantees awarded to the foreign investor are included in the contract, they may not be abrogated during the period for which they have been agreed upon, even if new legislation containing different rules is enacted. Amendments to the contract are possible only with the agreement of both parties.

The petition to obtain the referred authorization must be submitted to the Foreign Investment Committee, which is the only entity legally authorized to accept entrance of capitals from abroad under Decree Law 600 and to stipulate the terms and

condition of the corresponding contracts. This is a very agile institution and the procedure is simple.

The contract establishes the terms in which capital may be brought into the country, and that must not exceed 8 years for mining investments and 3 years for all others.

Foreign investors may repatriate their capital after one year has elapsed, counted as from the date in which it has been brought in. Related profits may be repatriated any time, without limitation as to the amount thereof, previous payment of Chilean taxes.

In the case of manufacturing or extractive industry projects which exceed US\$ 50,000,000, all or part of the proceeds from exports can be maintained abroad in order to cover expenses or to repatriate capital or profits. The foregoing must be agreed upon in the foreign investment contract.

Chapter XIV of Compendium of Foreign Exchange Regulations of the Central Bank

These provisions apply to individuals, corporations or entities which bring capital into the country in the form of foreign exchange which is registered by the Central Bank. A certificate is issued by the Central Bank upon registration. This procedure only applies to capital brought into the country in the form of foreign currency.

Registered investors may repatriate capital or profits under the terms and conditions provided by the specific Central Bank regulations in force at the time the foreign exchange has been converted into local currency. Capital may be repatriated only after one year has elapsed. There is no limit as to the time or amounts for the repatriation of profits.

Taxation System for the Foreign Investor in Accordance with DL600

Foreign investors who enter into a foreign investment contract with the Republic of Chile, under the terms of the Foreign Investment Statute, can choose between the two fixed rate systems set forth in the Statute. In this manner, the foreign investor can opt for a general invariable and fixed rate of 42%, for a period of ten years, as from the start up of the company's operations.

The first category tax of 15% is included in this fixed over-all tax rate of 42%. The former is paid yearly by the company, the same as in the mentioned general tax system.

Materialized Foreign Investment

(US\$ Millions)

	DL600 Capital Related Contributions (A)	DL600 Loans (B)	Total DL600 (A + B)	CHP. XIV Capital Contributions (C)	Total Contributions (A + C)	ADR's (D)	Total Capital Inflows (A + C + D)	Total Invested Capital and Loans
1990	511.1	808.8	1,319.9	35.7	546.8	105.2	652.0	1,460.8
1991	571.2	409.4	980.6	93.4	664.6	8.9	673.5	1,082.9
1992	688.7	306.9	995.6	149.8	838.5	331.7	1,170.2	1,477.1
1993	893.1	832.3	1,725.4	204.2	1,097.3	821.6	1,918.9	2,751.2
1994	1,541.4	976.5	2,517.0	407.1	1,948.5	1,643.5	3,592.0	4,568.5
1995	1,801.5	1,219.9	3,021.4	409.6	2,211.1	886.1	3,097.2	4,371.1
Jan-Dec '94	1,541.4	976.5	2,517.9	407.1	1,948.5	1,643.5	3,592.0	4,568.5
Jan-Dec '95	1,801.5	1,219.9	3,021.4	409.6	2,211.1	886.1	3,097.2	4,371.1
Increase %	16.9	24.9	20.0	0.6	13.5	-46.1	-13.8	-5.5

Central Bank of Chile
Foreign Investment Committee

The foreign investors who opt for this fixed rate system and who are partners or shareholders of the company, must pay a surtax of 27% on the dividends or profits that have been remitted. The foregoing is for the purpose of completing the already mentioned 42% rate. In the same manner, the branch office or agency of the foreign company must pay the same surtax on the earnings that have been withdrawn or remitted to the home office abroad. Under these circumstances, there is no right to a credit for payment of the first category tax.

Instead of the 42% fixed rate, the foreign investor can choose a general and fixed rate of 40%. In this case, the foreign investor is subject to a variable and progressive rate, in addition to the fixed rate. The rate is determined according to the relation existing between the amounts remitted and the average capital held by the company over a specific period, which is indicated by the Statute in each case.

The foreign investor may waive the rights granted by the Foreign Investment Statute any time and become subject to the general tax regime, in which case he may be subject to changes in the general tax legislation, with the same rights options and obligations pertaining to national investors. The waiver of fixed rates is irrevocable and once effected, the taxpayer may not return to fixed rates in the future.

Regional Incentives and Free Zones

There are various special tax regimes associated to isolated geographical areas. They establish tax exemptions (to income tax, customs duties, VAT, etc.), fiscal bonuses and subsidies, all of which seek to promote activities in those areas.

In addition, since 1975, Free Zones have been established and are operating both in the north and south of the country, respectively in the towns of Iquique and Punta Arenas. As long as imported goods remain within a Free Zone, no VAT and customs duties are charged. Free Zones may serve different purposes, such as deposit, exhibition or display, packing, sale, manufacturing, and assembling. Sales and services rendered within Free Zones are exempt from VAT, and income is exempt from First Category Tax. There is no reduction in Personal or Additional taxes. In terms of imports, investors opting not to use the free-zone areas are subject to a 11% tax and an 18% VAT.

Debt-Equity Ratio

There is no debt-equity ratio for tax purposes. Nevertheless, the Foreign Investment Committee may require that the ratio does not exceed reasonable limits.

Foreign Investment in Chile

Since 1990, Chile's initiatives towards the encouragement of foreign investment in all sectors have resulted in an accumulated US\$ 24.6 billion of materialized foreign investment under the DL 600 regime, an average of almost US\$ 4.1 billion per year. In 1995 however, while loans and capital related contributions under both DL 600 and Chapter XIV continued to rise, Chile's total materialized foreign investment was US\$ 4.3 billion, representing a 5.5% decrease from 1994. The cause of this recent depreciate is attributed to a 46.1% decrease in ADR's, which took place after the 1994 stock market crisis in Mexico.

2.3 NAFTA AND THE NEW BILATERAL TRADE AGREEMENT BETWEEN CANADA AND CHILE

With the release of the Leader's Statement at the Miami Summit of December 1994, the plan to bring Chile into NAFTA was solidified. The main features of NAFTA include: (i) elimination of tariffs and trade barriers (including non-tariff barriers) among the partners; (ii) the creation of a transparent mechanism for dispute settlement; (iii) national treatment for investors from NAFTA party countries; (iv) the opening of some previously protected sectors such as banking and telecommunications, and (v) the inclusion of services. There are certain interests in each country which have been excluded from NAFTA such as cultural interests in Canada, broadcasting in the USA, and petroleum in Mexico. In June, 1995, Ministers of the three NAFTA partners and Chile announced the commencement of Chile's accession to the agreement. Several quadrilateral negotiation meetings were then held between July and September 1995.

Towards the end of 1995 however, internal political issues within the United States put NAFTA negotiations with Chile on hold indefinitely. Consequently, in an effort to maintain the momentum of market liberalization and strengthen economic relations, Canada and Chile agreed to pursue an interim bilateral trade agreement, which will provide a bridge to full NAFTA accession and be fully compatible with current NAFTA obligations. Delegations from both countries exchanged proposals on market access, investment, trade, goods and services and other NAFTA disciplines. Canada is interested in negotiating a double taxation treaty with Chile and a Foreign Investment Protection Agreement will likely be included in the bilateral agreement. The second round of negotiations took place at the end of February 1996 in Ottawa, and a third round is planned for the end of March in Santiago.

Chile's Energy Sector and Bilateral Trade

As a large exporter of energy products (US\$ 16 billion in 1991), the liberalization of the energy sector is in Canada's interest. Chile's energy sector is very liberal, and is unlikely to cause any significant conflict during the bilateral negotiations.

As already stated, prices of energy products are freely determined by the market for all products, except those where a natural monopoly exists. The latter is the case of electricity, where a clear regulation exists, and prices are set on the basis of marginal costs. Foreign investors are allowed to participate in all sub-sectors, and imports are subject to the regular 11% tariff as the only trade barrier.

The only departure from a total liberal setting that Chile's Constitution stipulates that the state is the sole owner of all hydrocarbon deposits. As such, private exploration and exploitation of hydrocarbon fields can only occur with concession from the State. This restriction however, is unlikely to create a conflict in the free trade

negotiations for the following reasons. First, the concessions regime is transparent and full of incentives, and already attracted foreign companies, including Canada's EUROCAN. Second, Chile's regime is far less restrictive than Mexico's, whose state-owned PEMEX controls virtually everything in the petroleum sector: exploration, exploitation, refining, processing, and pipelining. Third, Canada's provincial governments also have ownership of energy resources. Finally, the ownership restriction applies to the hydrocarbon sector, which is not Chile's most attractive.

2.4 ENVIRONMENTAL ISSUES

While Chile has in the past signed several international agreements concerning environmental issues, (Toxic Waste, Basil 1989; Antarctica, Washington 1959 and Madrid 1991; Ozone Layer, Montreal; Marine Life, 14 different agreements; United Nations accord, Earth Summit, Rio de Janeiro, Brazil) it is justifiable to say that real concern about environmental problem, such as air pollution in Santiago and water pollution in coastal resorts is fairly recent. While existing standards in many areas are comparable to those in Canada or the USA (well developed standards for portable water, emissions of industrial liquid residues, emissions of stationary and mobile sources, and air quality), the prevailing opinion among technicians and authorities is that there is much lacking in terms of enforcement and coordination.

Current legislation is very broad, consisting of framework laws. The 1980 constitution provides each individual with the right to live in a pollution free environment. Protection of this lies in the jurisdiction of the courts. Government authority and responsibility for the environment is dispersed over 70 government offices. The public institutions to overview and handle environmental problems are National Environmental Commission (CONAMA), and Regional Environmental Councils (COREMAS). CONAMA, whose 1994 budget of US\$ 8.4 mn was eight times its 1993 version now works with environmental units in other ministries, especially Mining and Agriculture.

Regarding maximum tolerance levels of chemicals, Decree Number 185 was established in 1991 to regulate the amount of SO₂ (sulphur dioxide) and certain emissions from mines, smelters, and industries in small urban areas. According to the decree, a target of 56 micrograms /m³ for the Metropolitan Area (Santiago) is to be reached by 1997. As thermoelectric plants emit sulphur, they also have to comply to this regulation, which requires investment in environmentally cleaner equipment and monitoring systems.

More recently in March of 1994, an Environmental Framework Law (Law 19300) was approved by congress and promulgated by the outgoing Aylwin administration. This law creates a framework for environmental laws in Chile. The law covers five areas; environmental impact assessment, quality standards, emissions standards, prevention plans and preservation standards. Although the legislation is now in place,

norms governing environmental issues are still under discussion. Under this legislation, all projects involving emissions, potential health risks or the relocation of communities, are liable to produce an environmental impact study to be appraised by CONAMA or by the corresponding regional COREMA. Such a study must set forth both whether or not the referred project abides to environmental norms currently under discussion, and what actions the party will adopt in order to impede or minimize any adverse environmental effects.

Unlike lengthy environmental codes elsewhere in Latin America, the law does not define acceptable emissions levels but empowers CONAMA to set standards and review them every five years. CONAMA is undergoing discussions with Canada, the US Environmental Protection Agency and the European Union to see about the possibility of these foreign models. Recently, CONAMA signed a MOU (Memorandum of Understanding) with Canada pertaining to environmental issues, norms and regulations that will be further discussed. Also worth mentioning is that in Article 24 of the law, the President is authorized to establish all the above mentioned standards by Presidential Decree.

The General Law is the first legal instrument to set forth a systematic approach to environmental issues in Chile. So far, a series of presidential decrees aimed at specific polluters have already helped push industry, led by the copper, wood pulp, and fishmeal export heavyweights to spend around US\$ 1.2 billion cleaning up over the past four years. The biggest spenders have been copper smelters that have belched out soot, arsenic and sulphur dioxide for decades, with state-owned Codelco and Enami among the worst offenders. Codelco estimates that cleaning up its act could cost up to US\$ 1 billion; the Chuquicamata division alone plans to spend US\$ 23 million by 2000.

The law also considers an active community participation in the evaluation of an environmental impact assessment. The Official Gazette has the right to publish all such studies, giving the population access to any environmental impact study submitted to the National Environmental Commission, or its regional counterparts. Individuals, groups and government officials can file lawsuits aimed at getting polluting industries to pay fines, limit emissions, shut down and/or restore damaged environments. Considering that the environmental movement in Chile is still in its very early stages, what impact this right will have in reality still remains to be seen. This new law may improve the present environmental situation, but a sustained budgetary effort will also be required to accompany the required changes in enforcement capabilities.

