

Chapter 2 SOCIO-ECONOMICS IN ARGENTINA

2.1 Introduction

This chapter deals with various social and economical aspects of Argentina, in order to give a general concept of the country for the development of the Study. It includes past trends of various socio-economical features, which will enable us to estimate the capacities for future new or extended installation of power plants in the model areas. Table 2.1.1 gives some general facts about Argentina.

Table 2.1.1 Argentina in Brief (#117 other than noted)

Items	Description
Constitution	Amended in August 1994
Government Type	Representative, Republican, and Federal
Administrative Divisions	23 Provinces and City of Buenos Aires
Total Land Area Terrain	3,761,274 km ² , including the Antarctic area Northern half – rich plains, South – flat Western Border – rugged Andes Highest – Cerro Aconcagua 6,959 m
Population	32,615,528 (Census in 1991)
Languages	Officially Spanish
Currency	Peso; 1 Peso = US\$ 1 fixed since 01/01/1992
Fiscal Year	Calendar year
Inflation	minus 2% (1999)
GDP @ Market Price/Capita	Pesos 8,670 (1999) at Current value 30% by Production of goods, 70% by Services
Production of Goods (1999) at Producers' current prices	Manufacturing industry 55.3% Construction 18.2% Agriculture, livestock, forestry 13.3% Electric power, natural gas supply 6.9% Others 6.3%
Crude Oil Production Reserves	46,508,000 m ³ (1999) 488,300,000 m ³ (Confirmed in 1999, #255)
Natural Gas Production Reserves	42,425 x 10 ⁶ m ³ (1999) 748,130 x 10 ⁶ m ³ (Confirmed in 1999, #255)

2.2 Governmental Organization

The organization of the Federal Government is given in Fig. 2.2.1 (#281). Four secretariats and the Cabinet Chief support the President. Each secretariat has several sub-secretariats. The Cabinet Chief is in command of eleven ministries. There are also related secretariats and sub-secretariats under each ministry.

Table 2.2.1 Federal Governmental Organization (#281)

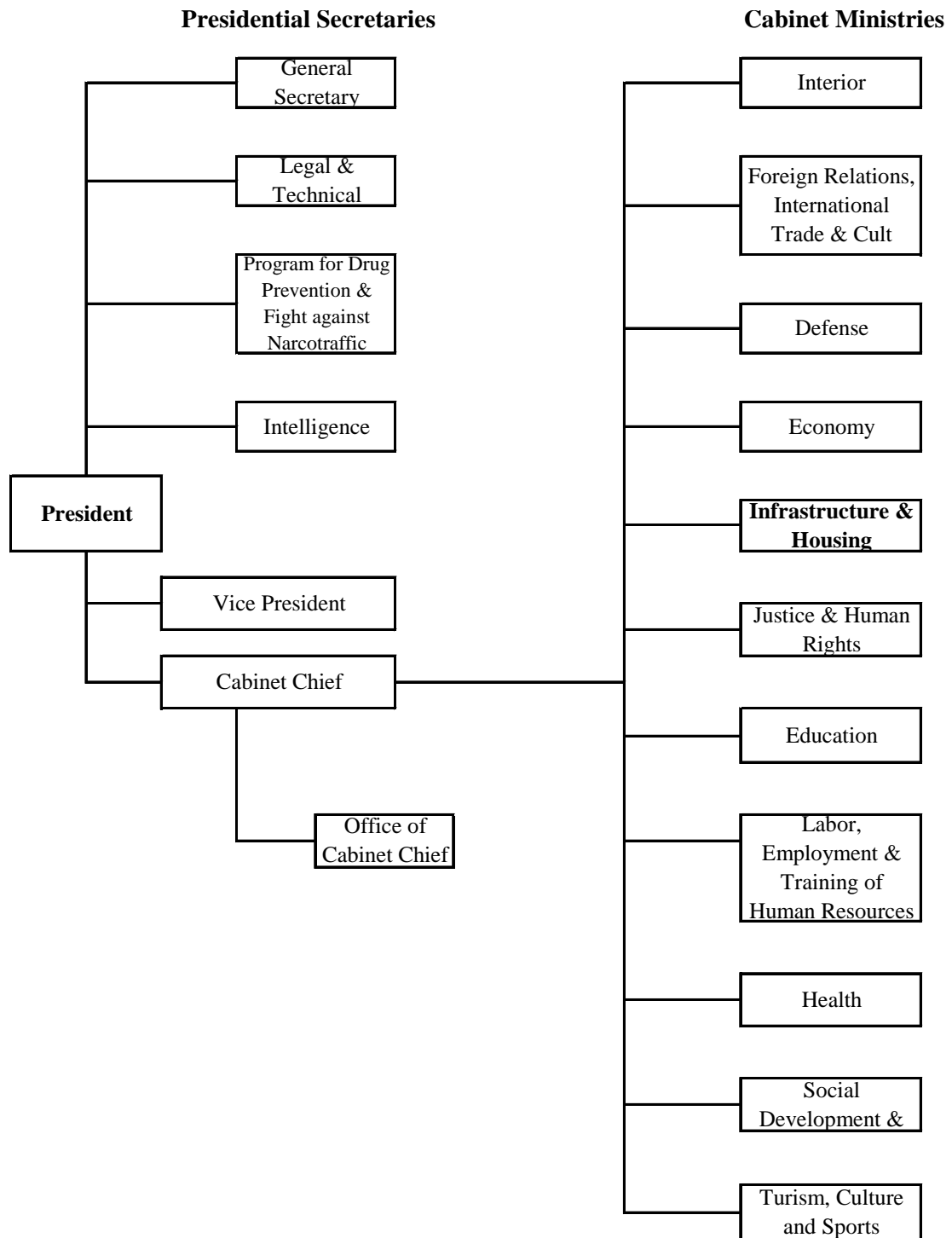


Table 2.2.2 Ministry of Infrastructure & Housing (#281, 282)

