Infrastructure in Latin America: Recent evolution and key challenges

(Seven Country Briefs) – C.B. 1/7: Argentina

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Advisers

Notes

Higher/middle-income countries: Argentina, Brazil, Costa Rica, Mexico
Regional average: Argentina, Brazil, Colombia, Costa Rica, Guatemala, Jamaica, Mexico, Peru

Weights and Measures

Metric System

Government Fiscal Year

1 January – 31 December

Acronyms

AASA: Consorcio Aguas Argentinas

ANEEL: Agência Nacional de Energia Elétrica

BAP: Buenos Aires al Pacifico

BOT: Build, Operate and Transfer

CAMMESA: Compañía Administradora del Mercado Mayorista Eléctrico

CIA: Central Intelligence Agency

CNC: Comisión Nacional de Comunicaciones

CNRT: Comisión Nacional de Regulación de Transporte

CNT: Comision Nacional de Telecomunicaciones

COFAPS: Junta Federal de Agua Potable y Saneamiento

COFESA: Junta Federal de Saneamiento

CPI: Consumer Price Index

CPP: Calling-party-pays

CREMA: Contratos de Recuperación y Mantenimento

CRM: Compañía de Radiocomunicaciones Móviles

CTI: Compañía de Teléfonos del Interior

DHS: Demographic and Health Surveys

DNV: Dirección Nacional de Vialidad

ECLAC: Economic Commission for Latin America and the Caribbean

EDELAP: Empresa Distribuidora la Plata S.A.

EDENOR: Empresa Distribuidora Norte S.A.

EDESUR: Empresa Distribuidora Sur S.A.

EIA: Energy Information Administration

ENAHO: Encuesta National de Hogares

ENARGAS: Ente Nacional Regulador del Gas

ENARSA: Empresa Nacional de Energía de Argentina

ENIGFAM: Encuesta Nacional de Ingresos y Gastos Familiares

ENIGH: Encuesta Nacional de Ingresos y Gastos de los Hogares

ENOHSA: Ente Nacional de Obras Hídricas de Saneamiento

ENRE: Ente Nacional Regulador de Electricidad

ENRE: Regulatory Agency for Electricity

EPH: Encuesta Permanente de Hogares

ESMAP: Energy Sector Management Assistance Programme

ETOSS: Ente Tripartito de Obras y Servicios Públicos

FIEL: Fundación de Investigaciones Económicas Latinoamericanas

FMIK: Frecuencia Media de Interrupción por kVA

FOB: Free on Board

HDI: Human Development Index

IBGE: Instituto Brasileiro de Geografia e Estatística

ICSID: International Center for Settlement of Investment Disputes

IDB: Inter-American Development Bank

INDEC: Instituto Nacional de Estadísticas y Censos

INE: Instituto Nacional de Estadística

INEC: Instituto Nacional de Estadística y Censos

INEGI: Instituto Nacional de Estadística, Geografia e Informática

INEI: Instituto Nacional de Estadística e Informátic

ITU: International Telecommunication Union

JSLC: Jamaica Survey of Living Conditions

LACs: Latin American Countries

LIS: Lines in Service

LSBs: Licentiatarias del Servizio Basico

MEM: Mercado Electrica Mayorista

MERCOSUR: Southern Cone Common Market

NCA: Nuevo Central Argentino

OCC: Organismos de Certificação Credenciados

OCCOVI: Órgano de Control de Concesione Viales

OCRABA: Organo de Control de Concesiones de la Red de Accesos a la Ciudad de Buenos Aires

OECD: Organization for Economic Co-operation and Development

OLADE: Organización Latinoamericana de Energía

ORSNA: Organismo Regulador del Sistema Nacional de Aeropuertos

OSINERG: Organismo Supervisor de Inversion en Energia

OSN: Obras Sanitarias de la Nación

PCS: Personal Communications Services

PHO: Pan American Health Organization

PIJ: Planning Institute of Jamaica

PNAD: Pesquisa Nacional por Amostra de Domicílio.

SIN: Sistema Interconectado Nacional

SING: Great Northern System

SISFER: Railway Transport System

SISS: Superintendencia de Servicios Sanitarios

SISTAU: Sistema de Autotransporte Automotor de Passageiros

SISTRANS : Transport System

SISVIAL: Integrated Transport System

SNA: Sistema Nacional de Aeropuertos

SNAP: Servicio Nacional de Agua Potable

SPIDES: Sistema Permanente de Información de Saneamiento Argentino

SSGRH: Subsecretaría de Gestión de Recursos Hídricos

SUBTE: Subterraneos de Buenos Aires

TEU: Twenty-foot equivalent units

TFO: Operative functions transference

TGN: Transportadora de Gas del Norte

TGS: Transportadora de Gas del Sur

TRANSENER : Compañía de Transporte de Energía Eléctrica en Alta Tensión Transener S.A.

TTIK: Tiempo Total de Interrupción por kVA

UF: Union Ferroviaria

UNCTAD: United Nations Conference on Trade and Development

UNDP: United Nations Development Programme

UNSTAT: United Nations Statistical Division

WDI: World Development Indicators

WEF: World Economic Forum

YPF: Yacimientos Petrolíferos Fiscales

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1. OVERVIEW

In the mid-nineteenth century, Argentina adopted a representative-republican-federal government. The nation, together with its 23 provinces and the government of the city of Buenos Aires, has its own constitution under a republican system, guaranteeing a judicial administration, municipal regime and primary education. Each political unit is run by three powers: the executive, legislative and judicial.

Figure 1.1 –Map of Argentina

Source: The World Factbook – Argentina 2004 - CIA

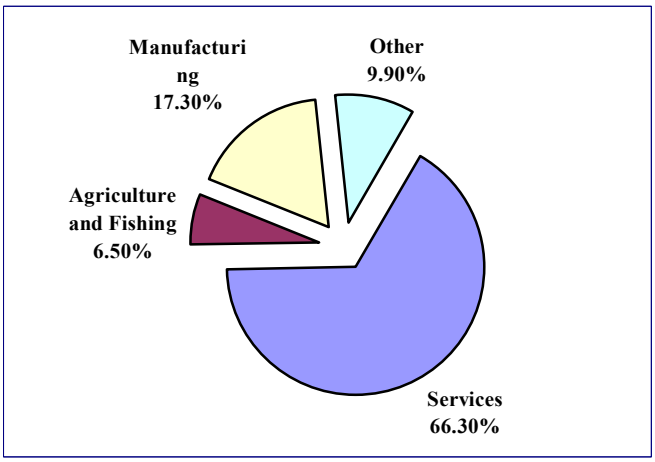
Argentina, which has an area of 2.78 million square kilometers, increasing to 3.76 million square kilometers if the Antarctic area is included, is the second largest country in South America[1]. Buenos Aires is the capital of the country and the seat of the Argentinean government. The country borders Bolivia and Paraguay in the north, Brazil and Uruguay in the east and Chile in the west. The population in 2004[2] was estimated to be 37.4 million – a third of which lives in Greater Buenos Aires (includes the capital city) – and the country has been growing at an annual inter-census rate of 1.07%[3].

With regard to ***macroeconomic indicators***, in 2002 Argentina had a *gross domestic product (GDP)* of approximately international $349 billion[4], with a *GDP per capita* of international $9,632.[5] It has shown, when considered at constant prices, an annual decrease of 0.05% for 2001 and of 0.09 for 2002,[6] resulting mainly from the economic recession the country experienced in those years.

In analyzing the ***composition of GDP***, services represent the greatest share in the Argentinean economy, with a sector value added equal to 66.3% of GDP. Agriculture and fishing value added accounts for about 6.5% of GDP, while manufacturing represents 17.3%. The residual shares of the GDP composition are allocated to other less representative sectors[7].

[1] Source: INDEC – National Census (National Bureau of Statistics).
[2] Source: Ibidem.
[3] Source: Ibidem.
[4] Source: National Bureau of National Accounts (Ministry of the Economy).
[5] Source: Ibidem.
[6] Source: Ibidem.
[7] Source: Ibidem.

Figure 1.2 – Value Added by Sector (% GDP)



Source: National Bureau of National Accounts - Ministry of Economy

A major issue for Argentina is the ***level of unemployment***. The rate was equal to 14.8%[8] at the beginning of 2004 (increasing from about 13% in 1998[9]) and rises to 19.1%[10] when excluding the beneficiaries of the welfare plan "*Jefes y Jefas de Hogar*", which may hide unemployment.

It is interesting to highlight that the retail ***inflation rate*** accumulated from January 2002 (the month of the exit to convertibility) to September 2004 was 53%[11]; wholesale inflation reached 139%[12], which was not passed on to a number of prices, such as public service tariffs, since the government placed all public utility contracts under global renegotiation. Prices and wages, with the exception of mandatory increases and other increases which have followed in the private sector, have been frozen since then.

With regard to Argentinean performance in terms of ***trade*****,** the country ran deficits in its trade account during the 1990s. In spite of this, after the devaluation of the peso, with exports slightly decreasing – in dollar value – and imports crumbling, the trade account showed a surplus. In particular, in 2003 the total volume of imports was US$ 17,989 million, equal to 14.2% of GDP[13], while the volume of exports was US$ 31,631, corresponding to about 25% of GDP[14]. Moreover, it should be noted that Argentina, along with Brazil, Paraguay and Uruguay, is one of the four members of MERCOSUR, the Southern Cone Common Market, which came into effect on January 1, 1995. This agreement has called for a phased elimination of internal tariffs and the introduction of a common external tariff.

It should also be highlighted that, at the beginning of 2002, the Argentinean president not only faced chaotic social and economic problems, but also encountered pressures from lobbying sectors interested in devaluating the peso. The origins of this crisis can be traced back to 1998 when foreign investment in the country dropped considerably on account of the Russian financial crisis of 1998 and the Brazilian currency devaluation in January 1999. The decrease in foreign investment led to a shortage of foreign exchange which increased international borrowing and increased the interest rates of Argentina's public debt. When the government took the step of freezing bank accounts to prevent the collapse of the banking system, the ensuing widespread rioting and violence led President Fernando de la Rúa to resign on December 20, 2001. After three successive presidents were forced to resign shortly after being appointed, on January 1, 2002 Congress appointed Eduardo Duhalde as provisional president until December 2003.

At the time, reserves were lower than those required by the Convertibility Law. This Law provided for a currency board which fixed the exchange rate with the US$ at one peso ($) under

[8] Source: INDEC – Permanent Household Survey (National Bureau of Statistics).
[9] Ibidem.
[10] Ibidem.
[11] Source: INDEC – (National Bureau of Statistics).
[12] Ibidem.
[13] Source: INDEC – National Census (National Bureau of Statistics).
[14] Ibidem.

full convertibility. Therefore, in the first days of January 2002, the president pledged to repeal the Convertibility Law after eleven years of continuity. After some intervention in relation to the official exchange rate, the currency started to fluctuate and ultimately stabilized at $3 per US dollar – after having peaked at almost $4 per US dollar by mid-2002.

At the same time as devaluation, the government also decided to make an unprecedented change in governing contract rules. The currency of all dollar denominated contracts was switched to pesos, in an asymmetrical fashion. Savings in dollars were converted to $1.40 and indexed by a lagged consumer price mechanism, while loans in dollars were converted to $1, also indexed by the same mechanism; however, small debts, under $100,000, were adjusted according to an almost frozen wage-based index[15]. Public utility tariffs and charges were frozen at their pre-devaluation level in pesos. 2002 and 2003 were transition years in this respect, as all contractual renegotiations were postponed. All further important redefinitions will take place from 2005 onwards,[16] with the exception of upstream prices of natural gas and electric power, which were adjusted during 2004, and some contract rescissions (*Correos Argentinos*, and the suspended case of *Metropolitano,* the railway company in charge of the *San Martín* line).

Given this scenario, it is important to observe some ***development indicators*** to help describe Argentina's situation not only on a strictly economic basis. Firstly, it is important to point out that social indicators are favorable. In fact, looking at the *Human Development Index* (HDI), the value for Argentina in 2001 was 0.849 and the country ranked 34th in the world[17], the first Latin American country to appear in the world ranking. Moreover, the Index showed an increasing trend in 2002, when it reached a value of 0.853[18].

In addition, it is useful to consider some specific development indicators; in particular, the conditions of health. In 2002[19], the *infant mortality rate* stood at 16 deaths per 1,000 live births, while *weight malnutrition* in the period 1995-2002 affected 5% of children under 5 years of age[20]. Both these indicators show a fairly good performance for the country in terms of health-care quality.

With regard to Argentina's education levels, in 2002 the *illiteracy rate* was relatively low, with only 3% of over-15s unable to read and write[21]. Furthermore, the *female participation of approximately 41% in the economically active population* in 2001[22] confirms the presence of a high level of gender equality in Argentina.

[15] Source: Central Bank and Presidential Decrees.
[16] Source: ENRE (Regulatory Agency for Electricity), ENARGAS (Regulatory Agency for Natural Gas)
[17] Source: UNDP – Human Development Report (United Nations Development Programme).
[18] Ibidem.
[19] Ibidem.
[20] Ibidem.
[21] Ibidem.
[22] Source: INDEC – Permanent Household Survey (National Bureau of Statistics).