About the Responsibility for Environmental Damage

The Environmental Framework Law abides by the *polluter pays* principle which establishes certain responsibilities for actions which cause damage to the environmental heritage. Firstly, everybody causing environmental damage is obligated to repair it. Such repair must be on account of he who causes such deterioration. In addition to the damage repair, the party must indemnify pursuant to the law. In this sense the law considers what is called *environmental action* which is an action meant to indemnify and repair environmental damage caused. Moreover, the law establishes penalties because of environmental damage.

	Gross Production	Imports	Exports	Gross Consumption
Crude Oil	714	7989	0	8451
Natural Gas	2185	0	85	1777
Coal	1182	1930	0	3145
Hydroelectricity	17256	0	0	16977
Firewood & Others	9166	0	0	9166
Biogas	66	0	0	66

3.1 OIL AND GAS IN THE ENERGY SECTOR¹

Energy is one of the most dynamic sectors in the Chilean economy. Between the years 1990 and 1994, the most recent figures available from the CNE, consumption of primary energy has increased by 20%, or at a rate of about 4.8% annually. The growth of the economy, projected at over 5% annually points to an increase in the demand for energy supplies as new productive activities, new investment projects and consumption, in general, increase.

Energy Consumption Breakdown

Transportation	26.2%
Industrial & Mining	26.2%
Business & Residential	23.8%
Consumption in Transformation Centres	23.8%

Source: *Balance Nacional de Energia 1994* (p. 5), published by the National Energy Commission, 1994.

¹For complete statistical information on energy production and consumption see *Balance Nacional de Energia 1975-1994 Chile*, Comision Nacional de Energia.

National energy consumption is diversified among various sources. Petroleum is by far the most important source, representing approximately 45% of total energy consumption. Presently, Chile imports 49% of its total energy, in the form of crude oil, liquid fuels and coal. The government and the private sector are working on a new Strategic Energy plan for the next ten years which aims to diversify the country's energy consumption pattern by stimulating the development of new energy sources such as hydroelectricity, domestic coal and geothermal power while encouraging gas imports from neighbouring countries. It will also promote the rational use of energy and implement flexible energy supply policies for users, avoiding further import increases and its by-products. The Chilean energy sector is widely heterogeneous, both in market structure and orientation of each sub-sector, and in the structure of property. While electricity generation and transmission are now mainly under private ownership, oil exploration and refining are still in the hands of the state (although distribution is made by private firms). The emerging gas industry's entire operations are under private ownership as well.

The potential for growth in the energy sector implies possible investment opportunities, which, combined with other factors, provide the means to develop sound energy projects and profitable businesses in the Chilean energy sector such as joint ventures, engineering and construction services, and qualified personnel for the operation of power plants.

Energy Dependency								
In Thousands of Barrels of Oil per Day								
	1976	%	1982	%	1988	%	1994	%
Imported Energy	71	39	50	25	92	35	190	49
National Energy	111	61	153	75	175	65	202	51
Total (in TBOD)	182		203		267		392	

The graph represents the ratio between locally produced and imported oil within the context of total gross energy consumption. The above figures have been arrived at on the basis of primary energy plus imports minus exports of secondary energy sources. Hydroelectricity has been included with a caloric equivalent of 2,750 Cal/KWh.

Taken from : Balance Nacional de Energia 1974-1994 Chile, Comision Nacional de Energia (CNE), Santiago, Chile.

3.2 GOVERNMENT AGENCIES IN THE ENERGY SECTOR

Comision Nacional de Energia (National Energy Commission):

- Studies and proposes legislation, regulations and standards.
- Designs development plans for the energy sector that interested companies may use as guidelines.
- Coordinates investments for major projects, working jointly with the Ministry of National Planning (MIDEPLAN).
- Establishes price policies and regulates pricing.
- Serves as an advisory agency to the Chilean government.

Ministerio de Economia (Ministry of Economy):

- Approves standards on fuels and electric power.
- Regulates prices in accordance with National Energy Commission recommendations.

Ministerio de Minería (Ministry of Mining):

- Represents the government in oil-related contracts.
- The Minister of Mining is Chairman of the National Petroleum Company (ENAP).

Ministerio de Planificación Nacional (MIDEPLAN, Ministry of National Planning):

- Controls investments by state agencies and firms.

Superintendencia de Electricidad y Combustibles (Office of the Superintendent of Electricity and Fuels):

- Supervises electric power company operations.
- Assures safety standards in electric power facilities and products.
- Assures safety standards in fuel-related facilities and quality standards for liquid and gaseous fuels.

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4.1 PETROLEUM: General Overview

Demand in the Sector

Petroleum is the main energy source presently used in Chile, representing in 1994 approximately 45% of total energy consumption. Throughout the 1990s, as the economy continued to grow at 6 percent per year, demand for petroleum and its derivative products also continued to rise. Between 1975 and 1994 for example, petroleum product consumption increased on average by 11 thousand barrels of oil equivalent per day. If the trend in energy demand growth witnessed over the past eight years continues, energy consumption in 2000 will exceed 177 MMboe.

As important as the absolute volume growth, is the composition of energy demand. Per capita energy consumption in Chile has increased by over 38% since 1989 to roughly 8 Boe/capita. Over the same period, GDP per capita has increased

Composition of Energy Demand in Chile

	Total Energy= 118.2 MMboe
Natural Gas	4
Coal	7
Firewood	23
Electricity	11
Petroleum Products	50
Others	5

Source: "Petroleum Industry in Latin America"
Canadian Research Institute
Study No. 64, August 1995

Composition of Energy Demand in Chile #2

	Petroleum Products= 59.2 MMboe
Kerosene	9
Deisel	34
Fuel Oil	22
Propane	11
Gasoline	24

Source: "Petroleum Industry in Latin America"
Canadian Research Institute
Study No. 64, August 1995

by only 19%. This increasing energy intensity of the Chilean economy is expected to continue into the next century. The dominance of the transportation and industrial sectors in energy demand is also projected to continue.

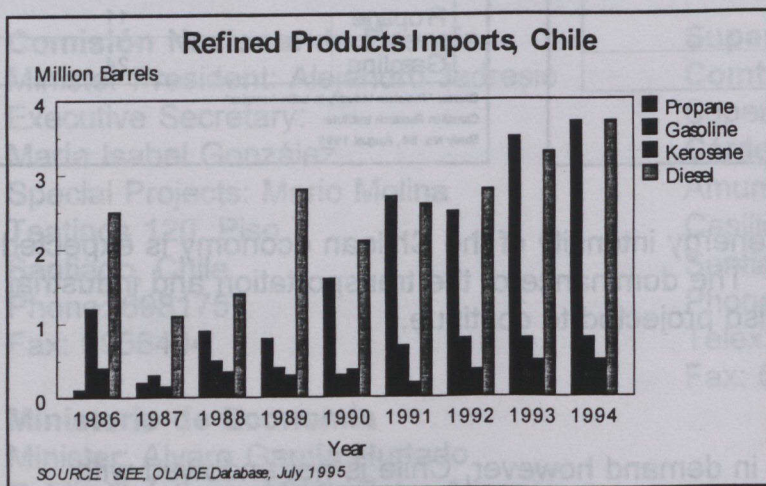
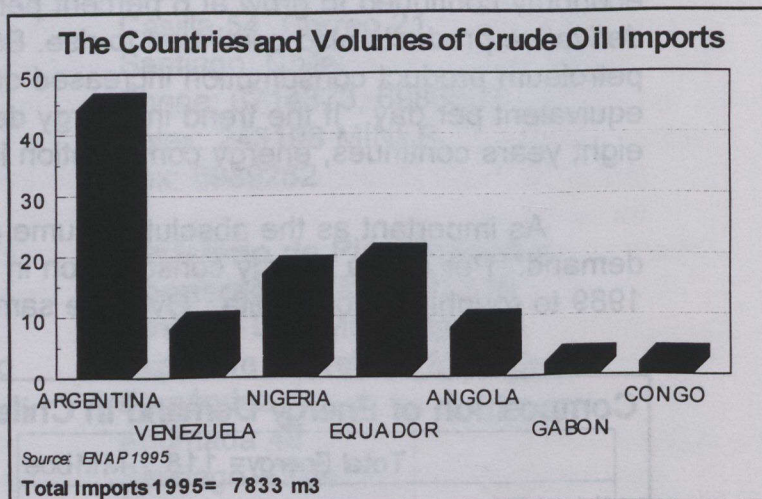
Production in the Sector

Despite this abundance in demand however, Chile is not endowed with significant domestic energy resources. Conventional energy production totalled 4.2 MMboe in 1993, or just over 40% of domestic energy consumption of 103.3 MMboe. Production shares were split 12% for oil, 39% for gas, 17% for coal, and 32% for hydroelectricity. Established crude oil reserves are estimated at 300 million barrels, and crude oil production in 1994 totalled some 12,000 b/d domestically.

Domestic production of crude oil dates back to the late 1940's. The state oil company, ENAP, was established in 1951, to develop the discoveries in Tierra Del Fuego. Oil production increased rapidly until the mid 1960's, plateauing at 35,000 b/d until 1972, when production from new offshore discoveries was brought on stream. Domestic production peaked at 43,000 b/d in 1982, and has declined steadily since that time.

Imports

In 1994, total domestic hydrocarbon production was 17,000 b/d, which represented only 12% of the country's oil consumption of 164,000 b/d. Consequently, by 1994 Chile found it necessary to increase oil and product imports to up to 143,000 b/d. The majority of this was sourced from Argentina via the newly commissioned Trans-Andean pipeline, which carried 105,000 b/d of crude oil from the Neuquen Basin to central Chile.



During 1994 ENAP imported 7,809 Thm³ (135,000 bbl/day) of crude oil, with a CIF value of US\$ 770 million. This volume is 9% higher than previous year imports. By 1995 ENAP was producing approximately 15.7% of the 9,295,000 m³ of crude oil consumed in the country.

In refining, specific imbalances between the refinery product slate and the product demand slate have also resulted in rapid growth in product imports. This is particularly evident for diesel fuel (for both transportation and industrial uses) and for propane, which has penetrated quickly into the residential sector over the last ten years.

Sipetrol

In addition to increasing imports of both crude and refined petroleum products, Chile's Enap has also expanded its foreign exploration and production affiliate, Sipetrol. Sipetrol operates producing wells in Argentina, Ecuador and Venezuela, which in 1994 produced up to 10,000 b/d. Production from existing wells is expected to increase to 20,000 b/d by the end of 1996. ENAP also estimates that in the near future, Sipetrol could produce up to 15% or 20% of the crude oil consumed.

While internally ENAP is now concentrating on its refining activities, externally through Sipetrol, ENAP has been moving outside of the country to take advantage of oil exploration opportunities emerging in South America. Generally speaking, this production is not destined for Chilean markets. Rather, the proceeds from oil exploration outside of the country are being used to partially offset the country's large and growing oil import bill, which totalled some US\$ 1115 million in 1993.

4.2 EXPLORATION AND EXPLOITATION

In the petroleum sector, the Chilean state is the owner of all hydrocarbon deposits. However, exploration and commercial operation of said deposits may be made in association with national or foreign private investors. Indeed, the government authorizes private operation of oil deposits under the system of Special Contracts for Petroleum Operations (See Annex) in the entire country, except for in the Magallanes area, which is reserved exclusively for ENAP, the National Petroleum Company of Chile.

More than sixteen sedimentary basins have been studied along the Chilean territory, both inland and offshore. The offshore sedimentary basins run along a narrow submarine strip between the coastal line and the Chile-Peru submarine depression. Sedimentary deposits, are up to 4,000 meters (13,000 ft) deep, and include submarine layers from the High Cretaceous and Tertiary Ages.

Inland sedimentary basins are found in: the Straits of Magallan (or Magallanes), the southernmost end of the Central Valley, and northern Chile. Of these sites, the most significant is the Magallanes basin located east of the Andes mountains. It has a central layer of over 8,000 meters (26,000 ft) deep, including marine strata from the Higher Jurassic, Cretaceous, and Lower Tertiary Ages, and continental strata from the Higher Tertiary Age.

Nearly 300,000 sq.km (116,000 sq.mi) of sedimentary basins are known. However, the Magallanes basin, representing 29% of the total area, has been the only oil producing basin. In fact, other than the Magallanes sites, only 94 exploratory oil wells have been drilled in more than 210,000 sq.km. Eighteen of those drillings have been done offshore.

The only active company operating in the Magallanes basin is state-owned ENAP, which concentrated its activities, up until the late sixties, on Tierra del Fuego island and

the mainland. By the mid-seventies works were started offshore in the Straits of Magellan, between its first narrow inlet and its eastern inlet.