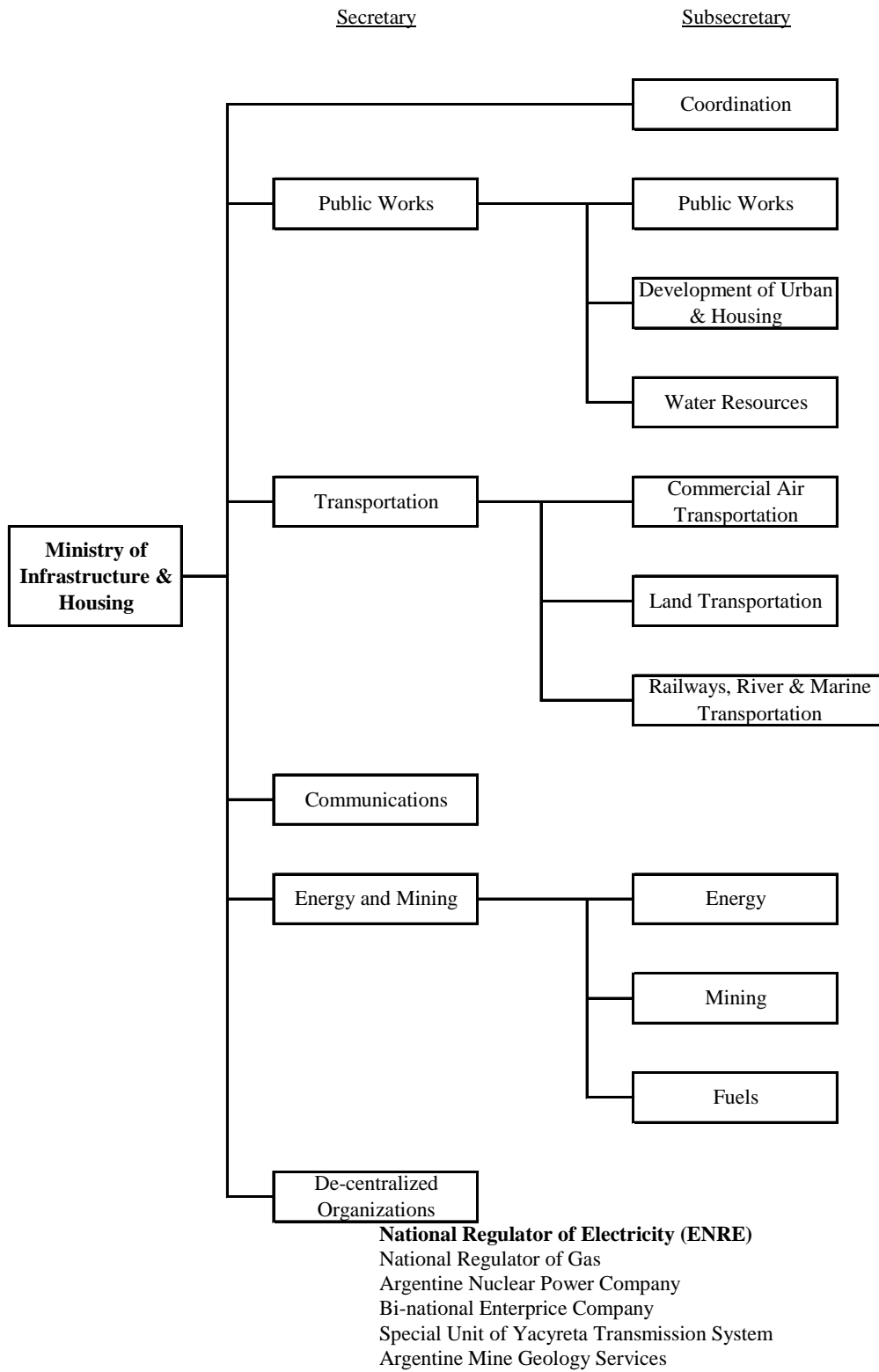
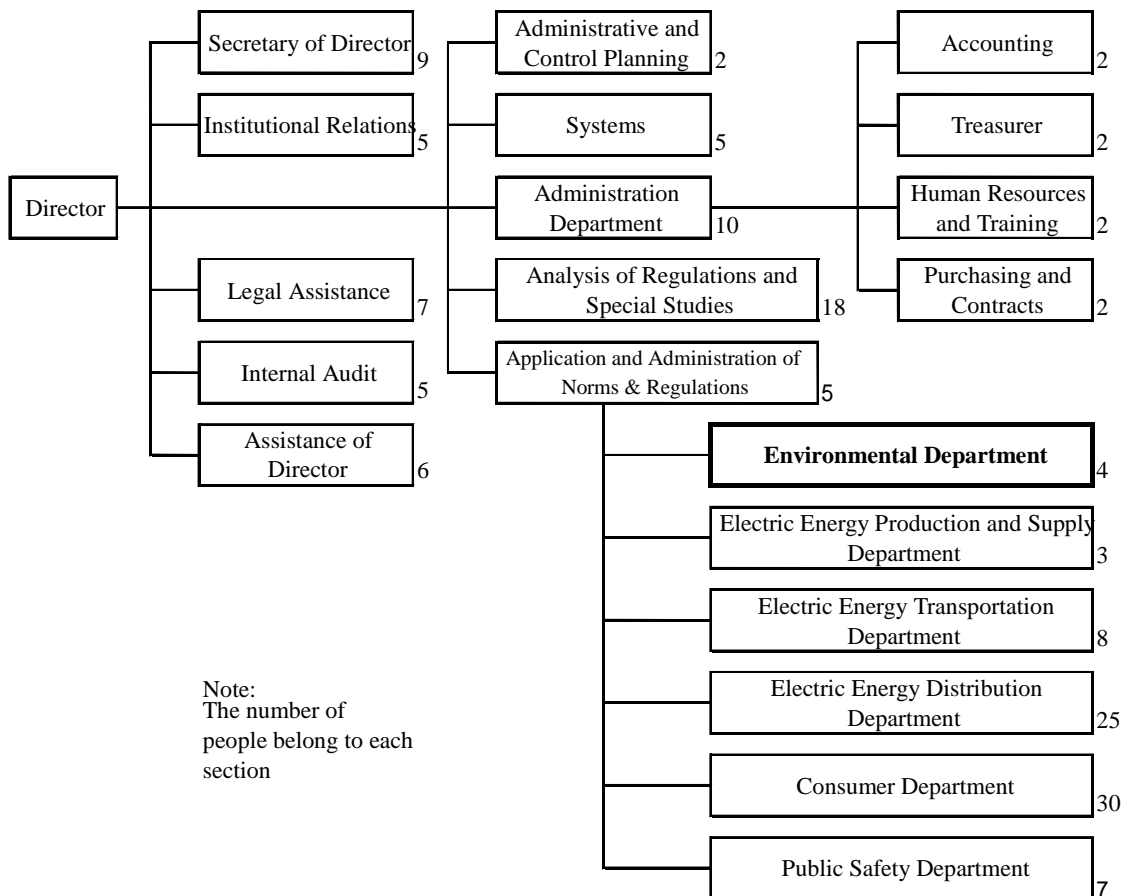


Table 2.2.3 Organization of Ente Nacional Regulador de la Electricidad (#208)



ENRE, one of the two agencies in the Argentine Study Team, is under the Ministry of Infrastructure and Housing as one of independent organizations. ENRE is independent from Secretary de Energy and Mining, one of 4 Secretaries under the Ministry and was the counterpart of the previous JICA Study in 1994 (#161). The organization charts of the Ministry and ENRE are illustrated in Tables 2.2.2 and 2.2.3. In Table 2.2.3, the number of officers is placed beside each sector.

The other agency of the Argentine Team, CNEA, is under the organization of the General Secretary in the Presidential Secretaries (#283).

Territorially Argentina is divided into 24 political provinces including the City of Buenos Aires, one of the model areas of the Study. Other model areas are located in the Provinces of Buenos Aires and of Mendoza.