2. TRANSPORT

2.1. OVERVIEW

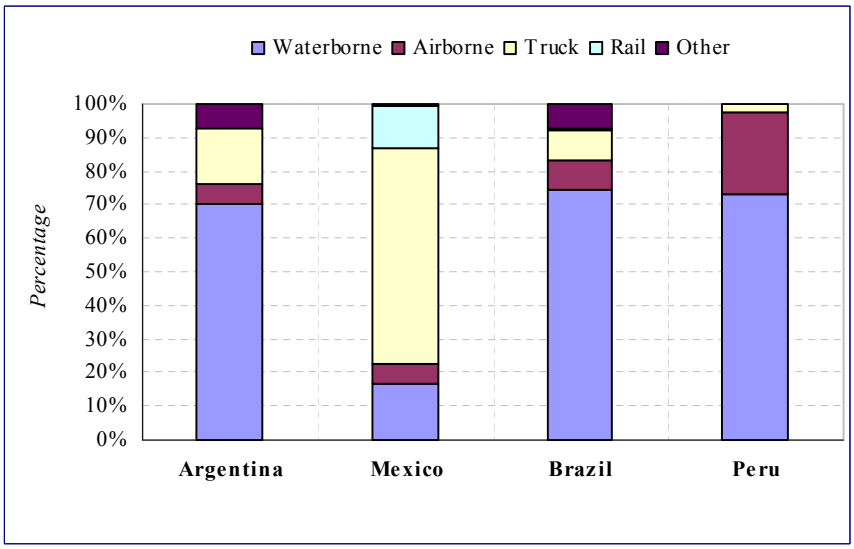
The Argentinean infrastructure system suffered serious deterioration in the 1980s due to low investment levels, due primarily to the economic and fiscal crisis the country had experienced in that decade. This represented a major obstacle to the country's economic growth, and also reduced its competitiveness in an environment of profound economic uncertainty.

In the 1990s, however, with the affirmation of greater commercial and financial openness, achieved through the Convertibility Plan of 1991, and the institutional changes that moved Argentina toward economic stability, there was a recovery in the level of infrastructural investments. In the context of this economic stability and financial openness, an adequate infrastructure stock was fundamental for enabling productivity gains and attracting foreign investments.

Therefore, since the 1990s, Argentina has become the first Latin American country to seek out privatization and competition in the transport sectors and to implement a series of reforms aiming to reach an adequate level of decentralization in services management. Moreover, the transfer of infrastructure management to the private sector has been directed not only at increasing the generation of resources and recovering the capacity of investments, but also at the promoting the necessary expansion in services and upgrading their quality. It is necessary to note, however, that despite the objectives related to gains in economic efficiency, the reform process of the sector was mainly fiscal in origin. In fact, the government's two main priorities were the reduction of the public resources required for operating the system and the attainment of the maximum income from the concessions granted to the private sector – the state thus supervising the performance of transport services providers and regulating concessions. Nevertheless, in spite of the efforts sustained to reach these goals, the use of public resources for infrastructure stock maintenance and development, along with the need to better define the concession contracts, remain the main problems in the transport sector since they imply spending a large amount of public resources due to inefficiencies in contractual forms and in the administration of the infrastructure.

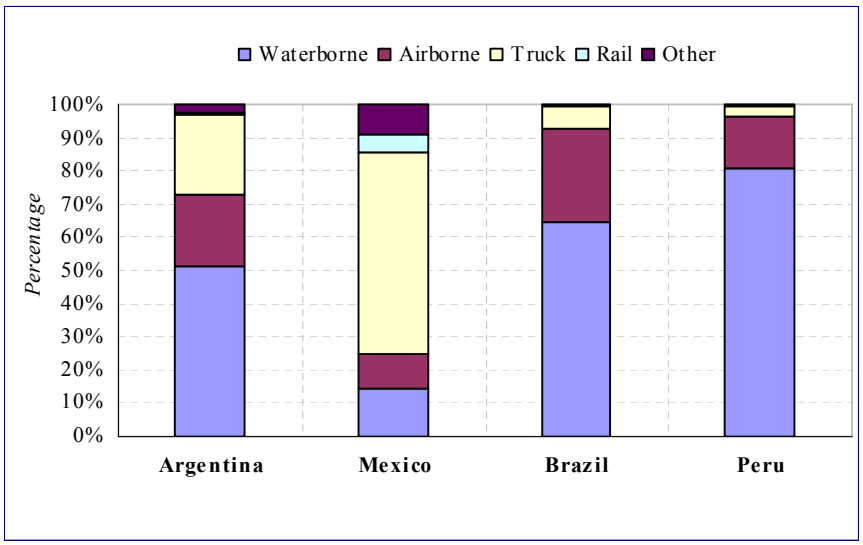
It should be noted that Argentina's low level of economic openness, confirmed in 2003 by a participation of imports and exports in GDP of about 14% and 25% respectively, has been associated with an intensification of regional commerce since the 1990s due to its membership of MERCOSUR and the affirmation of Brazil as Argentina's main commercial partner (see Figures 2.1 and 2.2). This regional supremacy, both in the destination of exports and origin of imports, explains the importance of road transport (trucks) for international trade, especially with regard to imports. Moreover, the growing importance of MERCOSUR justifies the need to improve the road network as well as the railway system, which participates negligibly in Argentinean international commerce.

Figure 2.1 – Exports by means of transport – 2000 – Value FOB



Source: ECLAC

Figure 2.2 - Imports by means of transport – 2000 – Value FOB



Source: ECLAC

2.2. ASSESSMENT OF KEY POLICY AREAS

2.2.1. ANALYSIS OF THE TECHNICAL DIMENSIONS OF THE SECTOR

In order to provide a detailed and exhaustive description of Argentina's infrastructure stock and transport situation, the following four main important topics will be investigated in the technical dimensions sector:

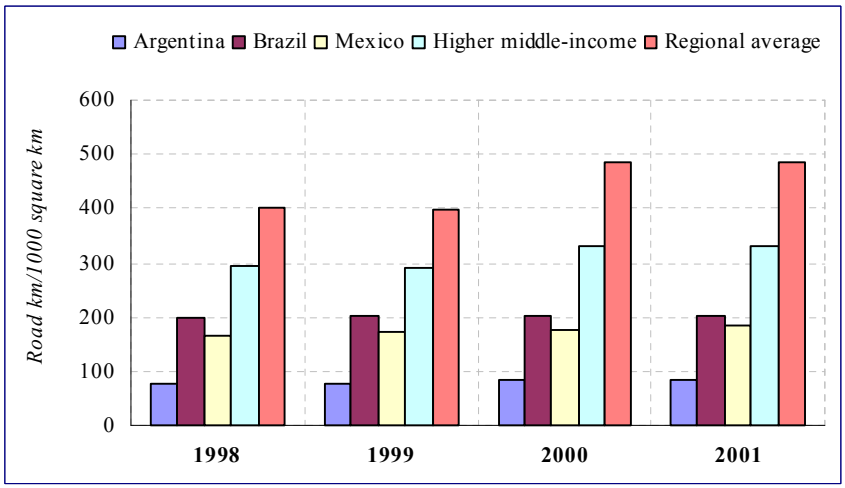
- *roads*;
- *rail system*;
- *ports;* and
- *airports.*

Roads. In analyzing the specific features of the road stock in Argentina, it is worth noting that the road network in the country, after presenting high rates of expansion from 1940 to 1980, remained practically unchanged from 1980 to 1990 when this sector, having become dependent on general budgetary resources, suffered a significant reduction in funds. During the 1990s, however, road expansion began again as a consequence of the road concessions program, which enabled an increase in investments in the sector.

With a total network of about 230,000 km of roads, Argentina has a low road density considering the dimensions of the country - about 84 km per 1,000 km^2 in 2001. This data is significantly low, especially compared to other countries in the region. In fact, Figure 2.3 shows that in the period 1998-2001 Argentina's road density in terms of land remained constant and significantly lower than the road densities of the other higher/middle-income LACs, namely Brazil, Costa Rica and Mexico. In particular, it is apparent that the Argentinean figure is significantly lower than those of the benchmark countries: Brazil has 203 km per 1,000 km^2 while Mexico has 183 km per 1,000 km^2. Nevertheless, the most serious consideration is that Argentina is far behind the regional average, which includes less developed countries.

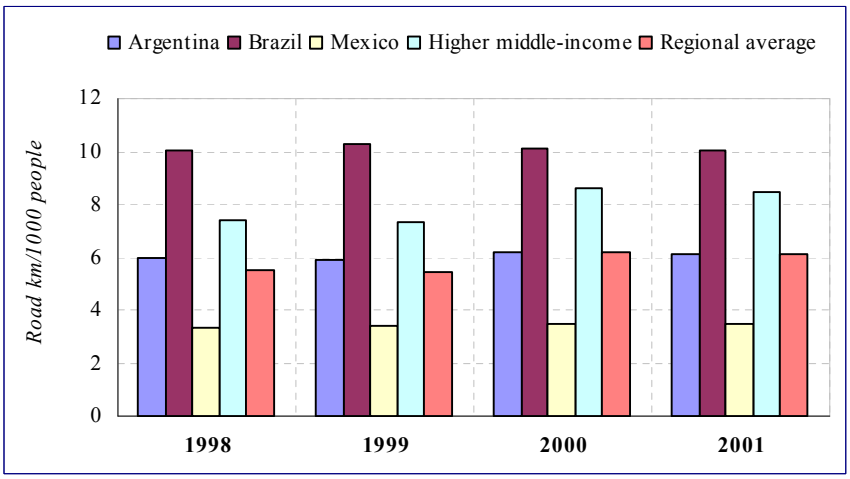
The situation is quite different when considering road density in terms of population. Although Argentina was far behind Brazil in the period 1998-2001 according to the indicator of kilometers of roads per 1000 people, its performance was better than that of Mexico. Moreover, in 2001 the Argentinean figure of 6.13 almost equaled the regional average of 6.14; however it was lower than the 8.37 shown by the higher/middle income countries.

Figure 2.3 – Road Density in Terms of Land



Source: Ernst & Young Italy and Cohen&Co. elaboration of World Development Indicators 2004 data

Figure 2.4 – Road Density in Terms of Population



Source: Ernst & Young Italy and Cohen&Co. elaboration of World Development Indicators 2004 data

As for road quality, in 2000 the percentage of paved roads in Argentina was higher than the average of higher/middle income countries (Table 2.1). In particular, while the Argentinean percentage of 27.60%, was higher than Brazil's, at 9.56% (a similar density of paved roads per 1000 km^2 in both countries), it was lower than Mexico's score of 32.49%.

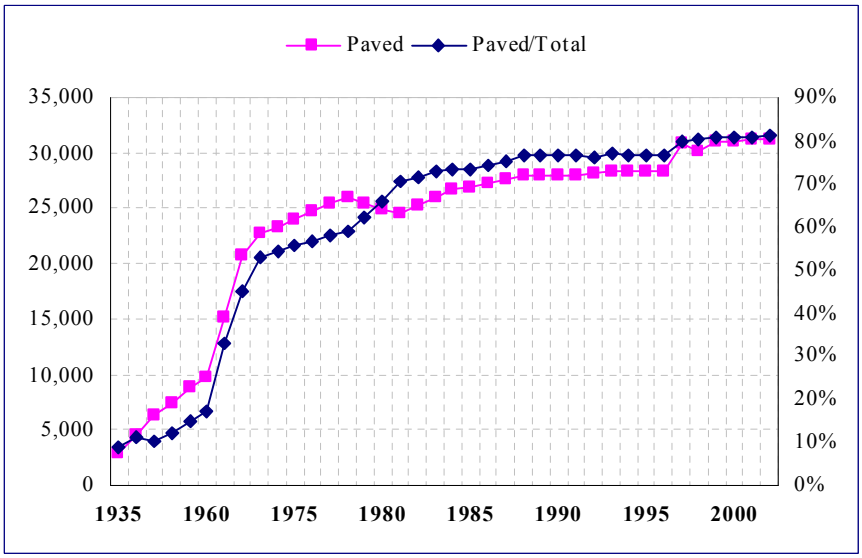
Table 2.1 – Paved Roads – 2000

	Argentina	Brazil	Mexico	Higher middle income	Regional average
Paved roads (% of total roads)	27.60	9.56	32.49	24.80	33.26

Source: International Roads Federation

In addition, it should be noted that in relation to federal roads, as illustrated in Figure 2.5 below, the growth in the network is closely correlated with the increase in the paving index. This latter passed 10% in 1940 and continued to evolve until the 1980s, reaching its current level of more than 80%. In contrast, it is necessary to stress the more negative fact that local roads have a paving index of less than 20%. Aside from the federal network, the system is divided into provincial and local roads, which constitute the greater part of the system. There is thus an urgent need to introduce new investments to improve the conditions of a large part of the Argentinean road network.

Figure 2.5 – National Road Length Argentina – Federal Roads – 1935-2002



Source: Direccion Nacional de Vialidad (DNV)

Railway system. The Argentinean railway network stood at a length of 47,000 km at the end of the Second World War, and had been further extended by about 38,000 km by 2002[23] (of which about 28,000 km are operated by cargo train companies and almost 900 km by passenger train companies). It is therefore one of the largest and most developed systems in South America[24]. Passenger train companies have a total fleet of 1,940 rail vehicles, including 1,172 electric cars (electric multiple units), 172 diesel locomotives, 592 cars and four diesel multiple units.

The country's railway system continued to expand until the 1950s, but then began to regress due to greater competition with roads; as a result, passenger and cargo flows reduced significantly

[23] Source: ECLAC.
[24] Source: UK Trade & Investment.

between 1965 and 1990. In fact, during these years, the flow of cargo transport and the number of interurban and metropolitan region passengers declined by 50%, 26% and 35% respectively.