By the s and continuing into the 1990s, risk contracts made by ENAP with several foreign firms (HUNT-USA, HAMILTON-NORCEN-USA, MAXUS-USA, EUROCAN-CANADA), have expanded exploration in the petroleum sector to other areas of the country including Pedernales, Maricunga, Copiapo, Chillan and Arauco. As of this year, many of these attempts to discover new indigenous oil sources have come up dry, which explains ENAP's present focus on both exterior projects and imports.

* For a complete list of all ENAP's current projects see Annex #1

Exploration Outside Chile: SIPETROL

As mentioned before, by the beginning of the 1990s, ENAP found itself facing a serious drop in production. Not only were new exploratory projects in the north coming up dry, but its traditional oil wells around Tierra del Fuego were drying up as well. Thus, in 1990, ENAP created *Sipetrol*, its foreign exploration subsidiary. In four short years, Sipetrol's production abroad has equalled ENAP's 1900 m³ per day. By the end of 1996, it is projected to increase by half, with an output of 970,000 m³ of oil, 12% of home needs.² Sipetrol has 13 exploration and production contracts, seven in Argentina, two in Ecuador, three in Columbia, and one in Venezuela. Sipetrol is also exploring opportunities in Africa, Guinea, and Gabon. In 1994, it increased its previous year's production almost eight-fold, from 54,000 m³ to 415,000 m³ of oil. Its next step is to expand beyond Latin America, offering expertise and a share in new projects on the continent in exchange for participation in projects elsewhere in the world.

ENAP owns 99.5% of Sipetrol with the rest owned by Refineria Petroleo Concon (RPC), its 70,000 bpd refinery, on the central coast. Being a legally separated company frees Sipetrol from the worst of the redtape and regulations that typically strangle initiatives in a state-run company.

Relative independence has allowed Sipetrol to pursue joint ventures. Sipetrol's most important contract is a 50/50 joint venture with YPF, the Argentine state oil company recently privatized, to operate new wells across from the eastern mouth of the Strait of Magellan. The first platform went into production in 1994, at 9,000 bpd. By January 1996, Sipetrol had three platforms to produce a total of 20,000 bpd.

²Chile, Inc 1995 Sourcebook, "High Risk Wells at Home Drive Sipetrol to Wildcat Abroad".

4.3 REFINING AND DRILLING

Investment in refining has risen to over US\$ 177 million dollars over the last six years to both improve and increase productivity. This figure is significantly higher than the one pertaining to the 1981-1989 period, when investment reached US\$ 95 million dollars. The following represents a summary of current refining projects in progress:

During 1994, a state-owned Sulphur Recovery Plant was inaugurated at the Concón Oil Refinery (RPC S.A.), thereby reducing the sulphur content of emitted gases in the process. The sulphur production capacity is 10 tons per day. The investment in the Plant was US\$ 4 million.

RPC S.A. is presently refurbishing the Catalytic Cracking Unit, including the Light Products Recovery Unit, to increase its conversion capacity and to obtain a higher octane-level gasoline and an increased yield in LPG production.

Total investment in this project will reach US\$ 26.1 million. This project's first stage, which represents an increase in refining capacity from 2,900 to 3,200 m³/day, has been in operation since late 1994. Upon completion of the Light Recovery Unit, refining capacity will have reached 4,000 m³/day.

RPC S.A. is also refurbishing its Atmospheric Distillation Units to increase refinery capacity to 13,000 m³/day to meet increased demand in oil-derived fuels. The total investment in this project will reach US\$ 11.7 million and will be completed by late 1995.

A new Catalytic Reforming Plant is under construction at RPC S.A. It is designed to produce 10,000 barrels/day of unleaded high octane gasoline for vehicles with catalytic converters and a high compression ratio. Total investment required is close to US\$ 30 million; production should start by the end of 1995.

RPC S.A. plans to construct an Isomerization Plant with a capacity of 5,400 barrels/day (860 m³/day), with a total investment of US\$ 14.4 million. This plant will increase unleaded gasoline production and should initiate operations in 1997.

Starting in 1997, the extension of the second Atmospheric and Vacuum Distillation Plant will increase refining capacity to 14,000 m³/day, with a total investment of US\$ 13.1 million.

A recent study performed at RPC suggested increasing the Catalytic Reforming Unit capacity to 12,000 barrels/day with an additional investment of US\$ 7.3 million. Operations should begin in 1997. A Hydrotreating plant for diesel oil is under

consideration. This plant will reduce sulphur and nitrogen contaminants. Total investment would be about US\$ 37.9 million.

The other state-owned refinery, Petrox S.A. Oil Refinery completed the refurbishing of the Light Fraction Recovery Unit on December 1994, with a total investment of US\$ 9.5 million, thereby increasing LPG production.

Petrox S.A. continued the construction of a Hydrocracking Plant with a capacity of 9,000 barrels/day (1,430 m³/day) with an investment of US\$ 45.2 million, increasing the production of low-sulphur diesel oil.

As a result of Petrox's most recent study, the construction of a Catalytic Reforming Plant with a capacity of 14,000 barrels/day (2,230 m³/day) is under consideration. This will require an investment of US\$ 37.5 million. Also a 4,000 barrel/day (610 m³/day) Isomerization Plant implying a total investment of US\$ 13.1 million. Both projects will allow the production of unleaded gasoline in 1998 and 1999, respectively.

Finally, the refurbishing of the second Atmospheric and Vacuum Plant is under consideration to increase Petrox's refining capacity to 16,000 m³/day. The investment in this plant amounts to US\$ 3.7 million and might be placed into operation in 1996.

*** For a list and description of current production units presently in operation, see Annex #3.

Two New Plants

The Petrox Refinery will significantly increase its high-quality fuel production capacity during the year by inaugurating two new plants in Talcahuano that will begin operating in late March 1996. The first is a Hydrocracking Plant, a US\$ 55 million dollar investment outlayed by Petrox itself, that will allow an increase in high-quality, low-sulphur diesel fuel production to 360,000 m³/year, thereby increasing its refining capacity by 14%. As a linked project, Petrox also constructed a Hydrogen Plant, a US\$ 12 million dollar investment, which will allow the Hydrocracking plant a continuous and secure supply of hydrogen required in the hydrocracking process. This project was financed with private capital as well. These plants will be operating under UNOCAL licence and technology. The equipment utilized has been supplied by US, Italian, and Japanese firms.

New Refining Project

The Chilean government is performing economic feasibility studies aimed at determining the possibility of constructing a third refinery that would commence operations by 2002. The studies under way will end in 1998. By then, the timeframe for the project and a precise determination of investment amounts and the type of financing to be utilized will have been defined. In any case, construction should begin in 1999.

The decision to build this third refinery is based upon figures on projected demand. While demand for fuel this year is about 10 million m³ (9 million of which came from Enap's two existing refineries), by the year 2000 demand is expected to grow approximately 14-15 million m³ per year. Estimated investment is on the order of US\$ 400 million.

Drilling

Drilling is undertaken both within Chile and abroad. In the latter case, drilling is undertaken by SIPETROL (*Sociedad Internacional Petrolera S.A.*), an ENAP affiliate. Domestic drilling in 1994: 10 wells drilled, all inland, using two rigs. 8 drilling sites in the XII Region, and 2 in the III Region.

Drilling abroad was undertaken at 33 sites: 19 in Argentina, 2 in Colombia and 12 in Ecuador. These include dry, gas, and oil wells.

4.4 DISTRIBUTION TO CUSTOMERS: INFRASTRUCTURE AND COMPANIES

Transport

The building of the Concon refinery meant the development and bringing to fruition of a number of related projects such as the Quintero loading dock, strategic storage areas, and oil pipelines connecting the different storage areas for the transport of various products. As a result, the Quintero sea terminal was effectively connected by a 20 kilometer pipeline to the Concon refinery.

All liquid products manufactured by the refinery began being delivered to distributors through the Concon-Salinas and Concon-Maipu oil pipelines. The latter is owned by *Sociedad Nacional de Oleoductos*, SONACOL, founded in 1957, with capital from *Compania de Petroleos de Chile*, COPEC, ESSO, *Standard Oil CO. de Chile*, and ENAP. In December, 1965, the Concon-Maipu pipeline was extended to San Fernando, increasing its length by 135 km. This pipeline is owned by SONACOL as well.

ENAP also constructed the 350 km pipeline between the Concon refinery and San Fernando which was placed into operation in mid - 1967.

Hence, a 620 km pipeline network was brought into connection with the central area of the country which accounts for 70% of liquid fuel consumption. In the Magallanes area, there exists an extensive network of gas and oil pipelines, both inland and offshore.

The rest of the country is supplied through sea shipping, except for the XII Region in Magallanes where ENAP has at its disposal a network of oil pipelines that transport different products from the existing deposits to the various treating plants and then on to loading and final distribution terminals. Within the context of bi-national integration, the *TransAndean Oil Pipeline* was inaugurated in February 1994. Its objective is that of transporting crude oil from Puerto Hernandez, in Neuquen, Argentina, to Talcahuano in Chile. The pipeline belongs to two companies: *Oleoducto Trasandino S.A. (Chile)*, and *Oleoducto Trasandino S.A. (Argentina)*. They are subject to the pertinent regulations emanating from their respective countries. Since its inauguration on June 1, 1994, it has transported 3.6 Mm³ of crude oil, 69% for the Petrox Refinery, and 19% for the RPC refinery in Concon. The remaining 12% was exported. 79.5% of the transported oil was produced by YPF, S.A. and 20.5% by *Petrolera Argentina San Jorge, S.A.*

Storage

The construction of refineries meant the concomitant construction of storage facilities with which the public could be better supplied with fuels. This also meant constructing storage facilities for the refineries themselves and a loading terminal in Quintero.

In general, the geographic storage capacity for clean and oil fuels can be summarized as follows: 32% in the V Region; 30% in the VIII Region, 12% in the XII Region, 11% in the Metropolitan Region, and 15% in the remaining regions of the country.

Distribution

Initially, the fuel market operated through concessions to three private companies: COPEC, SHELL, and ESSO. In 1978, wholesale distribution was liberalized. By 1982, petroleum derivatives were governed by free prices, with the exception of LPG in the XI and XII Regions.

As of 1979, when 1964 Decree Law #20 (which prevented the establishment of partnerships in the area of distribution) was abolished, the following firms entered the market: COMAR, in 1981; ENEX, in 1984 (ENEX became a SHELL affiliate in 1986);

APEX, in 1984 (APEX became a COPEC affiliate in 1986); ABASTIBLE, in 1984 (ABASTIBLE is affiliated to COPEC); GASPEC, in 1985 (now called GAZPESA); and TEXACO in 1992.

The new distribution companies, with the exception of COMAR, do not own wholesale distribution facilities, but rather, operate by renting storage facilities from EMALCO and ENAP. At the same time, traditional wholesale distributors (COPEC, ESSO, SHELL) own their own storage facilities throughout the country, including sea terminals.

GASCO, ABASTIBLE, ENAGAS and other affiliates of these are devoted to wholesale LPG gas distribution.

ENAP, RPC, and PETROX are in charge of initial distribution of petroleum derivatives and LPG, supplying 92% of the market through direct sales to large consumers and distribution companies.

Investments on the part of distribution companies has been relatively significant in terms of geographic coverage of their services, service station services and, in terms of developing a corporate image for medium range consumers. In 1991, there were 1,233 service stations, 39.5% of which sold under the trade name, COPEC; 21% through ESSO; 22.3% through SHELL; 9.7% through COMAR; and 7.5% through others. Approximately one-third of the service stations operate within the Metropolitan Region.

4.5 CURRENT GOVERNMENT POLICIES AND LEGISLATION

Historical Background

Since 1928, the State is the legal owner of all oil deposits and has the right to exploit and develop them. This ownership right was strengthened by the 1932 Mining Code and the 950 ENAP Act, which stated that "the State has the absolute, inalienable, and indefensible right of property to oil deposits, wherever they may be."

The exclusive right of the state regarding refining activities were reaffirmed by the ENAP organic law, which states that only ENAP is allowed to refine oil in Chile. Some small private refineries were allowed to operate, however, only by special laws and under fairly restrictive conditions. This situation lasted until the sixties, when they closed down.

Primary and secondary distribution of oil-based products has been traditionally carried out by private firms, under strict State enforcement of 1932 Decree Law N^o519.