Under the Provinces, there are total 503 districts in Argentina, called as partidos (in Province of Buenos Aires), districts, departments, etc.

2.3 Population

Based on the census carried out in 1991, the National Institute of Statistics and Censuses projected the population of the country and provinces until 2010 (see Support S2-A1). The projected data are listed in Table 2.3.1, for the Provinces that contain the model areas of the Study. Nationally, the population in 2010 is projected to be 12% more than that in 2000. The National Institute projected the national population in 2020 to be 45,347,004 without dividing it into provinces (#68).

Table 2.3.1 Projected Population (#117)

	1991	2000	2005	2010
National Total	32,615,528	37,031,802	39,301,755	41,473,702
City of Buenos Aires	2,965,403	3,046,662	3,061,859	3,076,436
Province of Buenos Aires	12,571,714	14,214,701	15,045,565	15,835,917
Province of Mendoza	1,412,481	1,607,618	1,703,726	1,793,260

In 1991, almost one half (47.71%) of the total population was living in the combined area of the City and the Province of Buenos Aires. Besides **the City** and **the Province**, there are two other distinctive areas having the name of Buenos Aires. **The Greater Buenos Aires** is the area surrounding the City of Buenos Aires, consisting of 19 districts (24 in January 2002) of the Province of Buenos Aires. The population of the Greater Buenos Aires area was 7,969,324 in 1991. The combined area of the City and the Greater Buenos Aires, called **the Metropolitan Buenos Aires** area, had a population of 10,934,727 in 1991, which was almost one third of the national population. The City of San Nicolas de los Arroyos, the urban center of the San Nicolas model area in the Province of Buenos Aires, had a population of 119,302 in 1991 (#117). It was reportedly increased to 151,000 in 2000 (#273).

The greater Mendoza, the urban center of the Province of Mendoza where the Lujan de Cuyo model area is located, consists of the Departments of Capital, Gody Cruz, Guaymallen, Las Heras, Lujan de Cuyo, and Maipu. It had a population of 773,113 in 1991 (#117). The Department of Lujan de Cuyo had a population of 79,952 in 1991 (#259-1).

Table 2.3.2 indicates the population densities of the model areas in 1991 based on the census and other sources.

Table 2.3.2 Population Densities in Parts of Model Areas

	Population	Area in km ²	Density
City of Buenos Aires (#117)	2,965,403	200	14,827.0
Prov. of BA (Except Greater BA) (#117)	4,625,650	303,891	15.2
City of San Nicolas de los Arroyos (#273)	151,000	680	222.1
Municipality of Ramallo (#273)	30,540	1,040	29.4
Greater Mendoza (#117)	773,113	16,692	46.3
Department of Lujan de Cuyo (#259-1)	79,952	4,847	16.5

A population census was also carried out in 1980, prior to the census in 1991. Table 2.3.3 shows the mean annual rates of population growth, actual and estimated by the National Institute. Generally the estimated growth rates show lower population growth in the future. The rates for the City of Buenos Aires were actually very low until 1991, and it went up and down by estimation until 2010. The main reasons for this fluctuation seems to be the political and economical stability after 1991 and the already high population density (14,827 people/km²) in 1991. For reference, the density in the Tokyo Downtown area was 13,000 people/km² in 1994.

Table 2.3.3 Mean Annual Population Growth (#117)

	1980 – 1991 (%)	1991 – 2000 (%)	2000 – 2010 (%)	2010 – 2020 (%)
National	1.47	1.42	1.14	0.9
City of Buenos Aires	0.14	0.30	0.10	--
Province of B. Aires	1.41	1.35	1.09	--
Province of Mendoza	1.56	1.45	1.10	--

2.4 Economical Indexes

1) Inflation

After the enactment of the Convertibility Law (April 1991), the consumer price index variation dropped amazingly to 7.4% in 1993 from 4900% in 1989. The annual consumer price variations were within plus or minus 2 % in those 5 years until 1999 (#117). Also wholesale domestic prices had stabilized in the same period.

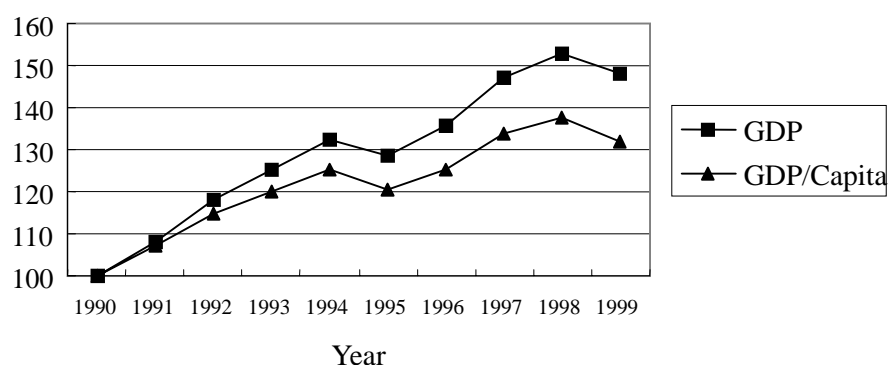
The Convertibility Law was designed to establish clear and permanent monetary guidelines to back 100% of Central Bank's financial obligations with liquid reserves, to maintain a one-to-one currency parity to the US\$, and to finance budget deficits only by resorting to foreign credits.

2) GDP

The annual gross domestic products have gained a momentum of increment from 1991 as shown in Figure 2.4.1. The annual mean growth was 4.48% or 3.11% per capita from 1990 to 1999.

Figure 2.4.1 Gross Domestic Product at Market Price

Base: 1990-100 (#117)



The production of goods (including agriculture, exploitation of mines, manufacturing, production of electricity, construction, etc.) accounts for 30% of the GDP at market price in each year from 1994. Other major components are the services of a) real estate, corporate and rental activities, b) wholesale and retail stores, c) education, welfare and health services, d) transportation, warehousing and communications, e) public administration, defense, and extra-territorial organizations, etc.

The manufacturing industry is the major contributor to the production of goods in the GDP. Among various products in the industry, those in Table 2.4.1 are of interest in the Study due to their electricity consumption and emission contributions.