From 1948 onward, the railway sector was managed by the state through *Ferrocarriles Argentinos*, which had been created by integrating of several existing lines. However, it should be noted that, according to Estache, Carbajo and Rus (1999), during the period 1965-1990 the company began to accumulate serious operational debts – more than US$ 1 billion per year. In spite of carrying out investments in expansion and maintenance, other problems were present:

(i) lack of commercial guidance;

(ii) problems with charging fees; and

(iii) investment errors.

Lack of investment, together with the aforementioned decrease in traffic caused by strong competition from the road system, led to a deterioration in services and contributed to increasing the sector's problems.

The privatization of the railway sector in 1989 was therefore regarded as a solution for reducing fiscal losses and halting the persistent deterioration of the system.

The privatization process divided the sector into three different businesses:

(i) metropolitan transport – subway and suburban trains;

(ii) cargo transport; and

(iii) interurban passenger transport.

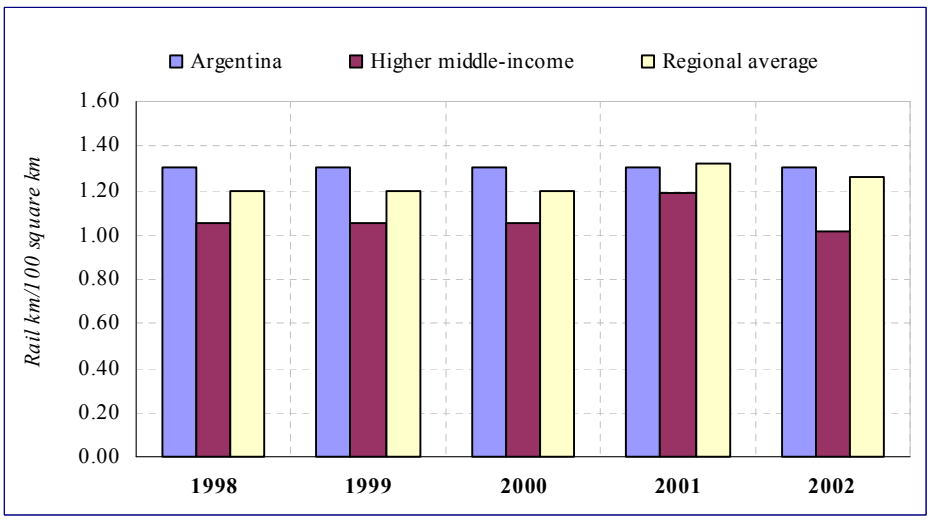
The interurban passenger transport division, which was unattractive to investors, was transferred to the provinces, where it became responsible for administration. Consequently, the greater part of routes were deactivated those which continued to operate were dependent upon provincial subsidies. On the other hand, as the metropolitan and cargo transport divisions had been shown to be profitable sectors, they were subjected to privatization. In particular, the suburban train lines in the metropolitan transport division were divided into seven areas and given in concession to the private sector. The cargo transport business was also divided into six sub-areas, according to geographic and technical criteria, and given in concession to the private sector. The state retained ownership of the physical structure – rails, stations, etc. – and private concessionaires assumed responsibility for operations, including the investment plans defined in the concession contracts and the payment of tax for use of the state infrastructure.

Following privatization, an increasing trend was shown in both passenger flow in the metropolitan region and cargo transport, although performance varied in the different areas which had been reformed. However, the projections regarding financial performance at the time of concessions had been too optimistic and therefore, in spite of the increase in traffic, the contracts had to be renegotiated at the end of the 1990s. The length of concessions in metropolitan transport was increased and tariffs were raised. In the cargo transport division, payments to the government were transformed into investment obligations. However despite the need for renegotiations, performance indicators relating to the post-concession period are largely positive, showing increased services, improvements in quality and, in particular, a reduction in the use of public funds.

Rail density and user perceptions of quality also confirm a positive evaluation of performance. With regard to rail density in the period 1998-2002, illustrated in Figures 2.6 and 2.7, Argentina's performance both in terms of land and of population is higher than both the regional average and the average of higher-middle-income countries (Argentina, Brazil, Costa Rica and Mexico). In fact, in 2002, an expansion of 38,000 km resulted in a density of 1.31 km per 100 km^2, higher than that of the higher middle-income countries (1.02) and also higher than the

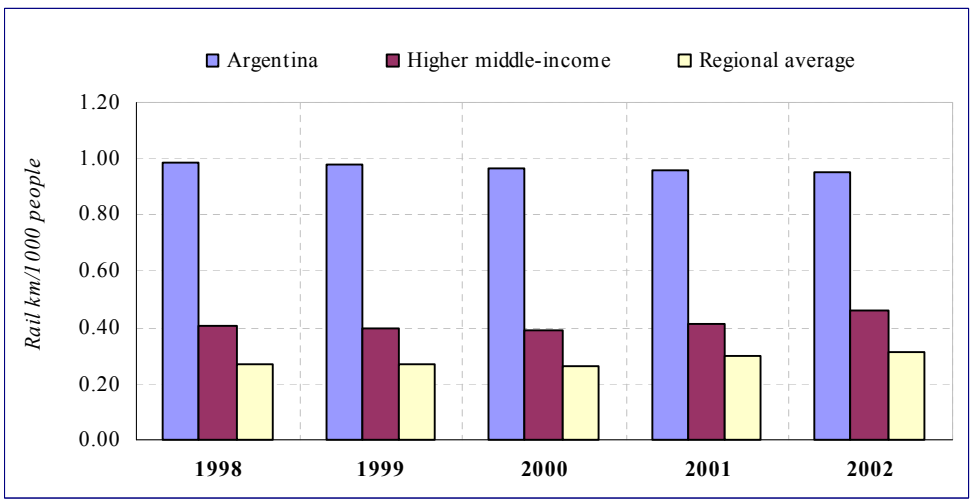
regional average of 1.26 km per 100 square km. Moreover, performance indicators of rail density in terms of population are even more positive. In 2002, Argentina had 0.99 rail km per 1,000 people, compared with 0.46 km for the higher middle-income countries and the regional average of 0.31 km.

Figure 2.6 – Rail Density in Terms of Land



Source: ECLAC

Figure 2.7 – Rail density in terms of Population



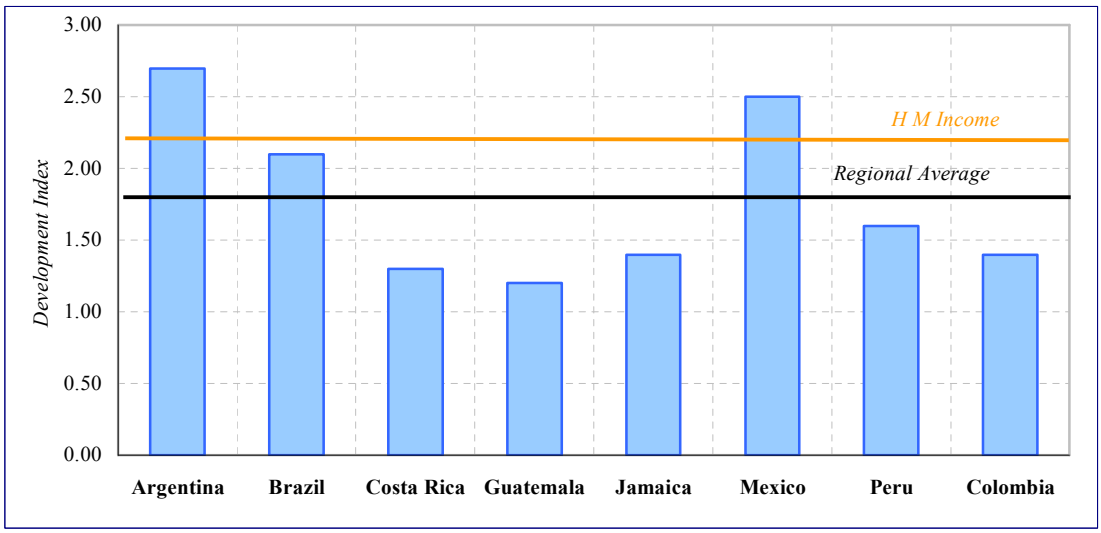
Source: ECLAC

With regard to the results of the World Economic Forum's 2004 Executive Opinion Survey,[25] it is interesting to note that Argentina's railroad infrastructure was judged by users as being the

[25] World Economic Forum (WEF) 2004 Executive Opinion Survey Results, produced in collaboration with the Center for International Development at Harvard University and the Institute for Strategy and Competitiveness, Harvard Business School.

best among the countries considered in the analysis. The value index was equal to 2.7 (where 1 = underdeveloped and 7 = as extensive and efficient, the world's best). Moreover, the figure exceeds the regional average of 1.8, as well as the higher middle-income countries of the region, at 2.2.

Figure 2.8 – Railroad Infrastructure Quality - 2004[1]



Source: World Economic Forum 2004 Executive Opinion Survey

[1]Scoring: 1= underdeveloped and 7= as extensive and efficient, the world's best

Ports. The Argentinean port system has undergone profound changes since the 1990s due to the introduction of competition among the ports and the privatization of activities. Argentina's main ports are:

(i) Bahìa Blanca;

(ii) Buenos Aires;

(iii) La Plata;

(iv) Madryin;

(v) Quequen;

(vi) Rosário;

(vii) San Lorenzo; and

(viii) Zarate.

To correctly describe the internal situation of the port system, it is necessary to make a distinction between traffic in freight tons and in containers. (Container capacity is measured in twenty-foot equivalent units – TEU.) With regard to freight tons, as indicated in Table 2.2, the port of San Lorenzo managed the greater part of the Argentinean flow, handling 29,263,870 tons in 2003 (36.07% of the total national traffic). In recent years the port of Bahia Blanca has replaced Buenos Aires as the second largest Argentinean port, handling 24.21% of the total traffic in 2003. In fact, as shown in Table 2.2, while the traffic of freight tons in Bahia Blanca increased sharply in the period 2001-2003, with a medium growth rate per year of 48.12%,

traffic in the port of Buenos Aires decreased by an average of 12.40% per year during the period 2000-2003.

However, despite a loss of importance in terms of traffic in freight tons, the port of Buenos Aires remains Argentina's main port with regard to commercial activities. It represents 16.49% of cargo tons in bulk and 67.26% of container flow for the country, with 897,123 TEUs moved in its six berths in 2003. However, although it remains the main port for TEU traffic, the Port of Buenos Aires, became less important in the period 2000-2003. In fact, while in 2000 the Port of Buenos Aires represented a 94.47% share of Argentinean TEU traffic, in 2003 the port was responsible for only 67.26%, a reduction of 5.60% per year in terms of TEUs moved. These difficulties are mainly related to the decline of Buenos Aires' dominant role as the gateway to the Rio de la Plata region in favor of Brazilian ports, due largely to the impact of logistics costs on Argentina's competitiveness. Furthermore, it is important to note the significant performance of the Port of La Plata. This port has seen a sharp increase in TEU traffic, from 14,401 units in 2000 to 307,700 in 2003. The port of Zarate, which has also been gaining prominence since its opening in 1996, shows a significant performance, with an increase in TEUs moved from 3,721 in 2000 to 56,089 in 2003. Other relevant ports engaged commercial activities concerning traffic in tons are the port of Quequen and the port of Rosario. Finally, the port of Madryn, whose berth management the responsibility of the province of Chubut, has a significant role in relation to TEU movements.

Table 2.2 – Port Movements – Main Ports Argentina – Tons and TEU - 2000-2003

Main Ports\Year	2000	2001	2002	2003
Freight Tons				
San Lorenzo	23,544,538	27,181,042	26,279,164	29,263,870
Buenos Aires	19,921,140	17,377,792	14,738,775	13,374,567
Bahia Blanca	n.a.	9,564,844	17,752,713	19,642,491
La Plata	5,613,239	5,545,119	5,209,740	5,749,420
Quequen	4,604,181	4,927,583	3,947,697	3,752,085
Rosário	2,726,125	2,263,889	2,500,000	3,054,539
Argentina-TOTAL	62,410,910	70,281,785	75,079,606	81,130,763
TEU				
Buenos Aires	1,126,712	962,965	745,658	897,123
La Plata	14,401	300,500	256,000	307,700
Zarate	3,721	17,674	26,424	56,089
Madryn	n.a.	16,707	23,071	24,173
Argentina-TOTAL	1,192,630	1,321,329	1,102,950	1,333,840

Source: ECLAC – Perfiles Marítimos

Additionally, it is important to note that the current structure of the Argentinean port system is a result of the significant changes, indicated earlier, that have taken place since the 1990s, i.e. the introduction of competitiveness among the ports and the privatization of activities. In particular, the process of deregulation of port activities was initiated in 1992 and aimed to:

(i) establish competition among and within ports;

(ii) obtain gains in efficiency; and

(iii) eliminate governmental prejudice.

The deregulation process liberalized a large part of port activities, allowed port operators to set charges freely (except when there is no competition among service providers), terminated agreements and existing labor rules, and gave the private sector authority to build and operate public-use ports.

Reform of the Argentinean port system was absolutely necessary as, the sector had previously experienced a major retraction due to the competitiveness of other methods of transport; the road sector, in particular, was increasing in importance not only in international transactions, especially with Brazil and Chile, but also in national transport, for instance, with Patagonia. Furthermore, Argentinean ports had become inefficient due to high operational costs, and had begun to experience competition from other foreign ports, especially in Chile.