Current Policies

Current policies for the petroleum sector were implemented gradually since 1974. The main changes in said policies have been:

- * State rights and duties regarding exploration and production of hydrocarbons now have been transferred from ENAP to the Ministry of Mining. Therefore the Ministry of Mining is authorized to enter into contracts regarding oil operations. This is the usual way the "door is opened" to private investors to participate in exploration and production projects in the country.

- * Approval of a new, free pricing policy for petroleum and its derivatives, along with authorization to import, refine, and distribute oil in the country. As long as Chile continues to be a net oil importer, and if customs duties are kept low and flat, this policy drives prices near to their true economic value, i.e. their opportunity value.

Foreign investment in the petroleum sector is important for the country, because it means new jobs, increased economic activity, and decreases the need for State investments. In addition there is a willingness to encourage oil exploration and production as a means to face declining oil production levels and reduce the country's dependence on imported oil.

In the petroleum sector, the Chilean state is the owner of all hydrocarbon deposits. However, exploration and commercial operation of said deposits may be made in association with national or foreign private investors. Indeed the government authorizes private operation of oil deposits under the system of Special Contracts for Petroleum Operations (see Annex) in the entire country, except for the Magallanes area, which is reserved exclusively for ENAP.

Oil refining and distribution activities are considered a separate economic sector. Therefore, both national and foreign private investors may access this market by themselves or in association with the State. To participate companies can purchase a significant portion of the share capital of some of the existing company or incorporate a new firm.

Current Legislation

Below is a list of the most relevant legislation presently in force applying to the petroleum sector, especially regarding the areas of exploration, production, refining, importation and distribution.

Exploration and Exploitation

Present legislation in this area is based on the Political constitution of the Republic of Chile, enacted in 1981. Article 19 of the Constitution reads as follows:

"The exploration, development, or exploitation of deposits containing substances not subject to concession may be managed directly by the State, or by the state-owned enterprises, or by means of administrative concession arrangements or special petroleum operation contracts. In this regard, all requirements and conditions set forth by the President of the Republic in each case by presidential decree, must be met. This standard shall apply also to deposits of any kind found under sea water within national jurisdiction, as well as to deposits located totally or partially within areas considered of importance or national security. The President of the Republic is authorized to terminate, at will and at any moment, with the payment of indemnity amounts when applicable, administrative concessions or petroleum operation contracts referring to operations sited in areas considered of importance for national security."

Other important statutes on the subject are Law N° 9618, known as the "ENAP Law", and Decree Law N° 1089 on special contracts for all operations.

ENAP Law

This law provides that ENAP is authorized to carry out hydrocarbon exploration and exploitation activities within and without the national territory, directly or indirectly through participating companies, or in association with other parties. When activities are carried out within the national territory, through companies or other partnerships, such arrangements must operate under administrative concessions or special petroleum operations contracts, and they must meet the requirements and conditions set forth by the President of the Republic by presidential decree. In addition, ENAP is authorized, although not exclusively, to refine petroleum and develop any other industrial activities related to hydrocarbons and their derivatives and byproducts. ENAP may also be authorized by the Ministry of Mining to perform the duties and exercise the rights of the State as stated in a special petroleum operation contract and in the applicable presidential decree.

Special Petroleum Operation Contract Law

Some relevant regulations contained in this law are as follows:

Terms such as "Special Petroleum Operations Contract", "Contractor", "Compensation", "Specific Petroleum Job Contract", and other expressions are defined.

The law states that if it is so specified in the special petroleum operation contract, the contractor is allowed to export the hydrocarbons received as payment, without the limitations imposed by the normal regulations applied to exports. The right to freely make use of foreign currency generated by exports of such hydrocarbons is guaranteed.

In **Annex A** summary is presented of the principal regulations contained in this law.

Refining, Importation and Distribution

Present legislation on refining, importation, and distribution of petroleum and its derivatives is contained in Decree Law N° 18179:

All entities that engage in the business of importing, refining, distributing, transporting, or retailing petroleum, petroleum derived fuels, natural gas and LPG directly to the consumer must be registered with the Ministry of the Economy.

The law provides that the President of the Republic is authorized to impose, by Presidential Decree issued through the Ministry of the Economy, certain duties on registered entities, with the purpose of preventing actions or activities harmful to the population or property.

The President of the Republic is authorized to establish, as a national policy, the technical and quality standards applicable to different kinds of petroleum, petroleum derived fuels, and any other fuels. Likewise, he is also authorized to set forth standards applicable to the marketing of these products.

The law provides that any producer or importer of liquid fuels derived from petroleum is responsible for maintaining an average reserve stack for each product on an amount equivalent to a 25 day average sale computed over the last six months, or the average import amount for the same period, provided it is kept for his own consumption.

The pricing system must comply with regulations set forth the Organic Law of the Ministry of the Economy.

4.6 INCENTIVES REGULATIONS AND RESTRICTIONS TO PETROLEUM PRODUCTION

The main incentives in the area of exploration and exploitation are described in the system of special petroleum operations contracts (see annex). These are risk-contracts guaranteeing the contractor a previously agreed compensation in petroleum, which is to be exported or purchased by the state. In addition, when authorized by the

President of the Republic, the contractor is assured a special tax treatment, which could range from 10% to 100% reduction in payable income tax.

Furthermore, the law also provides incentives for joint ventures. Specified are the minimal regulations required for the state to explore and exploit resources in association with national or foreign private investors.

In the refining and distribution area, any company is allowed to run refineries. Advantages include freedom to import crude oil and derivatives, free access to the market by new distribution companies, and free access through rental storage facilities from ENAP. Prices of petroleum derivatives are also freely set.

Application regulations and restrictions are those generally on quality and safety standards presently in force in the country.

4.7 BUSINESS OPPORTUNITIES FOR CANADIAN COMPANIES

Activity within the oil sector illustrates the varied opportunities for investment in the sector itself. The growing demand for oil and petroleum derivatives within the country (8-9% per year); the ongoing creation of new plants, and the expansion and refurbishing of existing ones; the undertaking of new projects including pipeline network expansion, further exploration and exploitation activities abroad and domestically; the formation of emerging international partnerships and collective projects, point to an economically dynamic sector of business in Chile.

More specifically, it is clear that the Chilean government has an interest in attracting foreign investors in various areas within the oil sector. Such is the case that, to use an example, there are a number of upcoming projects to be undertaken by international businesses in conjunction with ENAP and Petrox, (the future establishment of *Petropower*, a coking and co-generation plant. Foster Wheeler, a US firm, would be the dominant investor in this project. Also, the upcoming creation of *Petroquim*, a polypropylene plant under German-Chilean ownership).

These areas might include any form of technology, equipment and/or assistance in the exploration and exploitation processes.

Within the area of refining, the refineries and plant currently in operation (and those that will initiate operations in the future) are always a possible source of equipment and spare parts purchases. Indeed, if Enap, on its own, cannot withstand the investment costs for the building of a third refinery under consideration, private investment capital would be sought.

The sector is also open to the creation of partnerships and joint ventures, as is demonstrated by the various existing and emerging foreign business actors in various projects (such as the various oil and gas pipelines in the country). See section 5 for further information on gas pipelines, et. al.

To a lesser extent, there might exist certain needs for qualified personnel and training in specific cases although the sector does not seem to demonstrate any particular deficiencies in manpower or know-how, in general.

The tables in this section summarize business opportunities and projects within the sector.

Business Opportunity Areas

<i>area/activity</i>	<i>opportunities</i>
Refining Plants	Both existing and upcoming plants may require spare parts, equipment. Construction (for possible third refinery), engineering and design services.
Pipeline network expansion.	Construction technology, engineering, equipment, parts.
Exploration and exploitation	Technology for exploration and exploitation activities, equipment, personnel.
Personnel	Possibly necessary in certain cases, but no marked need presently.

In sum, the economic climate, marked by growth and intense activity in a variety of sectors; and the business climate, based unequivocally on free-market principles, offer competitive businesses and investors clear opportunities in a variety of areas within the Chilean economy. The oil sector, hence, may prove to be an interesting area for Canadian business to review and consider.

Market Entry

Market entry in the oil sector must be performed in a different manner because of the legislation that assigns the role of both the state and private enterprise. To reiterate some of the points mentioned in section 4.5 on legislation, state rights and duties regarding exploration and production of hydrocarbons now have been transferred from ENAP to the Ministry of Mining. Therefore the Ministry of Mining is authorized to enter into contracts regarding oil operations. This is the usual way the "door is opened" to private investors to participate in exploration and production projects in the country. Most private companies operating within the sector do so in the areas of distribution and storage, although the government is always open, as Enap authorities have expressed, are always open to doing business with foreign companies in the production and exploration areas. See section 4.5 for further details on this legislation.

Current Petroleum Projects in Chile

Exploratory Projects	Refining Projects
<p>Precordillera Project Preliminary contacts with private foreign companies that have shown interest in this area have been made.</p>	<p>Concon Oil Refinery (RPC) RPC S.A. plans to construct an Isomerization Plant with a capacity of 5,400 barrels/day (860 m³/day), with a total investment of US\$ 14.4 million. This plant will increase unleaded gasoline production and should initiate operations in 1997.</p>
<p>Lago Mercedes Block Anderman/Smith & Argerado (Chile) 33.3% ; ENAP 66.6% Lago Mercedes N. 1 well continued producing condensate, accumulating 9,139 m³ during the year.</p>	<p>Atmospheric & Vacuum Distillation Plant Starting in 1997, the extension of the second Atmospheric and Vacuum Distillation Plant will increase refining capacity to 14,000 m³/day, with a total investment of US\$ 13.1 million.</p>
<p>Lago Lynch Block Anderman/Smith 45% ; Argerado 25% ; ENAP 30% The participants negotiated a Special Operations Contract with the State, the signature of which has been delayed expecting new members to enter the block.</p>	<p>Catalytic Reforming Unit & Hydrotreating A recent study performed at RPC suggested increasing the Catalytic Reforming Unit capacity to 12,000 barrels/day with an additional investment of US\$ 7.3 million. Operations should begin in 1997. A Hydrotreating plant for diesel oil is under consideration. This plant will reduce sulphur and nitrogen contaminants. Total investment would be about US\$ 37.9 million.</p>
<p>Depresion Intermedia de Arica Block Cardinal Resource 75% ; ENAP 25% The partners requested the State an Exploration Block in the Depresion Intermedia de Arica. A Special Operation contract is expected to be signed soon.</p>	<p>Catalytic Reforming Plant As a result of Petrox's most recent study, the construction of a Catalytic Reforming Plant with a capacity of 14,000 barrels/day (2,230 m³/day) is under consideration. This will require an investment of US\$ 37,5 million. Also a 4,000 barrel/day (610 m³/day) Isomerization Plant implying a total investment of US\$ 13.1 million. Both projects will allow the production of unleaded gasoline in 1998 and 1999, respectively.</p>
<p>Chillan Block ENAP 50%; YPF 50% The seismic survey started in 1993 is completed with a total of 220 km. The analysis of this information resulted in the recommendation of drilling an exploration well in "Ñiquen A" structure. This drilling is started in 1995.</p>	<p>Atmospheric and Vacuum Plant Finally, the refurbishing of the second Atmospheric and Vacuum Plant is under consideration to increase Petrox's refining capacity to 16,000 m³/day. The investment in this plant amounts to US\$ 3.7 million and might be placed into operation in 1996.</p>

4.8 FIRMS ACTIVE IN THE SECTOR: CONTACT LIST

Exploration and Exploitation

National Petroleum Company (Empresa Nacional de Petroleo, ENAP)

ENAP is the state owned national petroleum company that has the sole right to ownership of all hydrocarbon deposits in the country, as well as the sole right to exploration and exploitation of national resources. Activities include crude oil production, refining, primary distribution, and storage of petroleum and its derivatives. Business for imported crude oil is made through ENAP offices in New York and Houston. Though ENAP is the only official firm active in this area, it does sign joint venture contracts with both national and foreign private firms wishing to participate in exploration and exploitation.

Contact: Miguel Durney tel: (56-2) 638 -1845
Development Manager fax: 638-0164
Empresa Nacional del Petroleo (ENAP)
Ahumada 341 Box 3556
Santiago

SIPETROL, International Society of Petroleum, S.A

Sipetrol is an ENAP affiliate specializing in foreign exploration and production. During 1994, Sipetrol continued with its production activities in Argentina, Columbia, Ecuador and Venezuela. While internally ENAP is now concentrating on it's refining activities, externally through Sipetrol, ENAP has been moving outside of the country to take advantage of oil exploration opportunities emerging in South America.