Table 2.4.1 Industrial Manufacturing Statistics (#117)

Products	Unit	1995	1997	1998	1999	Mean Annual Growth %
Carbonated soft drinks	1000 m ³	2,003	2,310	2,524	2,600	6.74
Paper	1000 t	1,021	1,143	1,159	1,130	2.57
Urea	1000 t	113	170	136	163	9.59
Polyethylene	1000 t	278	258	280	260	-1.66
Polypropylene	1000 t	165	195	213	-	8.88*
Tires	1000 units	7,174	8,532	9,516	8,250	3.56
Crude steel	1000 t	3,575	4,157	4,210	3,797	1.52
Concrete	1000 t	5,477	6,769	7,092	7,187	7.03
Color TV sets	1000 units	949	1,630	1,592	1,335	8.91
Motor vehicles	1000 units	285	446	458	304	1.63

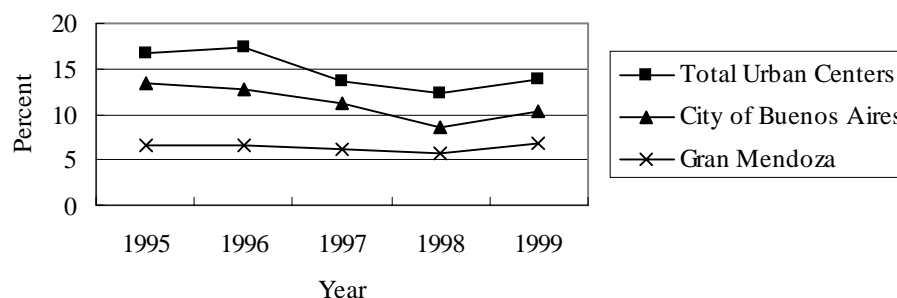
Note * from 1995 to 1998, as no data available for 1999

Industrial productions and people's living conditions seem to be prospering from Table 2.4.1. Production of motor vehicles indicated mean annual growth of 17% until 1998. However, it dropped because of the vehicle export reduction in 1999. Vehicles are imported from foreign countries far greater than exported in cash account; export FOB (free on board) 1,751 million US\$ and import CIF (including cost, insurance and freight) 3,796 million US\$ in 1999.

3) Unemployment Rates

Unemployment rates have decreased since 1995 as shown on Fig. 2.4.2.

Fig. 2.4.2 Unemployment in October (#117)



After May 1995 when the unemployment rate in total urban centers was 18.4%, the rates in the total urban centers and in the City of Buenos Aires are substantially reduced. The rates in Mendoza have been lower than Total Urban Centers' and shown no change in those years.

4) International Trade Balance

Table 2.4.2 shows the international trade balance of Argentina. The balance has been negative since 1997 because of increased amounts of imports.

Table 2.4.2 Argentine Trade Balance (#117)

Year	Exports FOB	Imports CIF	Balance
1995	20,963	20,122	841
1996	23,811	23,762	49
1997	26,431	30,450	- 4,019
1998	26,434	31,378	- 4,944
1999	23,333	25,508	- 2,175

millions of current US\$

The main export products were manufactures of agricultural origin (35%), manufactures of

industrial origin (30%), primary products (22%), and fuels (13%), in the order of the FOB amounts in 1999.

On the other hand, the imports in 1999 were almost manufactures of industrial origin, among which major items were machinery, transportation equipment, and chemical products.

Top three export countries are Brazil, United States and Colombia. Import goods are coming from Brazil, United States, France, and Germany.

2.5 Oil and Gas

1) Reserves

Table 2.5.1 shows for the confirmed reserves of crude oil at the end of 1998 and natural gas at the end of 1999. Northern Mendoza is where one of the Study model areas is located. Neuquina is composed of the southern part of Mendoza Province, and Provinces of Neuquen, Rio Negro and La Pampa.

Table 2.5.1 Confirmed Reserves of Crude Oil and Natural Gas

Locals	Crude Oil Reserves in 1998 (1,000 m ³) (#117)	Natural Gas Reserves in 1999 (1,000,000 m ³) (#255)
Northwest	32,343	165,360
Northern Mendoza	34,014	880
Neuquina	190,766	377,120
Gulf of San Jorge	149,878	33,340
Southern	30,756	171,440
National Total	437,757*	748,140

* Total 488,000,000 m³ at the end of 1999 without description of the local shares (#255).

The amount of oil reserves shows a little increment in the national total from 1994. On the contrary, the amount of gas reserves increased in 1995 and 1996 especially in Neuquina and Northwest region.

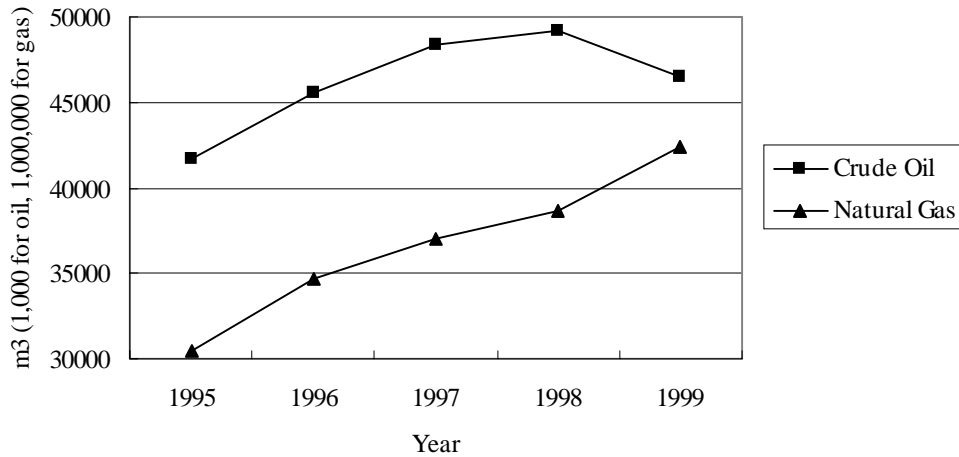
2) Production

Argentina produces crude oil enough for its fuel and other related products. Argentina exports larger cash amounts of the related products than those of the import: export FOB 2,827 million US\$ and import CIF 676 million US\$ in 1999 (#117).

Fig. 2.5.1 illustrates crude oil and natural gas production in Argentina. Mean annual growth rates were 2.9% for oil and 9.1% for gas in the 4 years after 1995. There were steady increments of both productions (5.6% for oil and 8.3% for gas) between the years 1995 and

1998.

Fig. 2.5.1 Crude Oil and Natural Gas Production (#117)



However, oil production was reduced by 2,639,000 m³ and gas was increased by 3,794 million m³ in 1999, from the amounts in 1998. By assuming heats of combustion to be 10,000,000 kcal/m³ of crude oil and 8,330 kcal/m³ of natural gas, the combined production of heat energy in 1999 was almost equal to that in 1998. Alternately by assuming the same heats of combustion of both oil and gas, the combined energy production was increased with the annual average growth of 5.08% from 1995 to 1999.

3) Oil Products

Table 2.5.2 shows for main products of crude oil refining and their domestic sales in 1999 (See Support S2-A2 and A3 for refineries).

Table 2.5.2 Main Oil Products and Domestic Sales in 1999 (#117)

Units: m³, except tons for fuel oil.

	Processed	Domestic Sales	Difference
Processed Crude	32,099,800		
Regular gasoline	7,863,500	1,677,600	2,642,500
Super gasoline		3,543,400	
Kerosene	171,300	294,800	-123,500
Jet aircraft fuel	1,986,700	1,716,300	270,400
Gas oil	12,552,700	11,896,919	655,781
Diesel oil	77,100	72,368	4,732
Fuel oil	1,817,100	1,356,199	460,901
Lubricants	232,200	231,402	798
Products Subtotal	24,700,600	20,788,988	3,911,612

An amount of 46.5 million m³ crude oil was produced in 1999. The difference between

the amount produced and the amounts processed, 14.4 million m³, may be exported or stocked for the future use. The differences between the processed and sales products are presumably from the same reasons (export or stock). Minor products, recovered gas and residue, and varieties of product densities may also cause the difference between the processed crude and the product subtotal.