As a result of these reforms and structural changes, the productivity of ports improved significantly. In fact, in the period after the reforms, the Port of Buenos Aires, divided into Dock Sud and Puerto Nuevo, showed a significant increase in its activity, capacity and productivity. Moreover, there were noticeable improvements in the performance of fluvial ports (which handle the greater part of the export of Argentinean agricultural products) regarding operational results, especially in terms of decreasing operational costs.

However, this positive performance has been negatively affected by the crisis of 2001. Before the crisis, the logistics costs (excluding inventory costs) incurred the port terminals of Buenos Aires were over US$ 800 higher than those incurred by a typical container moved through other ports in the world, on account of intermodal inefficiencies, customs clearance and pre-inspections. Since devaluation, logistics costs have risen in peso terms faster than the consumer price index and have even outstripped the producer price index. Since logistics costs continue to rise as a cost of production, they further hinder Argentina's ability to compete and diversify exports in the medium term.

These rising logistics costs have had a negative impact upon Argentina's competitiveness, causing the decline of Buenos Aires's dominant role as the gateway to the Rio de la Plata region. In the period between 1996 and 2002, the port of Buenos Aires lost about one third of its share in the container trade. The Brazilian ports of Rio Grande and Santos have grown in importance and thus taken its place. In 1998, after four years of significant private port investments, the combined terminals of Buenos Aires had grown to handle 45% of the region's 2.7 million TEUs. By 2002 that level had dropped to 27%, even though in absolute numbers of TEUs the port of Buenos Aires was handling 750,000 TEUs, about the same amount as six years earlier. Moreover, although the terminals of Buenos Aires witnessed a 20% increase in traffic between 2002 and 2003, it was not enough to reverse the decline in market share.

In addition, further alliances and consolidation of shipping lines (hence the rationalization of port calls), the introduction of larger container vessels into the Southern Cone container trade and Brazil's relative success in standardizing multimodal procedures continue to hamper Argentina's ability to compete. This affects not only the cost of imported goods, but also the site decisions of prospective investors in the region and, perhaps most importantly, the competitiveness of Argentinean exports.

The problems characterizing the Argentinean port system, for the most part caused by the crisis, are confirmed by data comparing the flow through Argentinean ports with that of Brazil and Mexico, the two Latin American countries that are considered to be the main benchmarks for Argentina. First, considering *freight tons moved*, it is clear that, in absolute values, the figures for Argentina are far behind those of the other countries considered, even though Argentina's performance in the period 2000-2003, with a growth rate of 29.99%, was better than Brazil's (15.64%) and Mexico's (7.60%). It should be noted that the worst growth rates were recorded in the period from 2001 to 2002 – neither Brazil nor Mexico were affected during that period – testifying to the impact of Argentina's economic crisis. Moreover, the country's poor performance in terms of tons of traffic is also significant when considering *freight tons per 1,000 people*, which is a more comparable indicator. In fact, as indicated in Table 2.3, Argentinean values for 2000 and 2001 are far behind those of the benchmark countries.

Table 2.3 – Port Movements: Freight Tons – 2000-2003 – Selected Countries

Year	Argentina	Brazil	Mexico
2000	62,410,910	477,405,631	244,252,372
2001	70,281,785	489,176,266	243,123,478
2002	75,079,606	502,829,439	254,612,510
2003	81,130,763	552,086,910	262,820,215
2003-2000	29.99%	15.64%	7.60%

Source: ECLAC – Perfiles Maritimos

Table 2.4 – Port Movements: Freight Tons per 1,000 People – 2000-2001 – Selected Countries

	Argentina	Brazil	Mexico
2000	1,741	2,807	2,493
2001	1,943	2,838	2,446
2001-2000	11.63%	1.11%	-1.88%

Source: Ernst & Young Italy and Cohen&Co. elaborations on ECLAC data

Nevertheless, the most interesting aspect emerges when considering container traffic. Tables 2.5 and 2.6, showing the *TEU* moved in ports, indicate that while the values for Argentina are lower than for Brazil and Mexico in absolute terms, Argentina's performance is far higher than the main benchmarks when considering *TEU per 1000 people*. In 2001 Argentina moved 36.54 TEUs per 1,000 people, compared to 16.20 in Brazil and 13.67 in Mexico.

However in the period 2000-2003 Argentina's growth rate in terms of TEU moved was 11.84%, far lower than the rates in Brazil (72.26%) and Mexico, (27.93%). This relatively negative performance might have been linked to the economic crisis the country was undergoing during this period, but could also have been connected to the problems mentioned above, namely increasing costs, Brazil's relative success in standardizing multimodal procedures and the site decisions of prospective investors in the region. Given the importance of container transport in Argentinean international trade, this problem needs to be resolved.

Table 2.5 – Port Movements: TEU – 2000-2003 – Selected Countries

Year	Argentina	Brazil	Mexico
2000	1,192,630	2,470,417	1,315,903
2001	1,321,329	2,793,245	1,358,178
2002	1,102,950	3,522,765	1,564,544
2003	1,333,840	4,255,598	1,683,400
2000-2003	11.84%	72.26%	27.93%

Source: ECLAC – Perfiles Marítimos

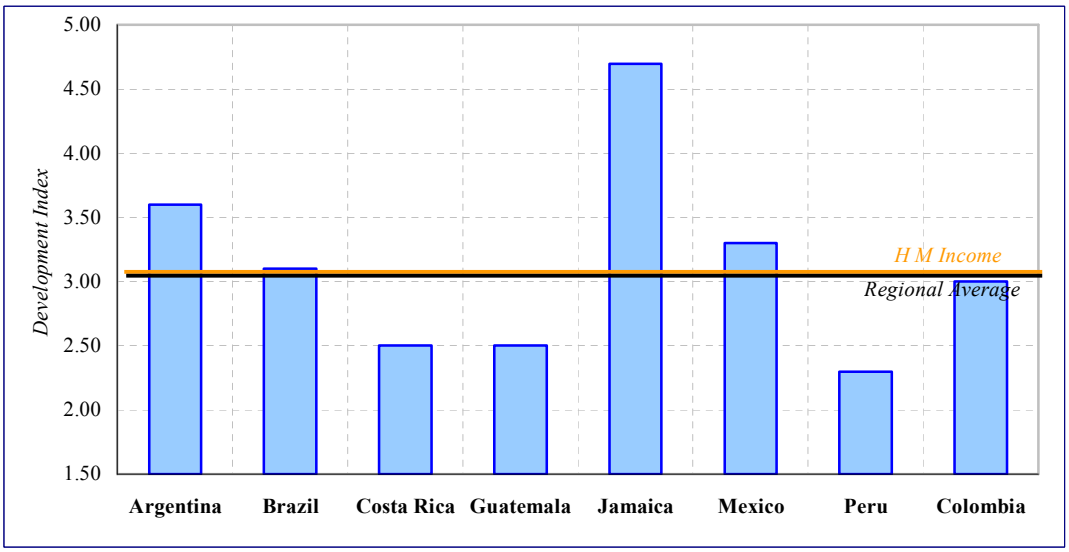
Table 2.6 – Port Movements: TEU per 1,000 People – 2000-2003

	Argentina	Brazil	Mexico
2000	33.27	14.52	13.43
2001	36.54	16.20	13.67
2001-2000	9.83%	11.57%	1.75%

Source: Ernst & Young Italy and Cohen&Co. elaborations on ECLAC data

Finally, it should be noted that the results of the World Economic Forum's 2004 Executive Opinion Survey are very positive with regard to users' opinions on port infrastructure. In fact, as illustrated in Figure 2.9, Argentinean ports have a quite adequate level of infrastructure quality (3.6), which is higher than both the regional average and that of the higher middle-income countries of the region, both at 3.1. Moreover, in 2004 the country had the best performance in the region, with the exception of Jamaica, which had an index of 4.7.

Figure 2.9 –Port Infrastructure Quality – 2004[1]



Source: World Economic Forum 2004 Executive Opinion Survey

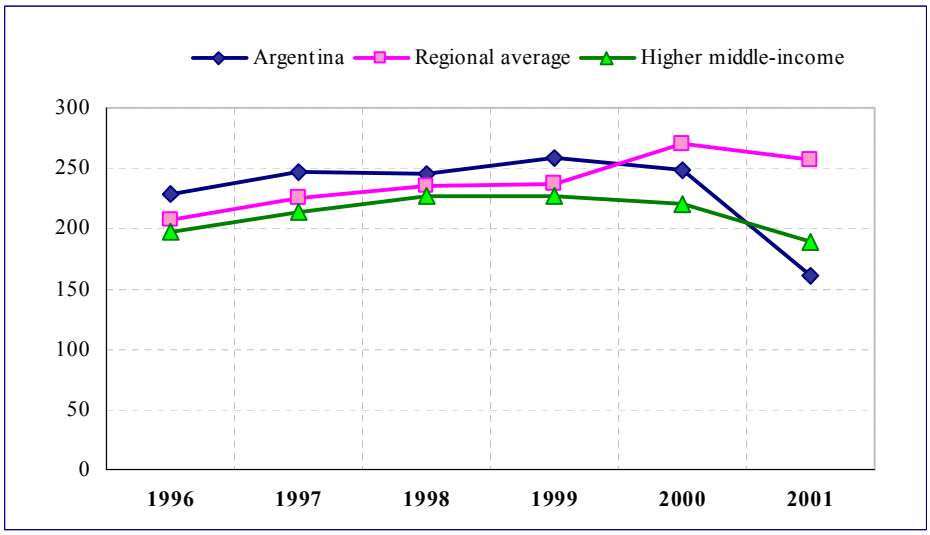
[1]*Scoring: 1= underdeveloped and 7= as extensive and efficient, the world's best*

Airports. Although Argentina has a vast number of airports, approximately 1,335, only 144 are equipped with paved runways[26]. Argentina is assisted by national and international airlines, with regular flights throughout the world. A large part of the airport sector has been given in concession to the private sector.

The airport sector has also suffered from the consequences of the economic crisis of 2001. In fact, as indicated in Figure 2.10, in the period 1996-1999 Argentinean values in terms of *passengers carried per 1000 people* were above the main benchmark groups for the country. In particular, in 1999 Argentina's airports carried 258.7 passengers per 1000 people, compared to the 236.25 carried on average in the region and the 227.28 passengers per 1,000 people registered for the higher middle-income countries. In 2000, for the first time in the period considered, Argentinean performance was worse than the regional average, in spite of remaining above the value of the higher middle-income countries, signaling the first difficulties encountered by Argentina. In 2001, the sector suffered a significant decrease in terms of passengers carried per 1000 people, from 248.37 in 2000 to 160.62 in 2001, a decline of about 35%. Certainly, it should be noted that this sharp decrease was also a result of the international crisis caused by the terrorist attacks on September 11, 2001; however, Argentina presented values well below the main benchmark groups considered, and although both groups also showed decreasing trends, Argentina's was significantly more pronounced.

[26] Source: CIA – The World Factbook 2004.

Figure 2.10 – Passengers Carried per 1000 People



Source: Ernst & Young Italy and Cohen&Co. elaboration on ECLAC data

Moreover, regarding *ton-kilometers of freight per 1000 people*, as shown in Table 2.7, the data for Argentina lag far behind those of the higher middle-income countries and the regional average. It is important to highlight the collapse of the level of traffic in Argentina during the year of the crisis. In fact, in spite of was a common decreasing tendency both for the regional average and for the values relating to higher middle-income countries in 2001 due to the international crisis, Argentinean performance ranked worse than the two benchmark groups. The ton-kilometers of freight per 1000 people decreased from 8,270.57 in 2000 to 3,439.79 in 2001, signaling a negative percentage deviation of 58.41%, higher than those of the regional average and the higher middle-income countries, 27.84% and 49.40% respectively.

Table 2.7 – Ton-Kilometers of Freight per 1000 People

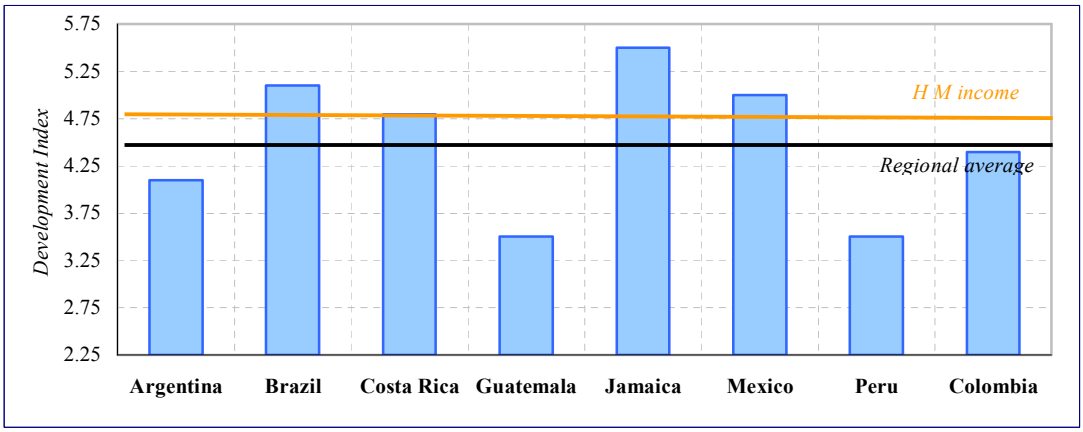
Country/Year	1996	1997	1998	1999	2000	2001
Argentina	5,120.03	6,312.59	7,102.68	6,782.81	8,270.57	3,439.79
Higher middle-income	7,484.04	8,753.76	11,220.87	10,335.08	10,297.50	5,210.59
Regional average[1]	6,914.00	9,118.07	10,568.47	9,767.95	9,825.28	7,090.13

Source: Ernst & Young Italy and Cohen&Co. elaborations on ECLAC data

[1]*Guatemala excluded.*

Finally, with regard to air transport infrastructure quality, data from the World Economic Forum of 2004, concerning user perceptions of quality, showed that Argentina had a rating of 4.1, which is below both the regional average of 4.5 and that of the higher middle-income countries, at 4.8. This low score suggests a need for investment in airport infrastructure.