Contact: Salvador Harambour G. tel: (56-2) 638-3726
General Manager fax: (56-2) 638-0502
SIPETROL
Ahumada 341, 6th Floor
Santiago, Chile

Refining

Refineria de Petroleo Concon S.A (PRC)

RPC is the ENAP subsidiary that runs the major refinery in Concon. With the US\$ 10 million remodelling project of the reactor, regenerator and fractionating tower of the Catalytic Cracking Unit, refining capacity is expected to increase from 3200 to 4000 m³ per day, thus increasing the production of LPG, gasoline and diesel fuel.

Contact: Alex Avsolomovich C. tel: (56-32) 81-1095
General Manager fax: (56-32) 81-1392
Refinera de Petroleo Concon. S.A. (RPC)
Av. Borgono s/n
Concon, Chile

PETROX

Petrox is the ENAP subsidiary that manages the refinery in Concepcion. Recently the Petrox refinery began constructing a new Hydrocracking Unit with a capacity of 9,000 bbl/day. The unit should start producing in April 1996 and will increase the production of low sulphur diesel oil.

Contact: Enrique Davila A. tel: (56-41) 50-6000
General Manager fax: (56-41) 41-0775
Petrox
Camino a Lengua s/n
Talcahuano
Concepcion, Chile

Distribution

Oleoducto Transandino

Within the context of bi-national integration, the *TransAndean Oil Pipeline* was inaugurated in February 1994. Its objective is that of transporting crude oil from Puesto Hernandez, in Neuquen, Argentina, to Talcahuano in Chile. The pipeline belongs to the distribution company, Oleoducto Trasandino S.A.(Chile), and it's Argentinian counterpart, Oleoducto Trasandino S.A. (Argentina).

Contact: Nicolas Martinez Conde tel: (56-2) 699-2020
General Manager fax: (56-2) 672-8586
Oleoducto Transandino
Compania 1085 10th Floor
Santiago, Chile

COPEC

Copec is a significant privately owned distributor of petroleum products in Chile.

Contact: Jorge Bunster tel: (56-2) 690-7000
General Manager fax: (56-2) 696-5063
COPEC
Agustinas 1382
Santiago, Chile

SHELL Chile S:A:C

Contact: David Turner
Executive President
Shell Chile
El Bosque 90
Las Condes
Santiago, Chile

tel: (56-2) 233-7085
fax: (56-2) 231-9847

ESSO, Chile

Contact: Vincent Mc Cord
General Manager
Esso, Chile
Av. Vitacura 4465
Santiago, Chile

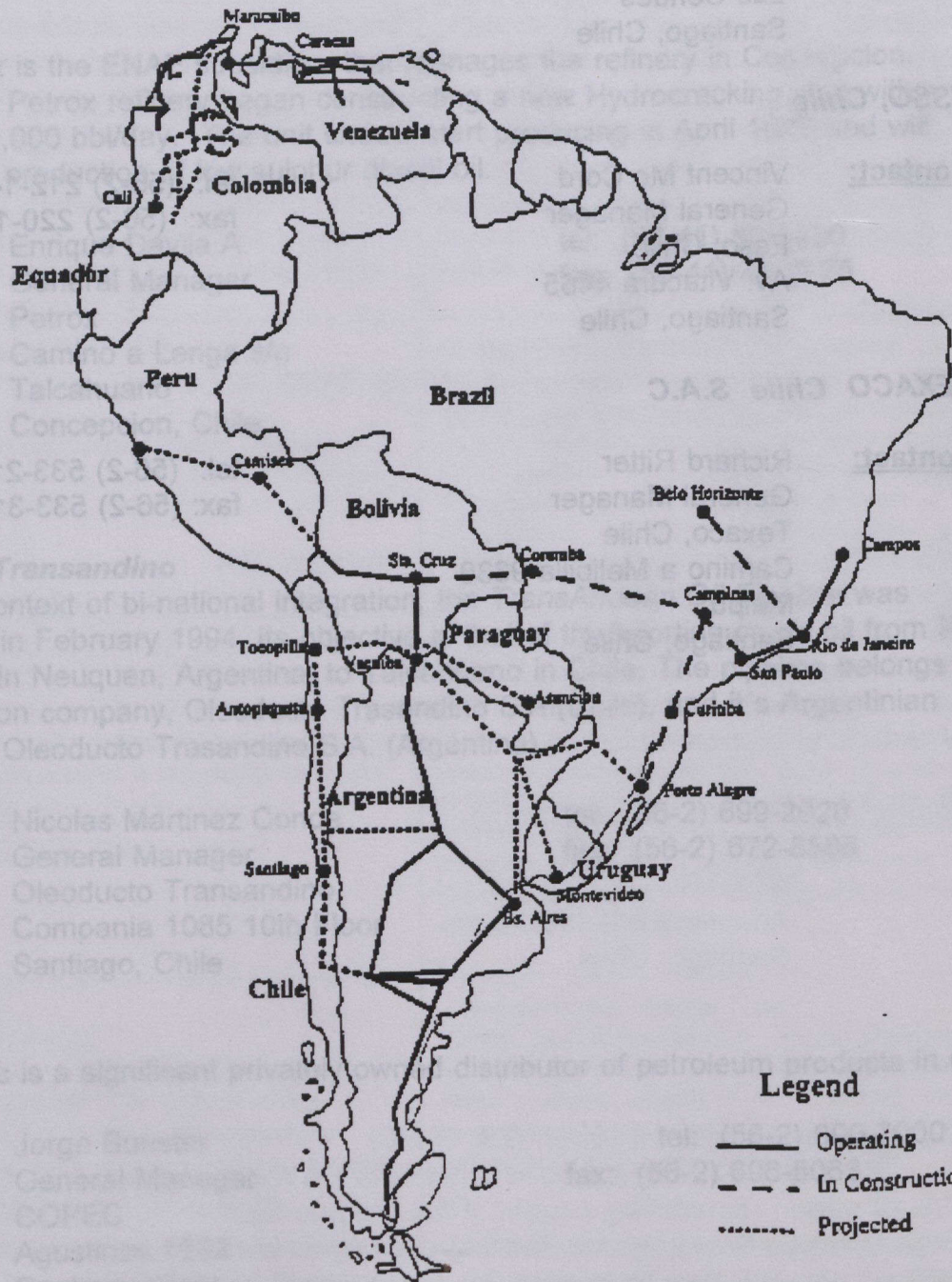
tel: (56-2) 212-1455
fax: (56-2) 220-1794

TEXACO Chile S.A.C

Contact: Richard Ritter
General Manager
Texaco, Chile
Camino a Melipilla 9330
Maipu
Santiago, Chile

tel: (56-2) 533-2177
fax: (56-2) 533-3101

Gas Pipeline Network



Source: YPFB, October 1994; Petróleos Ecuador, June 1993; CENSA Plan Estratégico Nacional Colombia, Caracas Venezuela.

5.1 GAS SECTOR: General Overview

History of Gas Fuels

The gas sector includes all gas fuels which are transported or distributed through pipeline networks. Until recently, *manufactured* and *town* gases were the most important gas fuels on the market. Historically, *manufactured* gas was initiated in Copiapo in 1851, later encompassing Valparaiso in 1856, and finally moving onto Santiago in 1966.

The mixture known as *town gas* includes natural gas and manufactured gas, and is produced from coal distillation, naphtha cracking or a mixture of one of them with biogas. Biogas is a gas derived from trash landfills.

The first deposit of *natural gas* was discovered in Chanarcillo in 1950. In 1951 the first plant, Manantiales, was constructed in Tierra del Fuego. Since 1950, 23 deposits have been discovered and developed in the Cuenca de Magallanes region. In terms of consumption, development of natural gas was first used by the electricity generation sector, particularly in the city of Punta Arenas in 1965. Shortly after, in 1971, cities in the Magallanes region began using natural gas for domestic purposes.

Until recent years, production and consumption of natural gas was limited to the Magallanes region, under the sole jurisdiction of the state-owned petroleum company, ENAP. Within the national energy context, up until 1991, the significance of natural gas was extremely minimal, representing only 6% of total energy consumption in Chile. Contribution to total GDP was only around 0.1% at the beginning of the decade.

Economic and Energy Integration in Latin America

Throughout the 70s and 80s, countries in Latin America have tended to act independently, in both the political and economic contexts. The reasons for this are varied; attempts to isolate one's economy from fiscal imbalances elsewhere in the region, longstanding territorial disputes which tended to discourage cooperation, the adoption of export based development policies focussed on markets outside of the region, and so on. With economies essentially isolated from one another, it has been relatively easy for a given political leader to move a country toward--or away from--populist, centrist, and interventionist policies. Weak economic and energy ties between jurisdictions minimized the amount of external pressure on domestic policy development.

The Latin America of the 21st Century promises to be a much different political environment. Increasing economic ties, through a growing number of regional and international trade agreements, as well as through rapid energy integration may tend to bind countries closer together behind a common purpose and direction. The process of

integration will make it increasingly difficult for countries to move out of step with the economic and energy policy trends being pursued generally in the region.³

Integration is of particular importance to the energy sector. Until recently, energy development in Latin America had proceeded almost exclusively along a national, rather than regional basis. As a result, international energy ties were limited to a few, largely under-utilized interconnections, such as Bolivia-Argentina natural gas, or Ecuador-Columbia crude oil. This nationalistic approach to resource development severely retarded both economic and energy development in the region.

Today however, integration opportunities, particularly in the area of natural gas, are central to future development. Natural gas export potential exists in Argentina, Bolivia, Peru and Venezuela. Linking these surplus energy sources to the existing, unserved demand centres in Chile and Brazil holds tremendous commercial potential. The resulting continental natural gas grid, focussed on the Southern Cone region (see Figure 1), would justify increased exploration for natural gas reserves, create opportunities for thermal electric power development, and release oil and petroleum products for export. Similar opportunities can be identified in oil and product pipeline development, and in expanded electricity interconnections.

Potential of Natural Gas Today.

Today, gas consumption in Chile's Metropolitan Region consists mainly of manufactured gas distributed either in bottles, or through an existing inner city network. In recent years however, natural gas has taken on a new potential significance for the Chilean energy market. As of May 1997, the international consortium GasAndes will be delivering natural gas into Chile's central region which includes Santiago. In addition to the GasAndes project, five other large gas pipeline projects are also being discussed with the goal of supplying and transporting natural gas from sources in Argentina and Bolivia to several regions within the Chilean Republic. With the proposed new influx of natural gas into the Chilean energy market within the next few years, GasAndes predicts that by the year 2010, demand for natural gas in the industrial, residential and commercial, transportation and electricity generation sectors will reach 11,985 thousands of m³ per day.

In addition, potential in the natural gas sector has also merited the attention of several significant foreign investors. The Canadian enterprise NOVACORP International for example, is heavily involved in joint ventures into the METROGAS, GASANDES and central NUEVA RENCA projects, investing up to US\$ 70 million so far throughout Argentina and Chile.

³Petroleum Industry in Latin America, Volume 1, xiv

In light of this projected change to energy consumption patterns, this report will discuss manufactured and town gas only briefly, concentrating on the new potential of "natural gas" to affect the Chilean energy market today.

5.2 MANUFACTURED AND "TOWN" GAS

Manufactured gas is currently produced principally from petroleum derivative cracking and, to a lesser extent, from sanitary landfills. It is distributed in bottles.

Since 1978, Santiago Gas Consumers Company (GASCO), a private distributor of manufactured gas in Santiago, has been conducting studies jointly with the Santiago Municipality for production and use of biogas from trash landfills.

This idea was successful and, since 1982, biogas is being extracted from the La Feria landfill. Biogas from the Lo Errázuriz and Cerros de Renca landfills is now being used. The process for extracting biogas from landfills was developed in Chile and has allowed for the production of over 30% of the manufactured gas in Santiago.

The same technology has been applied since 1988 by GASVALPO, a private gas distributor in Valparaíso and Viña del Mar. In this case, manufactured gas is produced from a coal plant in combination with a watergas plant.

Up to 1986, the manufactured gas distributed in Concepción and Talcahuano by GAS CONCEPCION, a private company, came from gas produced at the Huachipato steel mill. The gas was a combination of gases from the coking plant and blast furnaces. Due to an increase in the internal use of gas at the steel mill, it was necessary for GAS CONCEPCION to build its own manufacturing plant, and a production technology based on coal was chosen. This plant started production in 1986. It has a capacity of 140,000 cu.m/day (4.9 million cu.ft/day), thus allowing for total substitution of gas previously obtained from the steel industry.

Town Gas, which is distributed through an underground network, includes natural gas and manufactured gas, produced from coal distillation, naphta cracking, or a mixture of one of them with biogas. It is also usual to include in this sector gas produced at steel mills, like coking plant gas or blast furnace gas.