Table 2.5.3 shows the major oil products sold in the three areas where the model areas are. The National total is also given in Table 2.5.3 including the amounts sold in other provinces.

Table 2.5.3 Oil Products Sold in Provinces or City of Model Areas (#179, #204)

	Year	National Total	City of Buenos Aires	Province of Buenos Aires	Province of Mendoza
Regular Gasoline (m ³)	1997	2,192,009	163,611	819,431	101,784
	1998	1,887,864	124,245	710,162	90,118
	1999	1,676,581	103,303	652,137	82,510
	2000	1,204,632	49,667	459,875	56,130
Super Gasoline (m ³)	1997	3,765,213	634,480	1,508,074	120,470
	1998	3,686,454	605,053	1,445,995	114,253
	1999	3,539,233	554,891	1,442,013	108,277
	2000	3,400,260	498,766	1,391,537	100,531
Gas Oil (m ³)	1997	11,281,806	767,531	4,378,034	388,095
	1998	11,849,196	892,880	4,505,235	393,381
	1999	11,696,910	822,862	4,764,227	404,023
	2000	11,308,278	733,576	4,419,682	432,907
Fuel Oil (tons)	1997	1,737,540*	363,690*	261,876	19,662
	1998	1,838,480*	723,725*	357,818	17,789
	1999	1,821,820*	559,402*	265,828	43,353
	2000	1,222,060*	543,752*	215,199	11,513

Note * (#284)

Regular gasoline consumption was greatly reduced in all areas, especially in the City of Buenos Aires where consumption was reduced by one third from 1997 to 2000. Also, super gasoline was consumed less in all areas. However, gas oil consumption was almost steady in all area and was even increased in the Province of Mendoza. Although there were abnormal increments of fuel oil consumption in the City of Buenos Aires in 1998 and in the Province of Mendoza in 1999, the consumption was generally decreasing in all areas.

Table 2.5.4 gives the standards of oil products cited from the Resolution (#155). Table 2.5.5 shows the analytical data of gas and fuel oils used in a power plant (#274).

Sulfur in products relates directly with air pollution. YPF publishes in its inter-net homepage the sulfur contents of its products as 0.035% in regular gasoline, 0.028% in super gasoline, 0.11% in gas oil and 0.4 to 0.6% in fuel oil, all by weight.

Table 2.5.4 Standards of Oil Products (#155)

	Regular Gasoline	Super Gasoline	Kerosene	Gas Oil	Diesel Oil	Fuel Oil
RON	>83	>93				
Flash Point			>38°C	>45°C	>55°C	>60°C
Distillation	>10% @70°C	>10% @70°C	>20% @200°C	>90% @360°C		
End Point	<225°C	<225°C	<300°C			
Viscosity				2 – 5.5 cs @40°C	<7.4 cs @40°C	<630 cs @50°C
Cetan No.				>48	>30	
Leaded	< 0.2 g/l	< 0.2 g/l				
Unleaded	< 0.013 g/l	< 0.013 g/l				
Sulfur				<0.25% wt		<1.4% wt

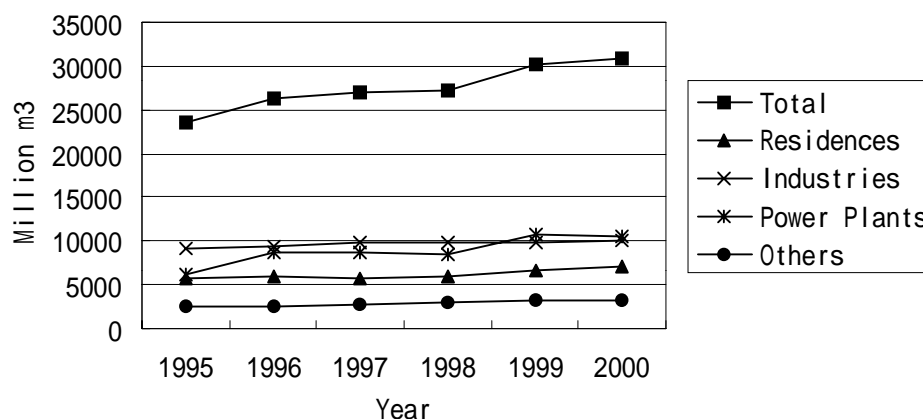
Table 2.5.5 Analytical Data of Gas and Fuel Oils (#274)

	Gas Oil		Fuel Oil	
	A	B	A	B
Density @15°C	0.8497	0.8600	0.9803	1.0058
Flash Point, °C	69	66	102	87
Distillation, °C				
Initial	169	168	--	--
90%	365	360	--	--
End	398	383	--	--
Viscosity, cs @40°C	3.61	3.81	1110	1157
@50°C	--	--	648	554
@100°C	--	--	45.3	46.7
Cetan No.	50.07	48.04		
Sulfur %	0.13	0.10	0.57	0.66
Water, vol%	<0.03	<0.03	0.1	0.1
Vanadium, ppm	<0.01	--	17	40
Sodium, ppm	0.06	--	26	18
High Heating Value, kcal/kg	--	10,838	--	10,125
Low Heating Value, kcal/kg	--	10,178	--	9,679

4) Natural Gas Consumption

Fig. 2.5.2 shows trends of natural gas consumption in major consumers. The data was cited from #117 until 1999 (see Support S2-A4) and the estimated consumption in 2000 from #255.

Fig. 2.5.2 Natural Gas Consumption



Total natural gas consumption in 1999 was 30,143 million m³ which is 12,282 million m³ less than its production in 1999. The balance is exported to neighbor countries, such as Brazil. Meanwhile, the total consumption in 1999 showed 2,916 million m³ of increment, equal to nearly 10%, from that in 1998.

The annual average growth rates from 1995 to 1999 were 6.4% in Total, 3.29% in Residential, 1.56% in Industrial, and 15.00% in Power plants. Chapter 3 will discuss in detail this increment of natural gas consumption in the power industry.

Major consumers of natural gas in the Industrial sector are listed in Table 2.5.6.