Figure 2.11 – Air Transport Infrastructure Quality – 2004[1]



Source: World Economic Forum 2004 Executive Opinion Survey

[1]*Scoring: 1= underdeveloped and 7= as extensive and efficient, the world's best*

2.2.2. ECONOMIC EFFICIENCY AND PRIVATE SECTOR FINANCING

The transport sector in Argentina has gone undergone significant reforms in recent times, with the main purpose of sustaining greater private participation and introducing competition. The reforms also have been necessary for the recovery of investment capacity and gains in efficiency, which had been reduced in the 1980s and which caused deterioration of the infrastructure. Therefore, the increase in investments in the transport sector in the 1990s was seen as a way to sustain economic growth, to attract further investments and to increase the competitiveness necessary to support economic development.

Roads. The road concessions' process was introduced in 1990 and was aimed at guaranteeing the recovery and maintenance of existing roads, reducing the demand of financial resources from the government and sustaining private participation in the sector. It focused on generating the necessary resources for the sector through charging tolls.

It is important to note that the Argentinean road privatization program is one of the largest in the world, with private participation occurring mainly in the federal transport system, which constitutes the main component of the Argentinean road network. Privatization was achieved in various ways, through *"Build, Operate and Transfer"* (BOT) contracts, to mere maintenance contracts and outsourcing. But the most frequently employed method in existing road concessions was the imposition of toll charges.

Therefore, it is important to note the features of the management methods – from direct action in maintenance and preservation of roads to transfers to the private sector – used by the *Dirección Nacional de Vialidad* (DNV), the institution responsible for tracking and managing the Federal Transport System:

(i) ***Concessions with tolls***: the concessionaire is, for a period of time, in charge of preserving, enlarging and improving routes, maintaining signalization, providing services to users, guaranteeing a minimum condition for roads and achieving new investments. The concessionaire may set toll charges, which should be sufficient to recover maintenance and investments costs. This system includes *Rede Troncal Nacional* – 9,383 km – and the access networks to the cities of Córdoba and Buenos Aires. These stretches of roads are appealing because of high flow of vehicles, at an average of 3,000 vehicles per day;

(ii) ***BOT concessions***: the private sector makes investments, either in road extension or recovery, which will be operated in a period of time fixed by the investor – a concession. During the concession period, DNV refunds the concessionaire for such services, including the recovery of investments. In the case of BOT concessions, tolls are not charged to users;

(iii) ***Contratos de Recuperación y Mantenimiento*** (***CREMA***): five-year contracts created in the 1990s and established with private companies. These contracts stipulate that in the first year the private entity must provide road recovery works to restore the roads to their former level of quality. In the remaining period, the concessionaire is obliged to maintain the traffic condition levels already established. In 2002, although the original proposal anticipated the issue of 61 concession contracts, corresponding to 11,813 km of roads, only 50 were issued, totaling 9,445 km;

(iv) ***Contract km per month***: maintenance contract with monthly payments to the company responsible for maintenance. Payments are linked to the kilometers of roads subject to maintenance and on the fixed unit cost for kilometers per month. The maintenance outsourcing contracts last for 48 months, with an option to renew for two additional years;

(v) ***Operative functions transference (TFO)***: covenants in which operations of maintenance, signalization, and structure support are transferred. Fixed investments are the responsibility of the DNV for the period of the covenant. The inspection of services and certification are carried out monthly by DNV; and

(vi) ***Self-management***: maintenance and operation carried out with equipment and labor provided by the DNV.

In 2002, as indicated in Table 2.8, the amount of roads given in concession to the private sector corresponded to more than 25% of total federal roads under the responsibility of the DNV, a large proportion of which consisted of toll roads. Private services provision in recovery and maintenance is given in relation to nearly 42% of all federal roads, more than 16,000 km. Therefore, the private sector participates in the operation and management of over 26,000 km of Argentinean federal roads, more than two-thirds of the total. 12,400 km of federal roads are subject to self-management.

With reference to the total length of Argentinean roads, approximately 5% are given in concession to the private sector and more than 10% are given in concession or with private maintenance.

Table 2.8 – Federal Road Network by Type of Management – DNV – 2002

		Length – Km
Toll-Roads (Concession)	Corredores Concessionados	8,877
	Access to Buenos Aires and Cordoba	506
	TOTAL	9,383
Concessions without tolls (BOT)	Corredores BOT nº 31 and 28	626
Maintenance and Recovery Contracts	CREMA – 1st round	9,445
	CREMA - 2nd round	162
	TOTAL	9,607
Maintenance	TFO	5,915
	Km/Month	603
	Own Administration	12,400
	TOTAL	18,918
TOTAL		38,533

Source: Direccion Nacional de Vialidad (DNV)

The other main aspect concerning the road concession process involves explaining the steps leading to the establishment of an adequate toll policy. In 1990, the first toll structure was defined – the maximum value was set at five times the basic tariff of US$ 1.50 per 100 kilometers, with toll charges depending on the size of the vehicle, the number of axles and the distance traveled between toll booths. It was established that the correction of costs had to consider the index of prices and the currency rate. Tolls could be charged only after making a prior amount of investments necessary to improve the quality of roads. The contracts did not specify the amounts and types of investments needed, but defined only the quality levels to be reached in each phase of the concession.

Five months after concessions were brought into effect, the original contracts were revised for several reasons:

(i) the introduction of the Convertibility Plan of 1991, prohibiting the use of contractual indexation rules;

(ii) the collection of tolls by concessionaires before the necessary or required investments had been accomplished; and

(iii) strong popular resistance to the high tolls, the proximity between toll booths, the proximity to urban centers, and the lack of alternative routes, among other factors.

Therefore, the government renegotiated several initial contractual features and not only reduced toll charges by 50%, but also compensated the concessionaires by eliminating the canon. Furthermore, it gave concessionaires an annual subsidy proportional to the amount of value-added taxes generated by each concessionaire, functioning as a "shadow-toll".

1995 saw a further renegotiation due to the need for new investments to cope with an increase in traffic flows. The solution was to extend the concessions period in order to enable the recovery of investments. However, these new concessions avoided the errors that had occurred in the first round. In particular, the new contracts defined the investments that would be undertaken, a timetable for their accomplishment, the distribution of risks between concessionaires and

government, and the services to be provided, among other factors. Moreover, it was decided that the winners of each concession would be those able to offer smaller tolls while respecting the specified conditions.

It is interesting to highlight that the renegotiations, along with the reluctance of the government to accept the correction of toll values, provided higher subsidies to the private sector than previously established. This gave rise to several delays in payment, aside from the replacement of debts by contractual changes that protected concessionaires – e.g. the extension of the length of concessions. Accordingly, the income of concessionaires is still a mixture of toll income and governmental resources associated with different agreements (decrees). Table 2.9 below summarizes the income of the concessionaires. It should be noted that, in general, just 37% of income in 2002 came from collection of tolls.

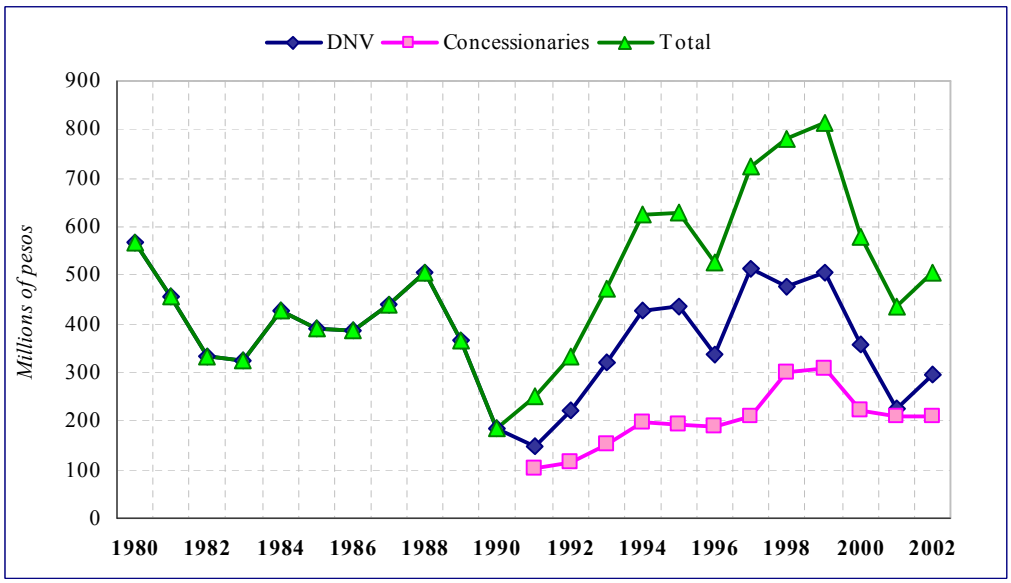
Table 2.9 – Revenue from Road Concessions – Argentina – 2002

	Toll Revenue	**Fiscal Transfers** (Compensation for Tariffs Differences)			**Total Revenue**
		Decree 976/01	***Decree 1817/92***	***Total***	
Pesos ($)	166,712,314	193,695,735	86,794,751	280,490,486	447,202,800
US$	54,481,148	63,299,260	28,364,298	91,663,558	146,144,705
Percentage	37.28	43.31	19.41	62.72	100.00

Source: Órgano de Control de Concesione Viales (OCCOVI); apud SANCHEZ (2003)

It is now necessary to review the evolution of investments made in the road transport sector in recent times. The first point to mention is a declining trend of investments throughout the 1980s, reaching their lowest level in 1990. With the introduction of the concessions process, investments resumed growth and reached a peak in 1999 after which they began to decline, largely as a result of the economic crisis. Figure 2.12 clearly shows that the recovery had not occurred solely as a result of investments on the part of concessionaires but also, more importantly, through government intervention.

Figure 2.12 – Investment in Roads – Argentina – 1980-2002



Source: Direccion nacional de Vialidad

Furthermore, it should be noted that the resources given to the land transport sector, including railways, originated from a fixed tax on fuel of 0.05 pesos per liter lasting until 2002, when this tax became a variable tax equal to 18.5% of the gas price. This tax is known as the Transport Infrastructure Fideicommissor Fund, which finances the transport system infrastructure of roads and railways as follows:

(i) 60% of resources to SISVIAL – Integrated Transport System; and

(ii) 40% of resources to SISTRANS – Transport System – whose total funds are distributed as follows:

- 40% to SISFER – Railway Transport System, and
- 60% to SISTAU – *Sistema de Autotransporte Automotor de Passageiros*.

Thus, as shown, the railway, road and metropolitan transport systems continued to depend upon public financing in spite of a reduction in the public resources committed. However, it is important to note that these transfers were necessitated by the crisis in the Argentinean economy and the errors occurring in the first round of concessions, problems that Argentina has started to resolve through the negotiation of new contracts.

Rail system. The Argentinean railway network was constructed mainly by British companies between 1870 and 1910. In 1948, it was nationalized by President Perón and the national railway company, *Ferrocarriles Argentinos*, owned and operated the entire network until it was privatized, as explained in the previous section.

Privatization became possible through an auction of train-operating franchises offered through international tenders. The Argentinean scheme was simple and straightforward. Franchises were awarded to train-operating companies who assumed responsibility for the management and maintenance of fixed installations and rolling stock, which continued to be owned by the state. The franchises required that services be offered as public services, complying with standards of safety and quality. In addition, private operators were required to implement a program of investments aimed at recovering and modernizing the network.

This process of privatization brought new life to the Argentinean railway system, with a dramatic increase in the use of railways that has remained unchanged in spite of the long recession and crisis of December 2001:

(i) the cargo transported by rail increased more than twofold, from 7.4 million tons in 1992 to 17.5 million in 2002; and

(ii) passenger demand in the metropolitan railway network, after doubling from 214 million passengers a year in 1993 to 477 million in 2000, decreased during the economic crisis to 355 million passengers in 2002. Nonetheless, economic recovery saw an increase in passenger numbers: 345 million in the period January to November 2003, indicating 5.7% growth compared to the previous year.

Moreover, important differences in the performance of freight and passenger services developed since privatization.

Rail-freight companies, despite succeeding in reversing the decline in rail use and recovering the major customers lost by the former national railway corporation, showed results below expectations and continued to retain only a meager share of the freight market. Consequently, profits and investments have been low and operators have renegotiated a rescheduling of mandatory investment programs.