Town gas is presently used only in some districts of the V Region (Valparaíso and Viña del Mar), the Metropolitan Region (mainly in downtown Santiago and the Providencia, Las Condes and Ñuñoa districts), the VIII Region (Concepción and Talcahuano) and the XII Región (Punta Arenas, Puerto Natales and Puerto Porvenir). Except for the XII Region, where natural gas is produced by ENAP, the other regions mentioned above are supplied with privately manufactured and distributed gas. It should be pointed out that, except for the XII Region, town gas consumption is not very significant, since it represents

less than 10% of the residential fuel consumption in the cities, and less than 3% of industrial energy consumption. At the national level, town gas represents only 6% of total energy consumption (excluding natural gasoline and LPG obtained from natural gas).

Given that neither manufactured gas, town gas or other commonly used gases, offer few, if any, investment opportunities, this study's discussion of gas will be centred upon the issue of natural gas production and consumption, which represents the single-most important contemporary energy issue in Chile, as projected figures on supply and demand will clearly illustrate.

5.3 NATURAL GAS: CURRENT PROJECTS

There exist a total of six gas projects throughout Chile that, if completed, will allow the country to build a comprehensive natural gas supply system. Total estimated investment should reach over the US\$ 2 billion dollar mark.

Projects for III Region Supply

Currently there are two projects aimed at supplying the III Region. In both cases, the pipeline's final destination is Calama. Tocopilla, Mejillones and Antofagasta would be considered branch line cities. The target market for both projects is the mining and thermoelectric energy generation industry in the area.

The Bolivia-Chile Gas Pipeline (the "Norandino" Gas Pipeline): This pipeline would run from the southeastern area of Bolivia to Chile by way of the Ollague sector. The project is undertaken by a consortium of companies (YPFB, 45%; BHP, 45%; and Enap, 10%). The pipeline would be 1,100 km in length and will imply a US\$ 300 million dollar investment. This consortium is not particularly interested in promoting a gas distribution business in the Region.

It is unclear what the project calendar would look like, as the consortium itself has stated that it requires further information on the size of the existing deposits in the area and on the routing required for the pipeline before actually initiating construction.

The Northern Argentina-Chile Pipeline (The Atacama Project): This project is a 725 km pipeline by a consortium in the making. (US companies, William International Pipeline and CMS Energy, with the possible incorporation of an Argentine firm and a Chilean firm, as well). Total investment would be about US\$ 500 million. The consortium has not stated what its project calendar is like either.

Projects for Central-Southern Zone Supply

The Gas Andes Project: This project is currently underway and implies using the existing "Central-West" gas pipeline in Argentina, augmenting its transport capacity, and building a gas pipeline between the Mendoza Province in Argentina and Santiago, by way of the Cajón del Maipo in the central region of Chile. The project also considers supplying Valparaíso and Vina del Mar.

The consortium is comprised of the following companies: Chilgener (10%), Gasco (10%), and Endesa (10%) all Chilean; Nova Corp.(40%), from Canada; Techint (15%), Compañía General de Combustibles (15%), from Argentina. The following gas producing companies intend to join the project as suppliers: Petrolera Santa Fe (Argentina), Santa Fe Energy (USA), Monumental Oil (UK) and BHP (Australia).

Estimated investment between 1995 and the year 2000 would reach US\$ 879 million (US\$ 284 million for the gas pipeline, US\$ 195 million in distribution, and US\$ 400 million in the conversion of the Central Renca facility. According to GasAndes, this project will begin operating in May 1997.

General clarification: In the Gas Andes Project, Metrogas S.A. will be in charge of distribution of natural gas, while the company, GasAndes S.A. will be in charge of natural gas transport.

The **Gas Sur** project involves building a pipeline from the Neuquén basin in Argentina that would directly supply Chile's VIII Region. The pipeline would be 12 inches in diameter and involve a US\$ 180 million dollar investment. The *open season* process is under way. No current information on concessions from the government nor on negotiated routes available. Environmental impact study has not been performed either. This project will be undertaken by the GasAndes consortium.

Transgas Project: This project includes the construction of a gas pipeline whose starting point is located in the Loma La Lata area in the Neuquén province of Argentina. It enters Chilean territory through the Butamallín pass, adjacent to Concepción, and heads north from this point on. The project is aimed at supplying the V, VI, VII, VIII and Metropolitan Regions with natural gas.

This project is comprised of the following companies: Tenneco Gas (USA) 30%, British Gas (UK) 30%, Enap (Chile) 10%, YPF (Argentina 10%). In addition the following Argentine gas producers participate as well: Bidas, San Jorge, Pluspetrol and Astra, each 5%.

Estimated investment between the years 1995 and 2000 reach US\$ 1.7 billion (US\$ 670 for the pipeline, US\$ 330 in distribution, US\$ 600 in thermoelectric power generation, and US\$ 100 in industrial processes conversions). Part of this pipeline

should begin operating in July 1997. Remaining branch lines to initiate operations by July 1998.

In the Transgas project, Distribuidora Gas de Chile S.A. will be in charge of natural gas distribution, while Transgas will be in charge of transport.

It is not yet clear whether the Chilean market will generate sufficient demand, at

Estimated Demand for Natural Gas					
(Thousands m3 per day)					
	Industry	Residential Commercial	Transportation	Electricity Generation	TOTAL
1997	862	212	4	742	1,820
2000	1,263	397	34	1,942	3,636
2005	1,459	706	106	4,742	7,013
2010	1,683	1,014	289	8,999	11,985

Source: Metrogas, Annual Report, 1995

least at an early stage, to justify the construction of two pipelines. Despite the fact that the GasAndes project is already underway, Transgas is still studying the possibility of building a second pipeline.

Projects aimed at supplying the XII Region

The Argentina-Punta Arenas Southern Basin Gas Pipeline (Methanex Project):

This pipeline will transport natural gas from the Argentine southern basin directly to Methanex Chile's methanol plant facilities in the Cabo Negro area in Punta Arenas. Methanex Chile is an affiliate of the Canadian firm, Methanex Corporation. This project will allow the methanol plant to double its current methanol production capacity, turning it into the world's largest methanol producer. This pipeline is currently under construction and should be connected and in operation by October, 1996. Investment in this project is US\$ 50 million.

Distribution projects in progress

A project that is currently underway is being carried out by the Metrogas consortium. Metrogas S.A. is comprised of the following companies: Gasco (Chile)

40%, Copec (Chile) 22.5 %, Chilgener (Chile) 10%, Enagás (Chile) 7.5%. Lone Star Gas Company (USA) 10% and Novacorp (Canada) 10%. Metrogas S.A. will invest US\$ 115 million between 1995 and 2000 in expanding the existing distribution network in the Metropolitan Region. The *distribution ring* to be built will be 144 kilometers in length along 24 neighbourhoods in Santiago. This ring will serve as the basis for the formation of a group of networks that will take natural gas to homes. In addition, US\$ 25 million will be invested yearly, beginning in 1998 to expand gas distribution coverage. Total investment by Metrogas between 1995 and 2000 will reach US\$ 312 million.

PLE International, from the U.K., and JRI Engineering, from Chile, will undertake a design and engineering study of *Gas de Chile's* natural gas distribution network for Santiago, Concepción, Valparaíso, and other zones. The initial phase of the study will require US\$ 1.3 million in investment, after which construction should begin (September 1997) at a cost of an additional US\$ 75 million in order to finish the current Transgas project in its entirety. The distribution network will supply some 300 industrial clients.

5.4 NATURAL GAS: MARKET AND DEMAND

The potential market for natural gas in Chile covers four basic demand areas; generation of electricity, industrial use, residential and commercial, and the transportation sector. In recent years, cleaner usage, lower costs and greater efficiency associated with natural gas, has drawn much attention and many investment dollars towards developing the potential supply of this new fuel. For the Santiago region and its surrounding areas, a stable supply of a cheaper, cleaner fuel could completely overhaul the breakdown of Chile's energy consumption today. In fact, GasAndes predicts that during the first ten years of natural gas availability in Chile, the market will reach up to 17.54 billion m³. By the end of the first twenty years, consumption is predicted to rise to up to 60.24 billion m³.

Demand in Electricity Generation

The estimate for the growth in demand for natural gas in the electricity generation sector (thermoelectric plants) has been based on the projection of seven new generation plants for electricity. The first unit is expected to be completed by 1997-1998, with the second unit following in January of 1999. During the first 15 years of the projects, production is expected to reach 2000 megawatts. To generate such a quantity of electricity, the consumption rate of natural gas has been predicted to increase to 10 million m³ per day.

Gas Demand in Industry

In the industrial sector, natural gas has the potential to be used in many diverse industrial applications; drying through the utilization of heat, foundries, glass fabrication, ceramics, porcelain, the food industry, metalwork, textiles and others. The projected rise in demand in this sector has been based on poles, analyses, and consumption of 120 industries (representing 80% of fuel consumers) in the Metropolitan Region. In the next three years, GasAndes predicts that natural gas will directly compete with petroleum derivatives, as sales estimates for the industrial market are expected to grow by 50% by the end of 1999. This trend is predicted to diminish in successive years until stabilizing at an estimated 3% growth rate annually.

The Residential Market

In the residential market, the gas companies optimistic projection states that demand for natural gas will grow by 20% by 1997, increasing six-fold during the first twenty years of natural gas availability. If possible, natural gas at the disposal of homes could mean a clean, easy-access, low cost fuel leading to a better quality of life for many Chileans. Despite GasAndes predictions however, converting domestic consumers to the natural gas market raises many problems. To begin with, residential use of natural gas would require a conversion of those appliances that today operate with either propane, butane or kerosene. Conversion of equipment is costly, and is most likely beyond the means of most metropolitan users. Second, despite greater availability, the problem of connecting such an abundance of homes directly to the distribution network remains no small task. Finally, while today many Chilean families are well aware of how to budget their monthly tank of fuel efficiently, gas distributed continuously through a pipeline will be more difficult to monitor, which could easily realize fears of overconsumption, confused billing and a general loss of consumer control.

The Transportation Sector

One of the largest, most threatening problems in Chile today, is the seriousness of air contamination in the Santiago region. As the transport sector in Chile is completely under private ownership, competition between private companies has led to inordinate number of buses on the streets. To a large extent, the air pollution problem in the Metropolitan Region is caused by the sheer number of diesel-fuelled automobiles and buses on the road.

As GasAndes has argued, natural gas provides a good solution to the air contamination problem. In contrast to diesel fuel which, when burned, combusts only a partial amount of the fuel and emits the rest directly into the environment through a black smoke exhaust; natural gas undergoes complete combustion when it is burned

thereby reducing the absolute number of free floating particles in the air. The exhaust on a natural gas vehicle is clear, odourless, and much safer for human habitation. Based on these benefits, GasAndes' goal is to convert up to 18,000 vehicles to natural gas usage by the year 2007. Estimated demand is expected to rise to 289,000 m³ per day by 2010.

Despite these optimistic predictions, in the transportation sector in particular, conversion to natural gas must face some significant obstacles. So far, the government has not been offering environmentally motivated incentives to encourage the use of more natural gas in transportation. Committed to letting the market determine all demand, present legal norms on contaminating emissions, allow for existing conditions. Unless public environmental pressure takes a dramatic turn towards more radical action, this situation is unlikely to change.

Obviously, for private transport companies, conversion would be undertaken only if profitable (i.e. costs of conversion and fuel should be equal, if not less than that of diesel). Technically speaking however, average costs of converting an engine today are about US\$ 2000 for a bus and US\$ 1000 per automobile. Furthermore, converting a bus engine to natural gas usage would also involve a 1200 kilogram weight increase, and would take up to 12 min to fill. Most likely then, from the perspective of the private owners, natural gas vehicles will probably not enter the market through conversion of existing equipment; but rather by a gradual replacement of old diesel powered vehicles when they can no longer pass safety inspection. With this in mind, natural gas buses are unlikely to be seen on the roads within the next five years. From a longer term perspective however, natural gas transportation could become reality in the beginning of the next century.

5.5 ADVANTAGES AND DISADVANTAGES OF NATURAL GAS

In discussing and investigating natural gas as a new potentially significant energy source in Chile, a number of advantages of using the product have been cited.

Environmental Benefits

Natural gas provides the opportunity for clean usage of a natural fuel.

- * Production does not cause irreversible harm to nature.
- * Development of natural gas is notably less contaminating than other energy sources.