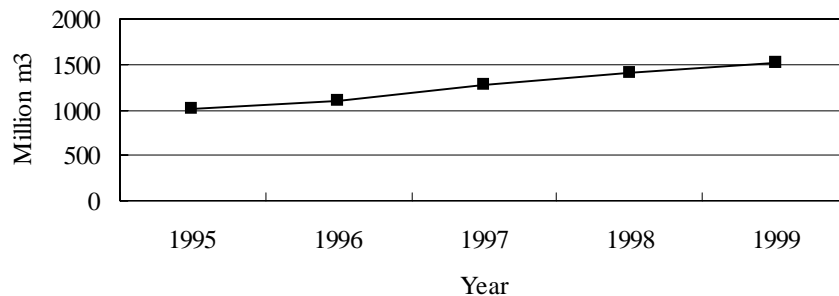
Table 2.5.6 Major Natural Gas Consumers in Industrial Sector in 1999 (#117)

	Million m ³	%
Total	9,763.5	100.0
Steel	1,056.9	10.8
Food (except edible oil)	705.8	7.2
Cement	639.1	6.5
Non-ferrous metallic	630.4	6.5
Chemical	528.4	5.4
Petrochemical	507.6	5.2
Others (< 4% consumption)	5,695.3	58.3

Within the Steel sector, Acindar Industria S.A. in Santa Fe (just outside of the San Nicolas model area) is annually consuming 295 million m³ of natural gas for the direct reduction steel production.

Compressed natural gas (CNG) is the major part (47.7%) of “Others” in Fig. 2.5.2. It is used for fuel of passenger cars. Fig. 2.5.3 shows trends of the CNG consumption. Its mean annual consumption growth is 10.6% from 1995 to 1999. The Secretary of Energy projected CNG growth of demands from 1,509 million m³ in 1999 to 2,873 million m³ in 2010, with the annual average growth rate of 6.65%.

Fig. 2.5.3 Compressed Natural Gas Consumption (#117)



The monthly consumed amounts (from October 1999 to September 2000) are given in the reference (#199) separately for several consumers, such as Residences, General Services-P, Sub-distributors, Compressed Natural Gas, Grand Customers-I, and Grand Customers-F. The group of General Services-P is for clients who consume gas not for domestic use and who do not have a minimum consumption contract. Sub-distributors are operators of piping branched off the main piping and sell the gas in small amounts. Grand Customers-I consume more than 3,000,000 m³ of natural gas annually, and Grand Customers-F consume more than 10,000 m³ daily for one year.

Annual natural gas consumption (#199) patterns in the Provinces and City that contain the model areas are given in Figs. 2.5.4 to 2.5.6. The Month 1 is January 2000 and the Month 12 is December 1999 in these Figures. Larger consumers are selectively plotted and smaller ones are combined into a plot of ‘Others’.

Fig. 2.5.4 indicates that the Grand Consumers-I group, the largest natural gas consumer in the City of Buenos Aires, has been forced to reduce the natural gas consumption in winter when residential customers use the gas in large quantity. There were only 3 to 5 clients in the group in this one-year period in the City. This phenomenon was evidenced by the trends of natural gas consumption in the power plants in the City.

Fig. 2.5.4 Monthly Gas Sold in City of BA (10/99-9/00)

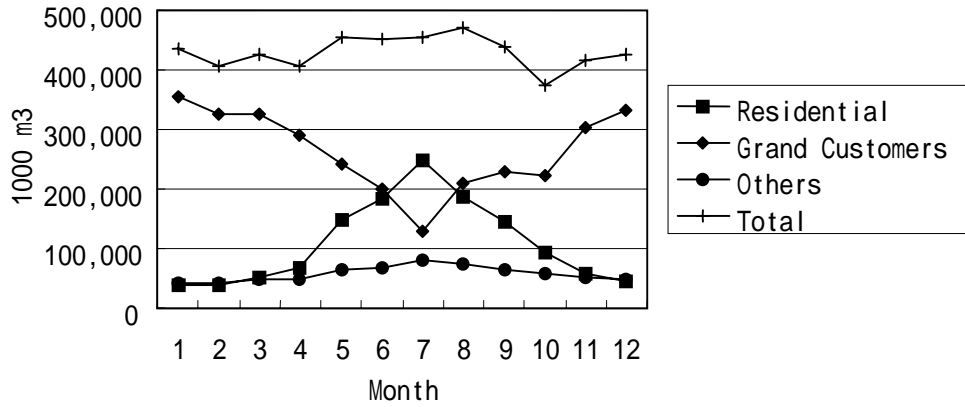


Fig. 2.5.5 Monthly Gas Sold in Prov. of BA (10/99-9/00)

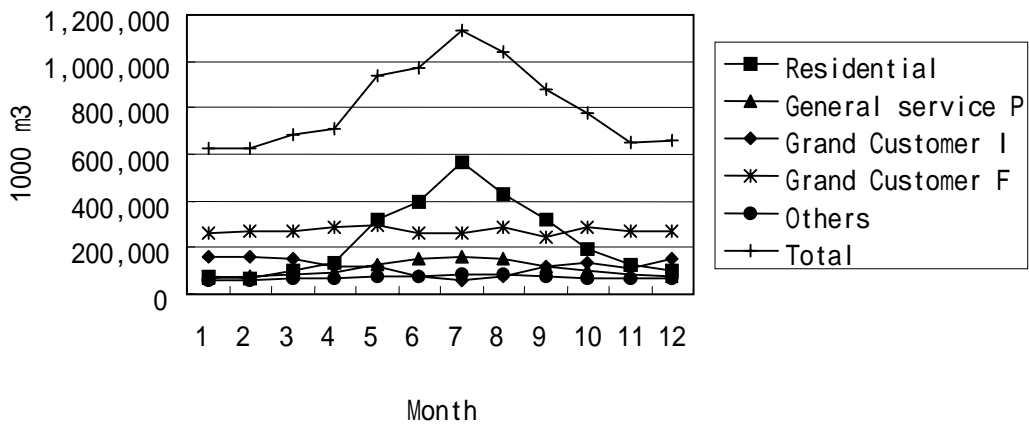
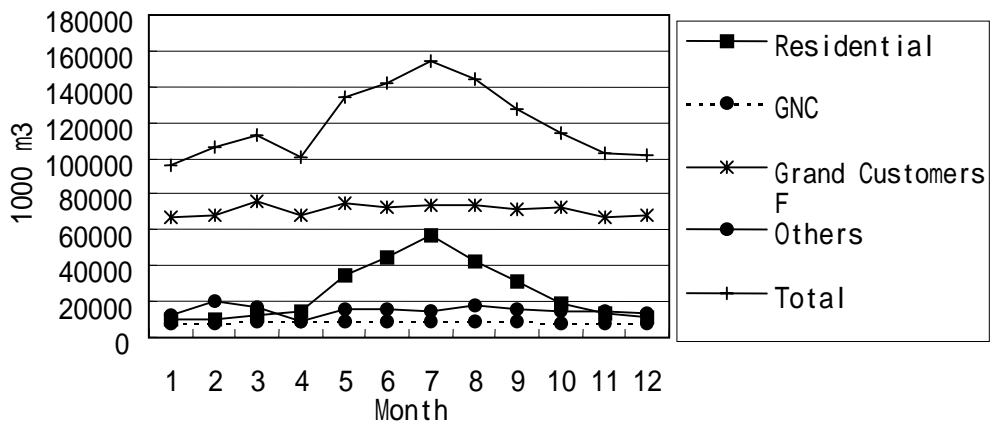


Fig. 2.5.6 Monthly Gas Sold in Prov. of Mendoza (10/99-9/00)



The total monthly consumption curves in Figs.2.5.5 to 2.5.6 in Provinces of Buenos Aires and Mendoza were shaped by changes of the residential consumption.