However, metropolitan passenger train companies have been more successful. In fact, the promising growth following privatization encouraged the government and passenger concessionaires to renegotiate new terms of concessions, including ambitious investment plans committing more than U$ 4 billion to upgrading the network and meeting growing demand. Investment targets for passenger and freight related to civil works, tracks, signaling and rolling stock. However, in spite of good performance in the first years after privatization, sector operators have been experiencing difficulties since 1999, when the government ceased paying subsidies and for works undertaken on its behalf. The situation became very difficult in 2002, to the extent that the government decreed a "state of emergency". As a result, passenger train operating companies gained a temporary exemption from complying with the mandatory investment programs agreed in the concession contracts, and must undertake "emergency" plans of minimal investments to maintain essential security and service standards. The state of emergency does not replace the existing concession contracts but simply interrupts the mandatory investment programs. In place of the previous ambitious plans, the Transport Secretary approved an Emergency Plan of investments in the metropolitan railways for US$ 723 million to be invested between 2003 and 2005. But after taking office on May 25, 2003, the government reviewed this emergency program and placed it on hold, focusing instead on the freight network and the revival of inter-city passenger services.

An interesting aspect to highlight is the government's attempt to privatize the longest freight network in Argentina, the Belgrano Cargas, a network of 9,860 km covering Argentina's northern and central provinces and including links with Bolivia, Chile and the country's main ports. It is managed by Belgrano Cargas SA, and owned by the Rail Trade Union, Union Ferroviaria (UF).

A previous effort at privatization by concession failed as private businesses were reluctant to take on such a vast network, which required locomotives and a high level of permanent investment. The government instead aimed to turn around the company by bringing in private capital and management. This was to be achieved by selling a majority stake of the operating company. However, on January 12, 2004, the privatization of the Belgrano Cargas freight railway began with the issue of presidential Decree 24/2004. By way of this decree, the President empowered the Federal Planning Ministry, *Ministerio de Planificacion Federal Inversion Publica y Servicios*, to proceed with the restructuring of shares of the Belgrano Cargas. The decree also appointed the Transport Secretariat – under the auspices of the Planning

Ministry – to establish the criteria for selection of investors potentially interested in acquiring equity *in Belgrano Cargas,* and to contract the state merchant bank BICE to act as financial adviser. Currently, 99% of Belgrano Cargas is owned by the Rail Trade Union and UF, while 1% is owned by the government. Future ownership should be divided as follows: private investors should own more than 50%, the UF less than 50%, and the government should have the golden share of 1-3%. The cost for restoring of lines and replacing rolling stock is estimated to be in the range of US$ 150 million to US$ 200 million.

Finally, the last point to mention is that the Buenos Aires Underground services are run by a private operator: Metrovías. The network, owned by *Subterraneos de Buenos Aires* (SUBTE), in turn controlled by the city government of Buenos Aires, extends over 42 km and transports an average of 220 million passengers a year. The city government has, since 1997, resumed much-needed works and invested US$ 149 million from 1999 to 2003 in extending the network. SUBTE stands out as the only railway in Argentina which has seriously invested in new infrastructure. It is to their great credit that works were only briefly interrupted during the crisis of 2001-2002 and were quickly resumed. The Buenos Aires city government has launched a program of works aimed at doubling the network to 89 km by 2011.

Ports. As early as the 1970s, Argentina allowed the private sector to manage stevedoring at the public port of Buenos Aires. This early modernization effort never produced satisfactory results in terms of productivity due to over-regulation and the overlapping supervisory functions of state entities, the strong labor unions that separated stevedoring and loading services, and a lack of investment by the port authorities. In addition, other public ports were still operating under the service model, functioning inefficiently and charging very high tariffs for cargo handling. In 1990, as mentioned previously, the first steps were taken to deregulate and decentralize public ports in a more comprehensive fashion. Deregulation consisted of abolishing restrictive working practices at ports and on vessels and liberalizing rates for pilotage, towage and stevedoring. In addition, foreign ships were allowed to practice cabotage. The government dismantled the port administration and transferred ownership of the major ports to the provinces, which were given the responsibility of establishing their own port authorities in charge of maintaining infrastructure and granting concessions to private firms.

The private sector currently participates in the Argentinean port system in two ways:

(i) acquisition of port property, as in the case of the port of Zarate, established in 1996 and located 75 km from Port of Buenos Aires in 'Rio de La Plata'; and

(ii) exploitation of the terminals of state property ports. An example is the port of Buenos Aires, in which Puerto Nuevo is public and has six privately-operated terminals which compete among themselves for cargo.

Table 2.10 lists the private sector participants in the main ports.

Table 2.10 – Participation of the private sector in the main Argentinean ports

Main Ports	Private entities
San Lorenzo	
Minera Alumbrera Ltd	Minera Alumbrera Ltd
Terminal 6	Aceitera General Deheza; Bunge Argentina S.A.
El Quebracho	Cargill S.A.C.I.
Nidera	Nidera S.A.
El Transito	Alfred C. Toepfer International S.A.
Pampa -Dempa	La Plata Cereal S.A.
Vicentin S.A.I.C.	Vicentin S.A.C.I.
Refineria San Lorenzo S.A. Terminal	Repsol S.A.
Cargill Fertilizers	Cargill S.A.C.I.
Buenos Aires	
Terminal Buenos Aires S.A	Privately owned by a consortium
Terminals 1/2	P & O Australia, Murchison S.A.; Roman Maritima S.A
Terminal 3	My Jack Products (U.S.A.); Rogge Marine Consulting GMBH (Germany); Autotransportes Antartida S.A (Argentina)
Terminal 4	Gabriel S.A., Guillermo Martinez S.A.; Graneles Portuarios S.A.; Platachart S.A.
Terminal 5	International Container Terminal Services (Phillipines); H. Bouzas S.A.
Bahia Blanca	
Piers 5/6, 7/8; 9	Terminal Bahia Blanca S.A.
D.E.B.A pier	Ricco; Toepfer S.A.; Glencore
Cargill pier	Cargill S.A.C.I.
La Plata	
Copetro berth	COPETRO S.A. (Subsidiary company of the American group 'Great Lakes Carbon')
Pto. Ing. Rocca	Siderar S.A.I.C.
Rosário	
Servicio Portuarios S.A.	Servicios Portuarios S.A[27]
Punta Alvear S.A.	Productos Sudamericanos S.A.
General Lagos	S.A.C.E.I.F. Louis Dreyfus et Cie.
Terminal Arroyo Seco	A.C.T.I. S.A.
Zarate	
Zarate Port S.A.	Zarate Port S.A.
Delta Dock S.A	Delta Dock S.A.

Source: Maritima Heinlein

[27] *Servicios Portuario S.A.* also manages Elevator Unit VI and Elevator Unit VII.

These changes have given rise to significant improvements in productivity; for example, according to Estache, in the early period after reform the port of Buenos Aires, divided into Dock Sud and Puerto Nuevo, experienced a significant increase in activity. The number of containers per year increased from 400 in 1991 to 1,300 in 1997. Also, the installed capacity of the port of Buenos Aires increased sharply, with 65 operational areas in 1991 increasing to 132 in 1997. The port experienced an increase in productivity - 800 tons per worker per year in 1991 compared to 3,100 tons in 1997 – and, finally, achieved a reduction in costs – costs incurred per imported container decreased from US$ 450 per ton in 1991 to US$ 120 in 1997. In spite of this, the impact of logistics costs on Argentina's competitiveness, as well as the economic crisis, brought about a decline in Buenos Aires' dominance as the gateway to the Rio de la Plata region in the period 1997-2002; the port lost about one third of its share in the container trade in favor of the Brazilian ports of Rio Grande and Santos. Although the terminals of Buenos Aires subsequently witnessed a 20% increase in traffic in 2003 compared to 2002, it was not enough to reverse the decline in its market share, and this illustrates the need to bring in new investments and to change port administration strategy.

Besides the indicators given for the Port of Buenos Aires, following privatization there was also a noticeable improvement in the performance of fluvial ports, which handle the greater part of Argentinean agricultural exports. In fact, according to Sanchez (2003), in the Bahia Blanca and Rosario ports the mean cost of handling of agricultural products decreased from US$ 9.00 per ton in 1991 to US$ 2.30 in 2000. Moreover, it is important to note that, in addition to these operational results, ports stopped receiving subsidies for their operations and began to contribute to the creation of resources for the government since, again according to Sanchez, the state collects about US$ 27.4 million per year only with the payment of concessions.

However, the most important aspect illustrated by the Argentinean case is that even when some port services are managed by the private sector, excessive regulation can constrain improvements in port efficiency. Argentina's experience since then shows that competition, whenever possible, is preferable to regulation but some efforts are still needed to achieve the best results.

Airports. The Argentinean government, after privatizing the national airline Aerolineas Argentinas in 1989, deregulated air transportation services at the beginning of the 1990s. With privatization, the government conferred to Aerolineas Argentinas the exclusive right to operate national flag flights in international services for five years to border countries and ten years to the rest of the world. However, at the same time, the deregulation process stimulated domestic competition by favoring the entry of new operators – through concessions – and granting freedom to set prices and charges. In spite of this, the sector began to show some symptoms of crisis in 1998-1999. Competition started to disappear in less profitable routes and several companies exited completely; other companies continued to operate but in grave financial conditions. Therefore in 2002, by Decree 1,654/2002, the government declared a state of emergency in domestic airline transportation. The new regulations deriving from the decree controlled competition by setting restrictions on the airlines' commercial practices, by defining price intervals and companies' discount policies and assigning routes according to demand.

In addition, regarding private participation in the airport sector, it is important to note that the Argentina Airport System project was the largest investment in transport with private participation in the period 1990-2001 in developing countries. With a total amount of US$ 3.9 billion in 2001, this initiative established the National Airport System. In 1998 the government granted in concession the management of the most important airports in the National Airport System to Aeropuertos Argentina 2000. This concessionaire manages 32 of the 57 airports that make up the National Airport System and is subject to the restrictions of equal and free access and non-discrimination in the use of airport services and facilities. The renegotiation of the concession contract has, however, been suspended.

Of the remaining six airports in the National Airport System given in concession to private subjects, four are operated by London Supply, namely Ushuala, El Calafate, Trelew, and Valle del Conlara, while Neuquén International Airport "Presidente Juan Domingo Perón", and Aeropuerto Internacional Rosario are managed by Aeropuertos del Neuquén and Aeropuerto Internacional Rosario, respectively.

2.2.3. REGULATORY FRAMEWORK AND INSTITUTIONAL DEVELOPMENT

Roads. Historically, road infrastructure was financed using public funds, both from general resources as well as from specific funds, which included tax on gasoline, tax on new vehicles, etc. In the beginning of the 1990s, this system was significantly revised by eliminating specific funds, obtaining international institution loans and charging tolls in areas with higher traffic density and for access to the city of Buenos Aires. Concessionaires became responsible for building, operating and maintaining the road system, which was financed through general public funds or tolls.

The concession of the interurban road network started with Law 23,696 of the State Reform and Law 23,697 of the Economic Emergency, in 1989. These laws declared public utilities – including national roads – to be under conditions of economic emergency and established a global privatization program allowing the concession of public works financed by tolls or charges. Decree 823/1989 established a program for the re-conversion of national roads and Decree 2637/1992 established a concession program for access to Buenos Aires.

In all cases, private operators were granted concessions for building, improvement, repair, conservation, expansion, maintenance, management and use of roads and access, at their own risk, generating revenues from tolls. The principle applicable to charges and tolls would be to reflect the average economic value of the services, covering the operation, modification and extension of the system, and to enable a reasonable return on investments.

The government granted concessions for 12 years for national roads and 22 years and eight months – with the possible extension of an additional year – for access to Buenos Aires.[28]

For several years, there have been two separate regulatory agencies: one for national roads, *Organismos de Certificação Credenciados* (OCC), under the National Road Office, *Dirección Nacional de Vialidad* (DNV) at the Secretariat of Public Works, and the other for access to the capital city, *Organo de Control de Concesiones de la Red de Accesos a la Ciudad de Buenos Aires* (OCRABA) – also under the Secretariat of Public Works. These institutions were in charge of supervisory and regulatory activities to control the effective fulfillment of concessionaires' contract obligations. In 2001, both institutions merged into *Órgano de Control de Concesiones Viales* (OCCOVI) and still remain under the Secretariat of Public Works at the Ministry of Federal Planning, Public Investment and Services. This lack of independence may pose some dangers to effective regulation, especially given that DNV, also under the Secretariat of Public Works, interacts with private operators in the management of the rest of the national roads, particularly, when such operators have interests in the roads under concession.

As a result of the widespread introduction of road concessions, the road system improved in relation to quality, coverage, reduction of congestion, and other factors. However, some regulatory aspects were not well covered. The regulatory principle that the "average level of charges [should] not exceed the average economic value of the service rendered", according to Law 17,520, was always difficult to interpret. It was particularly unclear whether the tariff adjustment mechanism would be price cap, revenue cap or rate of return, given that the legislation stipulated that the concessionaire must reinvest extra revenues over projected figures.

[28] The Buenos Aires-La Plata highway started in 1979, but effective works started with contract reformulation in 1993.

Concessions were involved in several renegotiations from the beginning of the concession period to 2002 to revise tolls and charges, eliminate royalties, include state subsidies, extend concession length and revise investment plans. In 2002, with the exit to convertibility, the government decided to undertake a global revision of contracts, which is still underway.

Railways. Law 23,696, on the Reform of the State, included Ferrocarriles Argentinos in the list of businesses to privatize. Decrees 666/1989 and 2749/1990 delegated to the former Ministry of Economy and Public Works and Services the transfer of infrastructure and load transportation services to the private sector, and Decree 2,074/1990 did likewise for metropolitan passenger services.

The load system was divided into six businesses, one of which – Ferrocarril Belgrano – was not concessioned while the metropolitan system was divided into seven businesses. Infrastructure and services not included in the concession plans were handed over to the provinces.