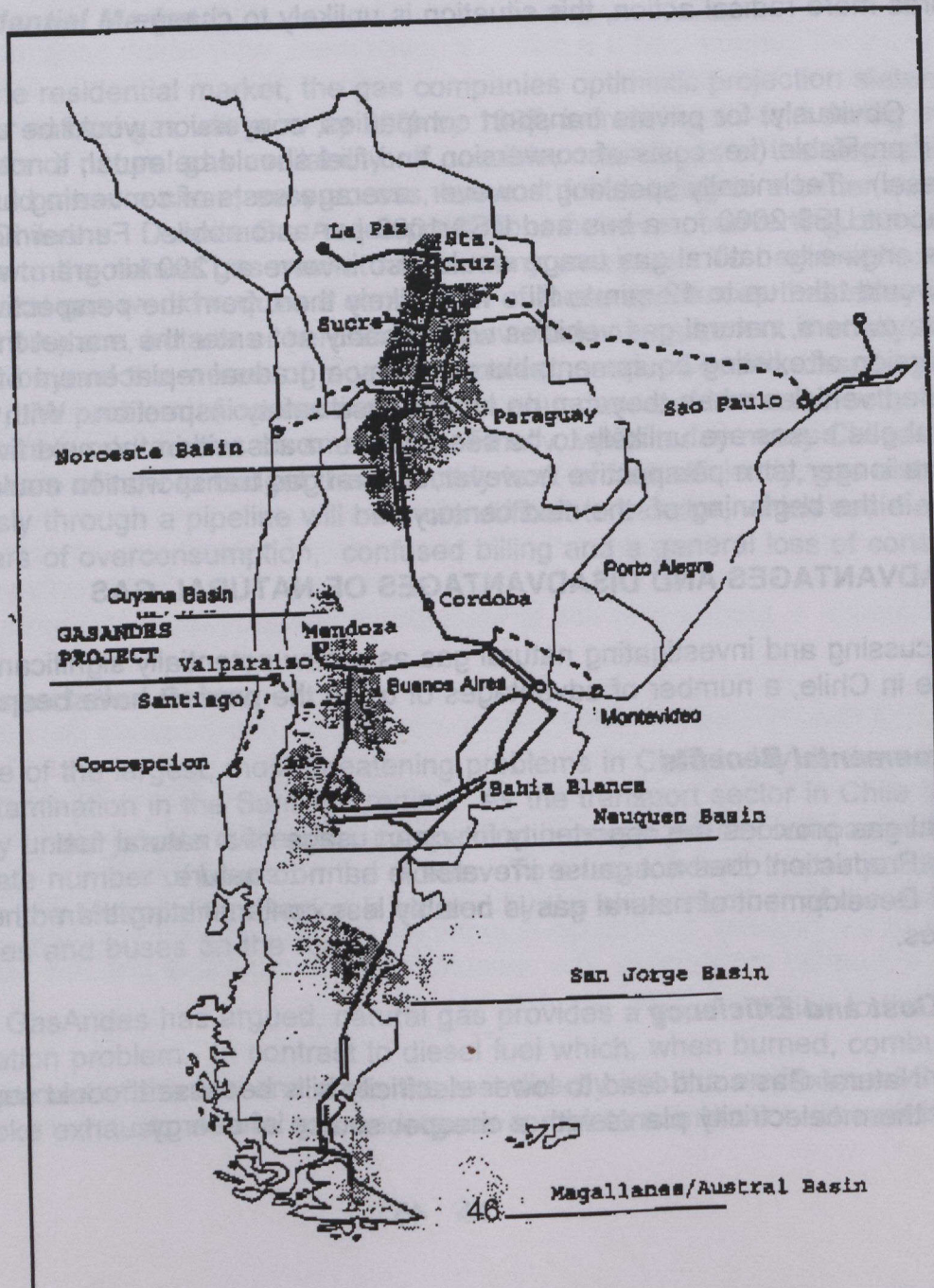
Low Cost and Efficiency

- * Natural Gas could lead to lower electricity bills because it could supply thermoelectricity plants with a cheaper source of energy.

- * Natural gas involves minor investment and is cheaper to maintain supply.
- * Natural gas represents an efficient investment as it uses an already existing network system in Argentina and various areas of Chile. The fuel could also be accessible through an integrated network in the Southern Cone.

PROPOSED PIPELINE SYSTEM

SOUTHERN CONE



- * Investment is efficient and is capable of maintaining high competitiveness.
- * Efficient also because complete combustion allows for ultimate calorie development.
- * Optimizes the use of space; does not require storage.

Security

- * Assured supply to homes and industry through a stable uninterrupted supply.

Open Access and Non-Monopolistic

- * Open access based on a gas pipeline as a means of transportation.
- * Monopolies and shared monopolies are blocked, transport in a non-discriminatory fashion.
- * Industrial consumers can choose and possibly buy directly from producers.
- * Price competition is ensured through the free market system.

Versatility

- * Natural gas has several versatile uses; domestic, industrial, residential, commercial, and in terms of electricity generation.

II. Problems with Natural Gas as an Energy Source

In conjunction with these possible advantages of natural gas as an energy source, there are also some potential problems. First, environmentally speaking, while natural gas solves the problem of free floating particles generated by diesel fuel or coal combustion, it also creates another by increasing low altitude ozone levels.

Furthermore, while natural gas may be a cleaner, cheaper fuel for use in the transportation sector, many potential consumers are seriously worried about conversion costs. A typical 'conversion kit' for a diesel fuel bus for example, generally costs about US\$2000. By comparison, the cost of converting a taxi to natural gas consumption is about US\$1000, which could be well beyond the means of a potential consumer.

5.6 REGIONAL OVERVIEW: Supply Sources of Natural Gas

Looking at natural gas from a regional perspective, the industry in Latin America is in its infancy. Currently, only Argentina can boast a developed national gas transportation grid and infrastructure. A few of the larger urban centres, such as Sao Paulo, Caracas, and Santa Fe de Bogota, have local distribution companies providing gas service to electricity generation stations and industrial users. Columbia is also moving to expand gas distribution within the country, and exploit newly discovered domestic gas reserves.

As can be seen from the economic, environmental and energy potential of natural gas in Chile however, the expansion of markets and the increased utilization of this abundant resource may be the most exciting energy prospect in Latin America. The pipeline projects designed to integrate the energy systems of Argentina and Chile, Venezuela and Columbia, and to bring needed gas supplies from Bolivia and Peru, are the focus of much discussion and negotiation. Truckline access may also in turn, spur the rapid development of distribution networks and investment in gas-using capital equipment, continuing a commodity investment boom that will reach into the billions of dollars.

	1975	1980	1985	1990	1991	1992	1993
Argentina	1,026	1,394	1,935	2,285	2,383	2,422	2,574
Bolivia	104	186	499	591	587	606	654
Brazil	442	518	495	572	589	599	572
Columbia	248	397	480	493	500	494	517
Chile	351	239	138	205	171	193	270
Ecuador	43	55	86	130	81	84	90
Mexico	2,154	3,551	3,470	3,410	3,358	3,308	3,464
Peru	131	126	102	88	83	110	90
Venezuela	1,648	1,829	1,989	2,758	3,048	3,137	4,853
Total	6,147	8,295	9,194	10,532	10,800	10,953	13,084

Sources: SEE, OLADE Database,
Canadian Energy Research Institute

In Venezuela, there is a project on an even larger financial scale with Cristobol Colon liquified natural gas, which is targeted towards the southern United States gas market. Also in progress is the ongoing negotiation of a liquified natural gas facility in Trinidad, and the proposal to run a natural gas pipeline from Venezuela through Central America to Mexico.

Latin America has significant established reserves of natural gas, with estimates ranging from 250-300 trillion cubic feet. Total regional gas production lies at just under 4.8 Tcf. Not surprisingly, gas production has been stagnant in the 1990s in all gas-producing countries except Argentina, where domestic demand growth and infrastructure development are being strongly promoted. In Venezuela as well, natural gas reinjection has been an important component of the country's continued gains in crude oil production. Elsewhere, production volumes have stagnated or, in some cases, declined over the first part of the decade.⁴

5.7 GOVERNMENT POLICIES AND REGULATIONS IN THE GAS SECTOR

Institutional Policies

The Comisión Nacional de Energía, or National Energy Commission (CNE), is the agency that institutes government policies in the sector. The Ministry of Mining plays an inspectionary role and sets forth norms. Safety standards for facilities are set and supervised by the Superintendencia de Electricidad y Combustibles (Superintendency of Electricity and Fuels).

In general terms, the government has stated that it will not intervene in the decision-making process regarding the projects that are or would eventually be undertaken. These decisions, the government contends, will be made by private enterprise.

General Legislation

In addition, government authorities have elaborated the regulatory framework in the natural gas sector. The legislation (Gas Services Law, DFL No. 323, 1931) regulates issues concerning production, transportation and distribution, concessions, the exploitation of these services, pricing, and other aspects relevant to the area. The legislation, however, is considered deficient in issues concerning concessions, exploitation and the supplying of gas, safety conditions, methodologies for pricing, among others. The government, hence, is working with private enterprise and has begun studying the changes that need to be made in the old legislation so that the sector may develop within a modern regulatory framework that tends to promote project development in an open and competitive free-market context.

Already, in October and July of 1995, specific changes in the old legislation have been introduced and a new set of regulations have been enacted. The regulations modify the 1931 law and sets the norms that guide the granting of provisional and permanent

⁴*Petroleum Industry in Latin America*, Volume 1, pages 57-59.

concessions in the transport and distribution of natural gas. In another modification, regulations are set forth regarding safety standards and requirements in the transport and distribution of natural gas.

Price Structure

Gas prices, for both manufactured and natural gases, are regulated by Law No. 18,856 (1989) which constitutes a modification of DFL No. 323 (1975). The former establishes that companies that supply consumers with gas are free to set prices for the product itself and for any other related service. The price structure that public service distribution companies establish must identify those areas in which sales prices to like consumers should not be discriminatory. Given the fact that the XII Region exhibits monopolistic features, Law No. 18,856 establishes a set tariff in this area. In fact there is a single natural gas supplier for the area and a single distribution company as well.

Currently, the same taxation and customs requirements that govern consumer goods govern the gas sector. Thus, there exists an 11% customs tariff and an 18% Value Added Tax rate.

5.8 BUSINESS OPPORTUNITIES

From a continental perspective, the introduction of natural gas into South America, and the concomitant projects that this fuel source generates in a number of countries, illustrates the growing importance of the form of energy in a number of economies. The pipeline network planned in the Southern Cone illustrates a clear business commitment aimed at fostering and promoting growth in the sector well into the 21st century.

From a local perspective, the natural gas sector in Chile is characterized by its dynamism, both in terms of the number and extent of the projects that are under way as well as in potential for growth. More specifically, the impetus with which pipeline construction and distribution projects are growing, and the projected demand for natural gas in the industrial, business, residential, transportation, and electrical power sectors (all within a context of policies that tend toward energy integration in the Southern Cone region), point to an area replete with sustained business potential now and in the future.

Indeed, such is the case that foreign investment in the area will tentatively reach over US\$ 2 billion dollars merely in the six projects mentioned previously. Two Canadian firms, Nova Corp. and Methanex Corporation have invested considerable amounts of capital in the development of projects that promise sustained growth and profitability

into the next century. Considerable investment is also being made by British, German, Japanese, US, and Australian firms in the sector (not to mention significant investment on the part of local firms). The emergence of international consortiums in pipeline construction, natural gas transport, distribution, pipeline engineering and design, illustrates another facet of this business dynamism, and demonstrates the willingness to and viability of establishing promising joint ventures in the sector with firms that are committed to growth in a robust economic climate.

The latter, coupled with favourable investment legislation and a sectoral regulatory framework, make for interesting business opportunities in a number of areas.

The tables in this section summarize business opportunities and projects within the sector.

Market Entry

Establishing a local presence through a strategic partnership, by retaining the services of a Chilean representative or agent, or by opening an office in Chile is essential for success. As is evident, most projects within the gas sector are, in fact, performed through partnerships with either Chilean companies or other foreign companies, or both. Entering this market requires frequent contact with key buyers, aggressive marketing, and a demonstration of commitment. Contacts and familiarity are indispensable when equipment or services are procured and clients must be assured that after-sales service will be available.

It is necessary to stay up-to-date on current activity, be aware of upcoming projects and prepared for bidding in advance of the equipment procurement phase. A local agent or representative can do this by maintaining informal contacts within the sector.

Depending on the economic climate in Canada, assembling or manufacturing all or part of a product in Chile may be warranted in order to overcome transportation cost disadvantages. Chile can also act as a good base to serve the growing regional market. In this regard, many Canadian companies have chosen to enter strategic alliances and co-production agreements with Chilean companies.

The key to long-term business success, through an alliance or full business partnership, will be the strength and credibility of the host country partner and their ability to act as a bridge to the local community.