Fig. 2.5.6 indicates the Grand Customers-F group consumes the largest and seasonally constant amounts of natural gas in the Province of Mendoza. There were 16 to 18 clients in this group in the Province.

Fig. 2.5.7 Residential Mean Monthly Natural Gas Consumption (#199)

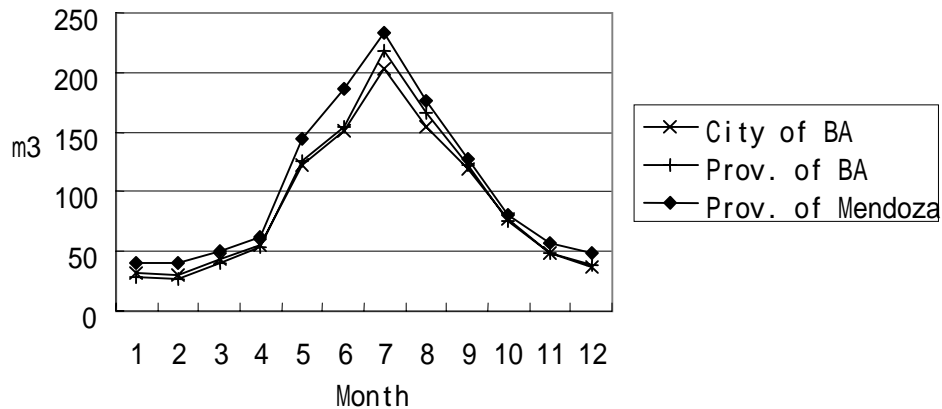


Fig. 2.5.7 shows specifically the seasonal changes of natural gas consumption by one average residence in each area. Winter is the highest season of the gas consumption. And there does not seem much difference in the consumption by an average residence between areas. However, personal annual consumption of the gas is around 1700, 680 and 900 m³/person respectively in the City of Buenos Aires, and the Provinces of Buenos Aires and Mendoza. This is caused by a difference in the number of people in one residence, the least in the City of Buenos Aires within the three model areas.

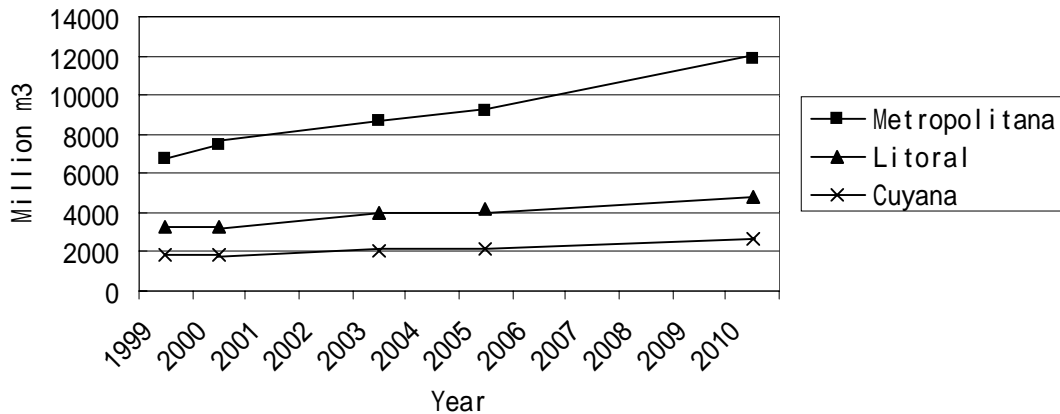
Table 2.5.7 (#199) shows for annual natural gas consumption in the Provinces where model areas are located.

Table 2.5.7 Natural Gas Consumed in Provinces (#199)
from Oct./1999 to Sept./2000

	1000 m ³	%
Province of Buenos Aires	9,696,830	37.9
City of Buenos Aires	5,163,496	20.2
Province of Mendoza	1,435,307	5.6
Other Provinces	9,305,011	36.3
National Total	25,600,644	100.0

The Secretary of Energy predicted natural gas demand in regions of the model areas as in Fig. 2.5.8 (#255). Metropolitana covers the City of Buenos Aires, Litoral covers the Province of Santa Fe and the Department of San Nicolas, and Cuyana covers the Provinces of Mendoza, San Juan and San Luis in Fig. 2.5.8.

Fig. 2.5.8 Prediction of Natural Gas Demands



Average annual growth rates of the three regions for 11 years are estimated to be 5.18% for Metropolitana, 3.60% for Litoral, 3.53% for Cuyana and 3.74% for the whole nation. It is natural to estimate the largest growth in Metropolitana, as the City of Buenos Aires has restrained to burn fuel oil in the City.

5) Prices of Oil and Gas

Table 2.5.8 shows information of fuel prices. The last data were prices on the street of Buenos Aires in the first part of May 2001. By assuming the combustion heat of fuel oil to be 10,000,000 kcal/m³, natural gas is 30% less in price than fuel oil as a stationary combustion fuel.

Table 2.5.8 Fuel Prices

Source	Fuel	(Dec/1999) #144	(Sept/1999) #175	(Jan/2000) #215	May/2001 in BA
Station-ary	Natural Gas	0.071 \$/m ³	--		
	Gas Oil	--	--		
	Fuel Oil	100 \$/ton	--		
	Coal	37 \$/ton	--		
Mobile	CNG	--	0.31 \$/m ³		0.306 \$/m ³
	Common Gasoline	--	0.938 \$/lt	0.96 \$/lt	0.959 \$/lt
	Super Gasoline	--	--	1.09 \$/lt	1.094 \$/lt
	Gas Oil	--	0.469 \$/lt	0.5 \$/lt	0.524 \$/lt

The prices of natural gas or CNG in Table 2.5.8 are converted to the \$/m³ unit by assuming

the combustion heat of the natural gas to be 9300 kcal/m³. For example, 2.7 \$/MM Btu is equivalent to 0.1 \$/m³. More detailed natural gas prices are available as in the reference #199 with variations of users, types of supply, and distributors.

Table 2.5.9 was composed by averaging the detailed prices given in the reference (#199) as natural gas prices to the end users in each area. Logically, grand customers enjoy cheaper prices of natural gas. There was a substantial difference in the price of CNG between Table 2.5.8 and 2.5.9. The prices of CNG in Table 2.5.9 are for services stations and not for end users. Natural gas prices are sometimes reported with a heat value.

Table 2.5.9 Average Natural Gas Price to Users (#199)

Users	City of BA	San Nicolas Area	Prov. of Mendoza
Residential \$/m ³	0.14885	0.12305	0.14221
General Services-P \$/m ³	0.13019	0.11335	0.12001
Grand Customers (I,F)\$/m ³	0.07910	0.07121	0.07407
CNG \$/m ³	0.09675	0.09009	0.08715

2.6 Electric Power Consumption

The next chapter, Chapter 3, deals with electric power generation, past consumption trends and future forecast, and other related items in the whole Argentina in detail. In this chapter, localized items in the model areas are described.