In 1991, five load networks were given in concession for 30 years, renewable for 10 additional years by means of a public bid to tender, although there were at most two bidders in each process: Ferroexpreso Pampeano, Nuevo Central Argentino, Buenos Aires al Pacífico San Martín, Ferrosur Roca and Mesopotámico General Urquiza. The awarding process considered a polynomial formula weighting antecedents and business plans, the investment program, capital expenditures during the first five years of concession, the values of royalties, tolls and rents, and the hiring of personnel from the former Ferrocarriles Argentinos.

There was no regulatory framework for load rail transportation prior to concessions. Rather the framework developed during the concession process and consists mainly of concession specifications and the awardees' proposal rather than a predefined set of governing rules. The consequence of such development is that the concessionaire was granted the power to "approve or reject" regulatory conditions and changes. The rules were mostly defined for technical considerations, leaving the regulation of service conditions to the market itself; for example, regulated rates were set too high solely to comply with a legal requirement. But these considerations referred only to the investment and maintenance plan, leaving the pace of such investments undefined.

After five years of trials, the *Comisión Nacional de Regulación de Transporte* (CNRT) was established as the agency for regulating road and railway transportation. CNRT is responsible for enforcing the normative framework, evaluating the performance of the system and the fulfillment of contracts – in terms of nominal and quantitative investments – and imposing sanctions. CNRT does not have power to issue regulatory norms, which are issued by the Secretariat of Transportation.

Notwithstanding the growth in the transport of loads, there was an significant difference between the real and projected volume and revenues, leading to arrears in royalty payments and non-fulfillment of projected investments. After negotiations with operators, the government opted to reduce the committed royalties – linked to reduction in charges applicable to regional economies, hence introducing cross-subsidies – and to renegotiate contract conditions. In summary, renegotiations were based on the fact that predictions of the evolution of demand had been too optimistic. And this could have been induced by the selection mechanism itself, which gave incentives to be optimistic.

On the other hand, Decree 1,143/1991 and Resolution 1,456/1991, of the former Ministry of Economy and Public Works and Services, defined the normative framework for metropolitan railway passenger transportation, including the subway system in the city of Buenos Aires. In this case, it was recognized that charges should be the result of adapting the coverage of global costs for service provision, investment and return to consumers' ability to pay. Subsidies were deemed necessary to ensure the required level of efficiency.

The concession procedure was an international bid to tender that indicated a predefined minimum quality of services, frequency, travel time, punctuality, a price cap on charges, with an incentive mechanism based on performance, and an investment program. The award was based on the minimum subsidy required or the maximum franchise offered.

Between 1994 and 1995, six of the seven systems (Ferrocarriles Mitre, Sarmiento, Roca, San Martín, Belgrano Norte and Belgrano Sur) were concessioned for 10 years, with the option of a further prorogation for a similar period of time. Ferrocarril Urquiza and Subterráneos de Buenos Aires were given in concession to the same operator in 1993 for 20 years. These contracts are all relatively short term considering the necessary investments in the sector, thus possibly reducing incentives to make such investments.

At the beginning of concessions, the control and inspection activities relating to the metropolitan railway system were assigned to the Coordination Unit, under the auspices of the national and municipal Ministries of Economy and Public Services. In 1996 this unit was incorporated into the CNRT.

Several amendments were made to contracts between the concession date and 2001. One concerned investments and financing by concessionaires, including charges to final users or government subsidies, while the other was related to renegotiation, including the extension of the concession period from 10 to 24 years in the case of Trenes de Buenos Aires Mitre and Sarmiento.

In 2002, with the exit to convertibility, the government decided to carry out a global revision of contracts, which is still underway. In 2004, the contract with Transportes Metropolitanos General San Martín was rescinded, although the concession had been suspended.

Contract renegotiation is an issue that has arisen with frequency in the road and transport sectors – in relation to concessions for access to the city of Buenos Aires, Puerto Nuevo and railway services – and, as will be shown later, in the water and sanitation sector. One of the main factors triggering renegotiation was the incentive created by the concession rules themselves to forecast optimistic scenarios, which turn out to be less profitable ex post. This inadequate provision for renegotiation, combined with a weak regulatory office, has led to several contract amendments. Engel, Fischer and Galetovic give several examples of contract problems and renegotiations in European and Latin American countries[29].

Ports. Law 24,093, Law of Ports, and Decree 817/1992 of Deregulation, provided the structure for the decentralization of maritime transport and infrastructure in Argentina. The Law of Ports established the mechanisms for authorizing commercial and industrial ports, and regularized ports with temporary authorizations. It transferred the ports of Rosario, Bahía Blanca, Quequén and Santa Fe to the provinces, to be operated privately, and allowed the private sector to build, manage and operate commercial, industrial or recreational ports for public or private use, on public or private territory.

The government has also eliminated supply and provision constraints, and established free competition and open access to port services and fluvial and maritime transportation services. The maintenance and signaling of navigable waterways has been granted in concession, procured or decentralized to the provinces.

The most important port in Argentina, the port of Buenos Aires, is divided into two areas: Puerto Nuevo and Dock Sud. Puerto Nuevo is still federal property, but the government has granted all terminals in concession to different private operators. The Province of Buenos Aires has granted the Port of Dock Sud in concession.

[29] Engel, E., R. Fischer and A. Galetovic (1997), "Revenue-Based Auctions and Unbundling Infrastructure Franchises", Document IFM-112, Inter-American Development Bank.

The Secretariat of Ports and Navigable Ways, within the Secretariat of Transport, supervises the National Ports and is responsible for supervising fluvial and maritime transport services, stipulating specifications for concessions through tenders or contests and intervening in these procedures, etc.

In the concession of Puerto Nuevo, operators agreed to pay a relatively high franchise compared to the minimum franchise negotiated directly with the province by the operator of Dock Sud. Strong competition developed between terminal operators in Puerto Nuevo and the operator of Dock Sud, ending in government intervention, including an unjustified reduction in royalties[30]. Nevertheless, the deregulatory and decentralization experience has on the whole been considered positive.

In 2002, with the exit to convertibility, the government decided to carry out a global revision of terminal operators' contracts, which is still underway.

Airports. In 1998, the government issued Decree 163/1998 to grant in concession the management of the most important airports included in the National Airport System, which was awarded to Aeropuertos Argentina 2000. The concessionaire is subject to the restrictions of equal and free access, and no discrimination in the use of airport services and facilities. According to information available at the *Instituto Nacional de Estadísticas y Censos* (INDEC), Aeropuertos Argentina 2000 handles 87% of domestic passengers in the SNA. About 7% of these passengers are handled by two other concessionaires, Aeropuertos del Neuquén S.A and London Supply S.A.,[31] and the remaining 6% mainly by provincial/municipal governments or the Air Force.[32] The remaining 6% also includes the private concessionaire of Aeropuerto Internacional Rosario.

Decree 375/1997 created the regulatory agency *Organismo Regulador del Sistema Nacional de Aeropuertos* (ORSNA). This institution is responsible for assuring free and equal access, non-discriminatory treatment, and verifying that airport fees are just, reasonable and competitive.

Furthermore, the government deregulated air transportation services at the beginning of the 1990s by Decrees 94/1989, 2538/1991, 2186/1992, 1293/1993 and privatized the national airline Aerolineas Argentinas in 1989 by Decrees 1591/1989, 461/1990 and 52/1994. As part of the privatization process, the government conferred to Aerolineas Argentinas exclusive rights to operate national flag flights in international services for five years to border countries and ten years to the rest of the world.

The deregulation process stimulated domestic competition by favoring the entry of new operators – through concessions – and allowing freedom to set prices and tariffs. In 1998, Decree 516/1998 further facilitated entry by eliminating more existing requirements on entry remaining from Decree 1293/1993.

However, in 1998-1999 the sector started to show some symptoms of crisis. Competition started to disappear in less profitable routes and several companies exited completely, while other companies continued to operate but in grave financial conditions.

Therefore in 2002, by Decree 1,654/2002, the government declared a state of emergency in domestic airline transportation. The new regulations controlled competition by setting restrictions on the airlines' commercial practices, such as the definition of price intervals and company discount policies, and the assignment of routes according to demand. With regard to

[30] Terminal operators of Puerto Nuevo argued for competition under asymmetric conditions. There has been discussion on whether such conditions existed or not and also in relation to the contract renegotiations. See, for example, *Fundación de Investigaciones Económicas Latinoamericanas* - FIEL (1999).

[31] *Aeropuertos del Neuquén* was granted a concession to operate the airport in Neuquén (2001), London Supply was granted a concession to operate the airport in Usuhaia (1997), El Calafate (2000) and Trelew (2001).

[32] Decree 375/1997 (and amendments) defined the list of airports belonging to the National Airport System (*Sistema Nacional de Aeropuertos*, SNA). There are other provincial and municipal airports included in the SNA.

the airport system, the renegotiation of the contract with Aeropuertos Argentina has been suspended.

2.3. POLICY OPTIONS AND IMPLICATIONS

In recent times, the transport sector in Argentina has been significantly restructured, in an attempt to achieve a decentralized management structure and to increase private participation. The purpose also has been to guarantee the recovery of investments, with the aim of increasing the availability and quality of infrastructure. These elements, besides reducing the government's expenditure on infrastructure, should also generate growth in national production and help Argentinean firms attain a better level of competitiveness

Logistics costs in Argentina are estimated at nearly 29% of GDP and represent 15% of the delivery price of goods (depending upon the value added of the product), second only to Peru in Latin America and almost triple the Organization for Economic Co-operation and Development (OECD) average. Argentinean firms clearly experience difficulties competing in international markets. Therefore the implementation of an efficient system of logistics and freight transport is will be a crucial element in the generation of sustained economic growth. Moreover, it would contribute to an equitable distribution of growth since high logistics costs have a disproportionate impact upon the competitiveness of small-scale firms and those located in the interior of the country.

In particular, in the ***roads sector*** Argentina's road privatization program which, despite having enabled an improvement in services, still generates several problems. The renegotiation of concessions is a major issue: contracts have repeatedly been renegotiated, in relation to issues such as tolls and charges, royalties, subsidies, extensions of concession lengths, revision of investment plans, etc. Moreover, these renegotiations, together with government reluctance to accept the correction of toll values, have ensured the preservation of public subsidies in roads management. In fact, the continuous change of contract conditions has caused the transfer of significant amounts of public resources to concessionaires in compensation for contractual changes.

In addition, the interaction between the DNV, within the Secretariat of Public Works, and the private operators managing the rest of the national roads, has created conflicts with the regulatory functions of OCCOVI. This latter also operates within the Secretariat of Public Works, and exercises a supervisory and regulatory function in order to ensure the effective fulfillment of concessionaires' contract obligations.

Another main issue is the mobilization of further private sector financing for additional urban highways and future interurban road concessions. In fact, until now, the bulk of private sector contributions were channeled for the substantial improvement of the main access roads to Buenos Aires without involving provincial areas. Moreover, the drop in toll levels in dollar terms since December 2001 and the subsequent inability to face the service debt has meant deferrals not only in investment but also in maintenance.

In the ***railway sector***, an issue is that the regulatory framework was designed for passenger transportation, but disregards load transportation. This created a problematic situation in which the concessionaires were granted the power to "approve or reject" regulatory conditions and changes for infrastructure and investments, etc., although the competitive aspects had already been left to the market itself. Since there have been contract renegotiations both in load and passenger transportation services, the absence of a regulatory framework for load transportation has created a confusing environment for renegotiating activities.

Another important issue is that, despite the transfer of cargo and metropolitan passenger transport activities to the private sector, railroad infrastructure is still precarious as the majority of maintenance and upkeep has been concentrated in a network totaling about 10,000 km, with the rest remaining in disrepair.

The freight railroads, in spite of having a meager market share, have seen a surge in traffic and an increase in rates since devaluation. This is due in part to the boom in the key bulk markets they serve, such as soy, other grains, and cement; in addition, the vertically integrated owners of the railroads are generally able to move their commodities by rail with modest investments. Conversely, interurban passenger services on the lines given in concession to the private sector have been largely abandoned. As at present the there is little likelihood of significant private investment in tracks, signaling or rolling stock in the near future, it is necessary to mobilize sufficient private sector capital to complement public sector capital investment in interurban passenger transport.

The Argentinean experience of deregulation and decentralization in the ***port system*** is considered positive. In fact, widespread private participation and the establishment of a competitive system among both ports and service providers in the same port were achieved. The introduction of competition enabled gains in efficiency, and the state was exempted from some activities without having to contribute resources for the expansion and preservation of activities. However, some efforts are still needed to decrease logistics costs and to revive competitiveness against the Brazilian and Chilean ports. Finally, in 2002, due to the exit to convertibility, the government decided to carry out a global revision of the terminal operators' contracts, which is still underway.

With regard to ***airports***, it should be noted that in 2002, after the deregulation of the air transport system and the privatization of the national airport system, the government declared a state of emergency in domestic airline transportation and introduced controls in pricing and other commercial practices. At the moment the main issue was the need to conclude the renegotiation of the contract with Aeropuertos Argentina, which has been suspended.

2.4. PRIORITIES FOR FUTURE REFORMS

The priorities for future reforms are the achievement of greater efficiency, especially in the reduction of logistic costs, and to facilitate a more efficient interchange of cargo between the different methods of transport. It is also necessary to pursue the further disengagement of public resources from the sector.