Business Opportunity Areas

area/activity	opportunities
Pipeline construction	Technology, equipment, engineering and design.
Distribution (existing and emerging networks of)	Technology, equipment, engineering and design, parts.
Industrial consumption (In paper, copper, cement, textile, ceramic, glass industries, among others).	An estimated conversion period of three years is predicted for industries located in Santiago once the natural gas supply is introduced. These industries will require replacement equipment, conversion kits, and parts during and after the conversion process.
Business, residential and transportation	Technology, equipment, parts, natural gas appliances. In transportation sector, competitively priced conversion kits, buses, parts, etc.
Electrical power	Power plants running on natural gas. Equipment, parts, technology.

GAS AND GAS RELATED PROJECTS TABLE

PROJECT	REGION SUPPLIED	Initiation of Operations	STATUS	Investment (In \$US Millions)
Gas Andes	Metrop. and V	May, 1997	-Concession approved -Open Season over -Environmental study complete -85% of pipeline route negotiated	284.1 (111 in Chile)
TransGas	VIII, VII, VI, R.M., and V	July, 1997	-Concession approved -Open season underway -65% of pipeline route negotiated -Environmental study in review	689 (438 in Chile)
Gas Sur (associated with GasAndes)	VIII	2nd Semester, 1997	-Open season underway -No concession	180
Methanex	Methanol Plant (Punta Arenas)	October 1996	-Under construction	50
Atacama Project (Northern Argentina-Chile)	III	-	-Study underway	500
"Norandino" Project (Bolivia-Chile)	III	-	-Study underway	300
Metrogas distribution network (associated with GasAndes)	R.M.	April 1996	-Concession process in progress	60
Gas de Chile distribution network (associated with Transgas)	300 industries in Santiago, Concepcion, Valparaiso, et al.	September 1997	-Study underway	76

5.9 FIRMS ACTIVE IN THE SECTOR: CONTACT LIST

GASANDES

GasAndes is an international alliance of gas companies headed by Gasco, Chilgener and Novacorp International whose objective is to bring natural gas onto the Chilean market. Currently, the three major gas pipeline projects in Chile are made up of three independent consortium enterprises: Gasoducto GasAndes, Metrogas Distribution, and Central Nueva Renca.

***The following is a list of some major partners in the GasAndes consortium:

NovaCorp International: Canada

NovaCorp International is a Canadian company currently heavily involved in the investment and construction aspects of several major gas pipeline projects in Chile.

Contact: Pedro Morales
Marketing Manager
NovaCorp International
Isadora Goyenechea 3600
Las Condes
Santiago, Chile

tel: (56-2) 334-3660
fax: (56-2) 334-3675

Gasco: Chile

Compania de Consumidores de gas de Santiago.

Contact: Gabriel Del Real Correa
General Manager
Gasco
Santo Domingo 1061
Santiago, Chile

tel: (56-2) 698-2121
fax: (56-2) 696-6986

Chilgener: Chile

Contact: Juan Antonio Guzman Molinari
General Manager
Chilgener
Mireflores 222 Floors 4 and 7
Santiago, Chile

tel: (56-2) 686-8589
fax: (56-2) 639-3677

COPEC: Chile

Contact: Gonzalo Palacios
Gas Projects Manager
COPEC
Agustinas 1382
Santiago, Chile

tel: (56-2) 690-7000
fax: (56-2) 696-5063

Enagas: Chile

Contact: Coleman Porrott
General Manager
Enagas
Tucape 374, 8th Floor
Concepcion, Chile

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fax: (56-041) 235271

*****Other companies involved in gas distribution are:**

CODIGAS: Chile

Contact: Patricio Albornoz
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Camino a Melipilla 11000
Maipu
Santiago, Chile

tel: (56-2) 698-9303
fax: (56-2) 557-6841

METROGAS: Chile

Contact: Jose Antonio Yazigi Ch.
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Santiago, Chile

tel: (56-2) 332-0167
fax: (56-2) 332-0173

ANNEX #1 CURRENT ENAP EXPLORATORY PROJECTS

Oil Evaluation Transects

Eleven oil evaluation Transects were done in the country. These Transects include the analysis of all existing geological and geophysical information and the geochemical sampling of rocks for defining the remaining portions of the basins with oil possibilities. Ninety percent of the fieldwork has been executed, and the laboratory results are underway to complete the evaluation.

ENAP's Projects in Magallanes

Assisted Recovery

The pre-feasibility study of the CO₂ injection in Magallanes oil fields centres mainly in obtaining samples and analysis of crude oil from two fields. The first results of the basic parameters of the fields required a redefinition of the CO₂ injection feasibility. The assistance of experts in field simulation and operation under this type of activity was hired. The possible supply of the required CO₂ was investigated.

Springhill Exploration

The exploration activity of Springhill Project was directed to the northern sector of the Tierra del Fuego Island, mainly in the Sombrero, Victoria and Campanario areas, to Punta Degada Este in the Continent.

Pre-Cretaceous Project

The most significant results in the Pre-Cretaceous exploration was the discovery of oil in fractured volcanic rocks in the Cisne anomaly. Its real size and volume will be estimated by means of a reinterpretation of the structure of this sector. Special emphasis has been given to the study of the reservoir rocks and traps in fractured volcanic rocks of the shallow pre-Cretaceous in fill. This will enable the extension of the exploration to stratigraphic levels different from the Springhill Formation.

Coal Bed Methane

Two exploratory wells were drilled. Their objective was the reconnaissance and confirmation of reserves and the collection of coal samples for productivity analysis. The analysis for selecting the sections of the wells that are to be tested and evaluated will be done in a pilot program.

Precordillera Project

Preliminary contacts with private foreign companies that have shown interest in this area have been made.

Exploration Projects Outside Magallanes

Pedernales

The Joint Venture formed by EUROCAN, NORCEN and ENAP decided to return the block to the State, due to the high investment cost that meant to go on to the next exploration period. ENAP did a complementary magnetotelluric survey and a seismic reinterpretation that lead to recommend testing the Los Llanos structure, in the east side of the Pedernales salt lake.

Copiapo

Two wells located in "El Paton" sector tested the Jurassic limestone and the volcanic Triassic sedimentary sequences. Both wells were abandoned as dry due to lack of reservoir conditions.

Projects in Association with Third Parties

Magallanes

Lago Mercedes Block⁵

Lago Mercedes N. 1 well continued producing condensate, accumulating 9,139 m³ during the year.

Lago Lynch Block⁶

The participants negotiated a Special Operations Contract with the State, the signature of which has been delayed expecting new members to enter the block.

Outside Magallanes

Depresion Intermedia de Arica Block⁷

The partners requested the State an Exploration Block in the Depresion Internedia de Arica. A Special Operation contract is expected to be signed soon.

⁵Anderman/Smith and Argerado (Chile) 33.3%; ENAP 66.6%

⁶ENAP 30%; Anderman/Smith 45%; Argerado 25%

⁷Cardinal Resource 75%; ENAP 25%

ANNEX #2 SPECIAL PETROLEUM-OPERATION CONTRACTS

This Annex contains a summary of the law on Special Contracts for Petroleum Operations, Decree-Law Number 1089.

The main provisions of these regulations are as follows:

- * It defines the terms "Special Operation Contract", "Contractor", "Compensation", and "Contract for a specific oil job".
- * It provides that, if authorized by the Special Petroleum Operation Contract, the contractor may export hydrocarbons received as his compensation without having to meet export regulations, and having guaranteed free disposition of the foreign currency amounts perceived from said export operations.
- * It stipulates that the State guarantees the contractor access to the foreign currency market, called the "free banking market", or whichever system may replace it in the future, for conversion and further remittance abroad of incomes perceived from the sale of his own equipments or other goods, in accordance with the terms and conditions stipulated in the contract.
- * It establishes that the contractor will be subject to a tax figure calculated directly on the amount of his compensation, which is now 50% of said compensation; or he may be subject to the regular provisions of the Income Tax Law. Notwithstanding this, the President of the Republic may authorize, whatever the applicable tax system, reductions of the payable tax, or of all or any of the taxes established by the Income Law, equivalent to a figure ranging from 10% to 100%, in 10% increments. The applied system substitutes all other direct or indirect taxes that could be levied on the compensation or on the contractor with regard to his compensation, and it remains invariable during the term for which it is granted.
- * It authorizes the President of the Republic to condone, in 10% increments up to 100%, the duties, fees, taxes, or contributions and, in general, any other payments or taxes which may be directly or indirectly levied on imports of machinery, equipment, materials, spare parts, and items or goods intended for works of exploration or exploitation of hydrocarbons.
- * It indicates that hydrocarbon transfers made to the contractor as payment of his compensation, and the repurchases made by the State or state enterprises from the contractor, as well as the actions, contracts, or documents recording these operations, will be free from all taxes.

* It states that payments to foreign subcontractors, with no registered address in Chile, shall be subjected to a tax computed on the basis of these payments at a rate of 20%, and that this tax will substitute for all other taxes, direct or indirect, which might be levied on payments to subcontractors. The President of the Republic may decide to reduce that tax amount in increments of 10% up to 70%.

* It establishes that the machines, equipments, instruments, and tools, and their pieces or parts necessary for the fulfilment of a special contract for a petroleum operation may enter the country under the system of temporary admission for a 5 year term. This term may be extended by the National Customs Director, according to the needs and peculiarities of the respective petroleum contract.

* The Law authorizes the State, for expropriation purposes, to declare as being "for public good" any piece of land that, by supreme decree issued by the Ministry of Mining, has been determined by the President of the Republic to be needed for hydrocarbon deposit exploration and exploitation works to be performed by persons or corporate bodies who may have entered into special petroleum operation contracts with the State. Alternatively, easements may be established applying entirely to hydrocarbon research, exploration, and exploitation activities conducted by persons who may have entered into special petroleum operation contracts with the State.

* It stipulates the system, benefits, and exemptions applicable to contractors under this Law shall remain invariable during the time each contract remains in force.

ANNEX #3

DESCRIPTION OF CURRENT PRODUCTION UNITS CURRENTLY IN OPERATION

REFINERIA DE PETROLEO CONCON S.A.

Oil refining capacity: 10,500 m³/day.

Atmospheric Distillation Units, Hydrocracking Unit,
 Vacuum Units, Light Fraction Recovery Unit,
 Catalytic Cracking Unit, Sulphuric Acid Plant,
 Visbreaking Unit, Sulphur Plant
 Reformation Unit, Merox Treating Units,
 Alkylation Unit, Treating with Amine Units.

PETROX S.A. REFINERIA DE PETROLEO

Oil refining capacity: 14,000 m³/day.

Atmospheric Distillation Units, Ethylene Plant,
 Vacuum Units, Sodium Hydrosulphide Plant,
 Catalytic Cracking Units, Light Fraction Recovery Unit,
 Visbreaking Units, Merox Treating Units,
 Reformation Units, Treating with Amine Units.

GREGORIO PLANT

Oil refining capacity: 1,650 m³/day.

Atmospheric Distillation Unit

CULLEN PLANT

Gas treating capacity: 4.2 million m³/day.

Extraction and fractioning of propane, butane and natural gasoline.

POSESION PLANT

Gas treating capacity: 9 million m³/day.

Cryogenic recovery of propane, butane and natural gasoline

CABO NEGRO PLANT

Liquid recovery capacity from gas: 1,400 m³/day.

Fractioning of propane, butane and natural gasoline.

Empresa Nacional de Petróleo, Annual Report 1994.

ANNEX #4

SALES AND PROFITS FOR MAJOR ACTORS IN THE OIL AND GAS SECTORS

The following are sales and profits figures for some of the companies in the oil and gas sectors (figures for many companies unavailable, especially in the gas sector, as these represent emerging companies/consortiums involved in projects under development):

In US\$ Millions

Company	Sales 1993	Sales 1994	Profits 1993	Profits 1994
ENAP	1,430	1,657	22.6	101.2
Copec	1,946	2,393	122.9	315.8
Petrox	675.2	740.8	21.1	40.1
Shell-Chile	510.1	448.9	18.7	16.2
Esso	334.4	383.7	16.5	5.1
Methanex	74.7	233.7	5.1	41.0
Comar	124.2	147.5	2.3	1.9
Gasco	126.6	147.4	31.2	29.1
Abastible	103.3	110.9	9.4	9.7
Petroquímica Dow	30.4	45.6	4.0	8.9
Codigas	-	37.2	-	1.7
Sociedad Nacional de Oleoductos	-	32.0	-	9.4
Enagas	21.6	26.5	1.9	2.5
Enex S.A.	-	22.5	-	0.9
Agas	17.0	20.4	0.4	0.8

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