Fig. 2.6.1 Annual Electric Power Consumption in Argentina

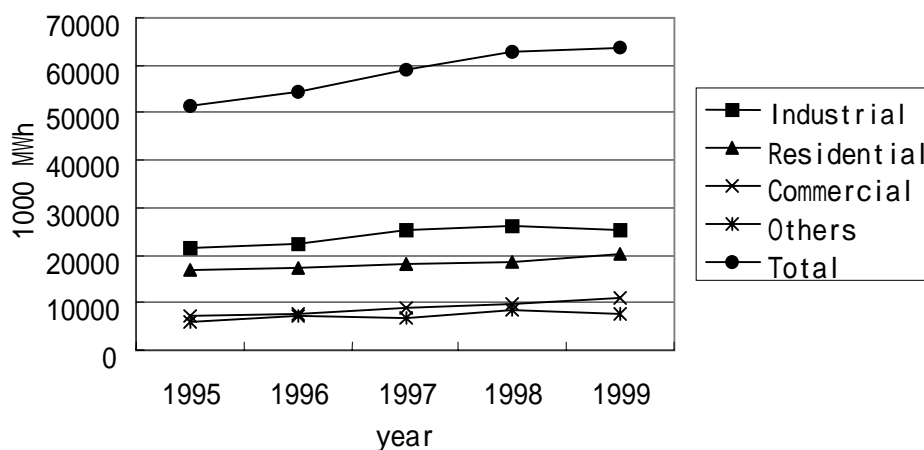


Fig. 2.6.1 (#114), the past trends of the annual electric power consumption, shows that the three main sectors - industrial, residential and commercial users, constitute more than 88% of the total demand. Table 2.6.1 shows for annual average growth rates from 1995 to 1999. The growth in the

Commercial sector has pushed up the total growth of the annual average power consumption (5.56%). The Others category in Fig. 2.6.1 and Table 2.6.1 includes users of Street light, Government, Water supply, Irrigation, Transportation, etc.

Table 2.6.1 Annual Average Growth of Electric Power Consumption by Sectors

	Industrial	Residential	Commercial	Others	Total
Consumption in 1999 (MWh)	25,384,422	20,040,993	11,042,088	7,386,721	63,854,224
Annual Average Growth from 1995	4.23%	4.59%	11.54%	5.11%	5.56%

Table 2.6.2 shows electric power consumption in 2000 of the regions having the model areas by breaking down the total national consumption with the regional consumed percentages (#255). Cuyo in the table is the combined region of the Provinces of Mendoza and San Juan. The populations in 2000 are estimated from those of 1991 with the annual average growth of 0.325% for the Metropolitan Buenos Aires (City of BA and 19 Districts) and 1.374% for the rest of the Province, as assumed by the reference #117.

Of the three regions, people in the Metropolitan Buenos Aires are enjoying the highest consumption of electric power. For comparison, the Japanese consumption was 6.5 MWh/capita in 1999 (#163).

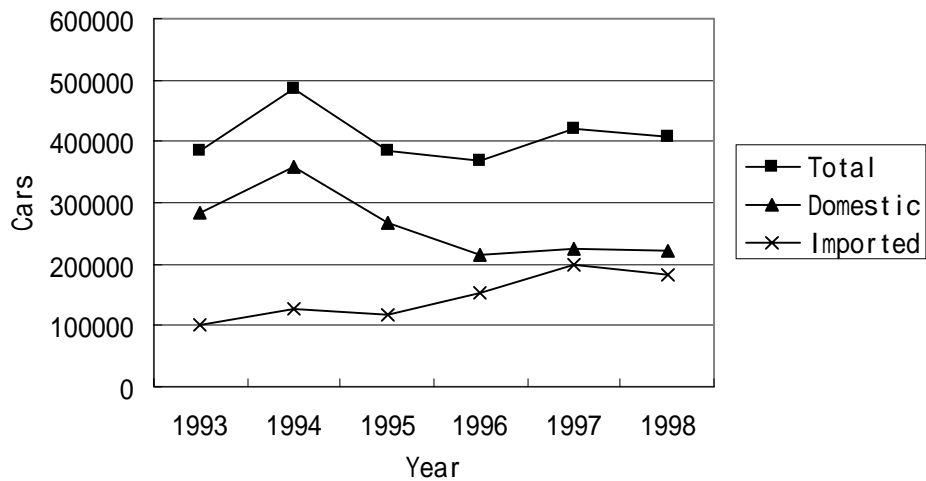
Table 2.6.2 Regional Consumption of Electric Power in 2000

	Metropolitan Buenos Aires	Rest of Prov. Buenos Aires	Cuyo	Others	National
% in 2000 (#255)	43.9	13.0	6.1	37.0	100
Consumed MWh in 2000	31,579,000	9,351,400	4,388,000	balance	71,934,000
Estimated Population in 2000	11,258,757	5,230,124	2,186,122	balance	37,031,802
MWh per capita in 2000	2.80	1.79	2.01	--	1.94

2.7 Cars

Fig. 2.7.1 shows the trends of registered cars in Argentina (#117). The annual average growth of the registered cars is minus 4.77% for domestic cars and plus 12.92% for imported ones from 1993 to 1998. The numbers of the registered cars in 1998 were 223,031 domestic, 183,448 imported with a total of 406,479. On the other hand, the annual average growth rate of the domestic production in the same period was 5.99% (#188). This difference may be caused by numbers of cars produced and sold. The domestic production was extremely reduced in 1999 to about 67% of the 457,957 cars in 1998.

Fig. 2.7.1 Registered Cars in Argentina



2.8 Privatization

Privatization of the state owned companies is progressing as an economic policy since 1991. Those privatized are

- Electric power generation and transportation,
- Petroleum processing, Petrochemical production, Gas transportation and distribution,
- Aerolineas Argentinas, Maritime transportation, etc.

2.9 Afterword

Since 1991 when the Convertibility Law was enacted in Argentina, its economy has grown steadily. There is no inflation anymore, and the annual mean growth of GDP/Capita is 4.45% in the last 9 years. As the local currency (Peso) has been fixed with the US\$ at a 1 to 1 ratio, US\$ papers are widely circulated in Argentina with Pesos. However, there are certain negative signs of economic development, such as reduction of GDP in 1999 and 2000, and increment of unemployment in 1999.

National Institute of Statistics and Censuses has estimated population growth in provinces until 2010 and in nation until 2050, based on the census in 1991. Its estimation in the City of Buenos Aires is quite low. The next census was taken in November 2001.

Energy shift from oil to natural gas is evidenced by the difference of production growth rates between crude oil (2.9%) and natural gas (9.1%) in the 4 years leading up to 1999. Natural gas is cleaner environmentally and is supplied more economically than oil products.