The first cross-sector priority, especially for the road and railway sectors, is the ***strengthening of the regulatory structure,*** with the creation of a sector regulatory agency able to supervise and accompany concessions and to regulate disputes. These agencies must be autonomous, with their own financial resources, and independent from concessionaires, government and users. Regulatory agencies must have sufficient information to achieve, through regulation, the main objectives of public services, while preserving the equilibrium between consumers and the interests of service providers.

Moreover, the establishment of these agencies must be accompanied by the ***formulation of well-defined concessions contracts*** to avoid arbitrary decisions and lack of clarity. Concessions contracts must be clear and must generate appropriate incentives to attain efficiency, and must ensure that part of the gains are transferred to consumers. The necessary investments, the expected quality of services and an adequate tariff correction mechanism must be foreseen, in order to avoid breaches of contract due to disputes. Therefore, with the new tenders, which will take placed upon the expiry of road and railway concessions, state intervention to guarantee the recovery of private sector investments must be avoided.

This is also essential in order to reduce public subsidies in these sectors, since the use public resources should be limited to those areas that completely lack private interest. Furthermore, through self-sufficient concessions, resources currently allocated to concessionaires might be returned for the expansion and improvement of service quality in deficient areas.

Furthermore, the proposed cross-sector regulation which outlines the multimodal elements of the Transport Sector Law (Federal Act 24,921 of January 1998), could help to address many of the administrative inefficiencies of the logistics system. If adopted, this regulation will modernize the legal framework and improve the predictability of transport costs in Argentina. Along with the adoption of an international standard for the Multimodal Transport Document, the regulation should:

(i) decrease inventory costs through faster rotation of goods and better management of storage taxes and insurance;

(ii) improve the efficient use of transport equipment and facilities;

(iii) reduce inventory risk costs; and

(iv) improve financial calculations and carrying costs.

In the ***road sector*****,** policies should focus on the following key priorities:

(i) the mobilization of additional private sector financial resources in order to achieve more effective decentralization of private intervention in the sector and to maintain better connections with the provinces; and

(ii) maintaining the independence of OCCOVI.

In relation to the ***rail system***, the main priorities are:

(i) merging of the different agencies and regulating bodies into a single authority with the power to regulate, prioritize public sector investment, and operate services where necessary. In the latter case, devolution of operations to the private sector should be pursued as far as possible;

(ii) rehabilitation of the railway network, making the necessary investments to secure efficient freight and passenger operations, by private and public sector operators, with particular attention to the re-organization of interurban passenger rail services;

(iii) encouragement of private risk investment in infrastructure and operations; and

(iv) rehabilitation of the Belgrano freight line, Belgrano Cargas.

In the ***port sector*****,** policies should focus on three key priorities:

(i) decreasing the very high logistics costs in Argentinean ports;

(ii) recovery of competitiveness in relation to competing ports - the recovery of the port of Buenos Aires' predominant role in the Rio de la Plata region should be a priority; and

(iii) concluding the global revision of terminal operators' contracts, which is still underway.

In the ***airport sector*****,** the main priority is the need to conclude the renegotiation of the contract with Aeropuertos Argentina, which has been suspended.

Finally, it is also important to note that the World Bank[33] has already defined a combination of targeted investments and policy initiatives to be considered by the Argentinean government in order to increase the effectiveness of Argentina's transport and logistics sector. According to the World Bank, the investment decisions that the government should investigate to allow for a more efficient interchange of cargo among modes of transport include:

(i) Expansion of the Retiro Intermodal Facilities. This should be developed as part of a Greater Buenos Aires Freight Transportation Master Plan, which also considers the IDB-proposed Port of Buenos Aires Improvement Project;

(ii) Analysis of the feasibility of double-stack clearance into and out of Buenos Aires;

(iii) Analysis of the comparative costs and benefits of (a) adding main tracks and reverse signaling to allow for the elimination of freight operating windows in the *Nuevo Central Argentino* (NCA) and *Buenos Aires al Pacifico* (BAP) main passenger lines; or (b) developing a consolidated intermodal rail corridor involving a mixed gauge route for NCA. After complete economic and financial impact analyses, the government should consider funding the better option;

(iv) Funding of grade crossing protection and separation projects in high volume intermodal corridors; and

(v) Construction of a third meter-gauge rail between Paso de Los Libres and Buenos Aires to compete with Brazil in terms of maritime transportation along the coast.

[33] Source: "Infrastructure, the Private Sector and Finance in Argentina", June 2004, World Bank.

3. ENERGY

3.1. OVERVIEW

Argentina's electricity industry was founded by private entrepreneurs at the end of the eighteenth century, but in the 1940s the national and provincial governments began to expropriate the companies, due in part to concerns that municipal governments were not facing problems deriving from monopoly abuse. Over the years, the national government became responsible for building and operating new generating capacity and the national transmission system. The provincial governments owned most of the large distribution companies, with the exception of the company serving the Greater Buenos Aires area, which is owned by the national government.

Under public ownership, electrical service was taken to rural areas and many new generating plants were built but, public companies eventually began to run deficits and became unable to maintain their equipment or to make new investments. These issues were amplified by the energy shortage of 1988-1989, when low water flows, combined with lack of available thermal and nuclear plants, led to electricity rationing for many months. The government initially considered the possibility of reforming the sector while maintaining public ownership. However, by 1991 it was already convinced that incentives had to be changed dramatically to facilitate private ownership.

Therefore, by 1992 Argentina was one of the first countries to restructure its government-owned electricity industry into separate private generation, transmission and distribution companies. Generation was intended to be competitive, but transmission and distribution were considered to be natural monopolies. By separating the three functions, government regulation was limited to transmission and distribution, while competition disciplined the wholesale power market where the supply of electricity was traded.

The national government sold its thermal plants outright, but granted concessions for its hydro plants, as it did not want to lose control over the associated water rights. Distribution and transmission companies were also awarded concessions for 95 years, but would be subject to a new bidding process after the 15th year and every 10 years thereafter. The privatization process produced the following main players:

(i) three large distribution companies:
- Edenor (*Empresa Distribuidora Norte S.A.*),
- Edesur (*Empresa Distribuidora Sur S.A.*), and
- Edelap (*Empresa Distribuidora la Plata S.A.*);

(ii) one national transmission company, *Compañía de Transporte de Energía Eléctrica en Alta Tensión Transener S.A.* (Transener); and

(iii) many generation companies.

The regulator of the electricity sector is *Ente Nacional Regulador de Electricidad* (ENRE), whose main responsibilities are:

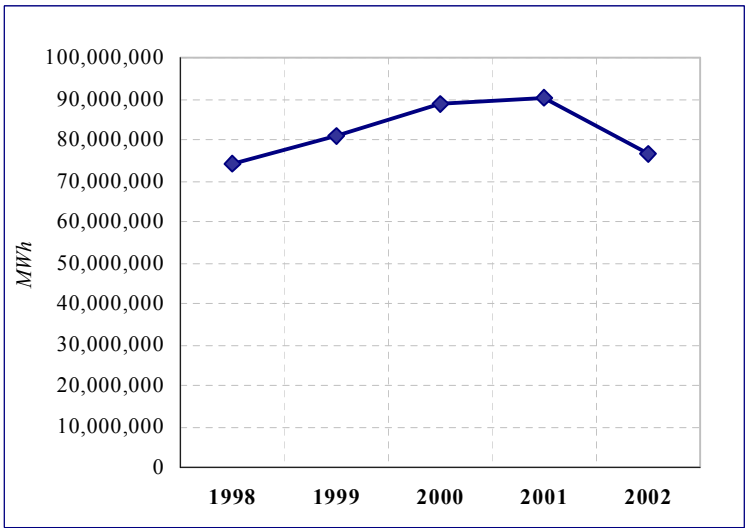
(i) setting tariffs, according to a *price cap* system; and

(ii) administration of a system of penalties and bonuses designed to control quality.

With regard to the actual level of energy production in Argentina and the country's main energy sources, it is worth noting that after privatization Argentina's generating capacity and electricity production increased considerably, reaching 89,422,400 MWh in 2001. A sharp decrease

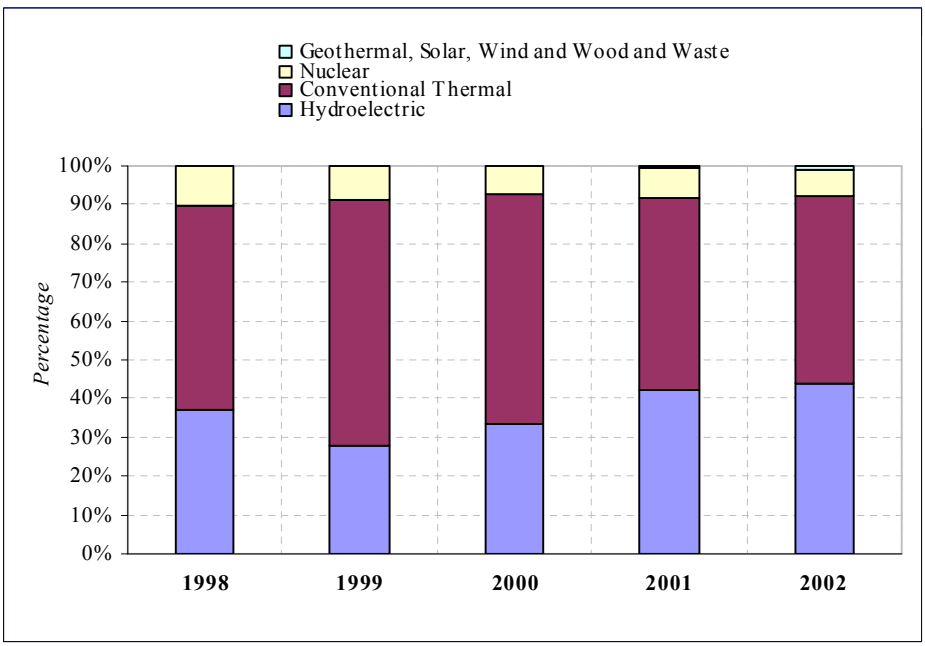
occurred in 2002, as illustrated in Figure 3.1, as a consequence of the social and economic crisis. It should also be noted that production of electricity in Argentina is predominantly thermal and hydraulic. In 2002, for instance, 48.74% of total generation was conventional thermal, followed by hydroelectric generation, at 43.65% (Figure 3.2).

Figure 3.1 – Electricity Production



Source: World Development Indicators 2004 and Secretaria de Energia, Ministerio de Planificación Federal, inversión Pública y Servicios, Informe del Sector Electrico 2002

Figure 3.2 – Electricity Production by Source



Source: Energy Information Administration, U.S. government - EIA

As stated above, approximately 50% of Argentina's electricity generation depends upon gas, which is a primary input for industrial users and, increasingly, transport service providers; families also use gas to cook and to heat their homes. Therefore, any type of shortage, outage, unpredictable prices, or expected shortfalls in capacity in either sub-sector could affect all areas of the economy.

This situation has indeed arisen – since the beginning of winter 2004, Argentina has faced increasingly severe gas restrictions as demand has outstripped the capacity of gas pipelines and gas production, and electricity shortages are likely to occur in 2005-2006 due to transmission bottlenecks. These energy supply constraints caused by:

(i) negligible public expenditure over the last decade;

(ii) decreasing private investment over the last five years; and

(iii) a sudden boom in demand in 2003.

Specifically, the predicted demand for gas and electricity, shown in Table 3.1, indicates the need for increased capacity in gas transport and electricity generation until 2008.

Table 3.1 – Electricity and Gas Demand Projections

		Base case		High case	
	2003	**2004**	**2008**	**2004**	**2008**
Electricity demand					
GWh/year	81,799	86,298	98,072	87,934	107,902
Av. Monthly Peak MW	13,678	14,430	16,399	14,704	18,043
Gas demand					
MMm3/year	37,430	39,863	47,082	40,612	51,755
Winter Peak MMm3/day	140	155	185	160	210

Source: The World Bank estimates

Note: the current capacity of the gas transport system is 120MMm3/day (combined domestic and export)

This difficult situation is the result of a slowdown in investment levels in the Argentinean energy industry. During the period of economic slowdown beginning in 1999, gas producers (regulated) and transport and distribution concessionaires (unregulated) continued to invest in their capital stock, although levels of investment reflected the slowing of economic activity. However, after pesification - with tariffs frozen and capital debts skyrocketing – private operators of gas pipelines were forced to postpone nearly all investments. Thus, although gas sector privatization had succeeded in halting the decline in gas reserves, the gas reserve ratio has dropped once again since 2002, from 18 to 12 years of production, and it appears to be one of the main problems Argentina needs to solve in order to enable sustainable economic and social development.

In April 2004, the government launched an important one -year energy conservation program applicable to gas and electricity consumption in residential and commercial sectors. The program was inspired by the 2001 electricity conservation program in Brazil, which achieved a 20% reduction in consumption compared to 2000. The target for Argentina is to reduce residential and commercial consumption by 5-10% compared to the previous year. The program is based on rewards – applicable to small users saving more than 10% – and penalties, applicable to large users saving less than 5%. Moreover, to complement the penalty and reward system for residential and commercial users, conservation measures are planned for public entities at the national and provincial levels, with a 15% reduction target. Some provinces are planning additional efforts, such as Cordoba, which has drawn up a comprehensive energy conservation law.

3.2. ASSESSMENT OF THE KEY POLICY AREAS

3.2.1. ANALYSIS OF THE TECHNICAL DIMENSIONS OF THE SECTOR

The first issue to be considered in order to assess overall sector performance is ***access and service coverage*** provided by the electricity network throughout the country[34]. According to the World Development Indicators, 94.60% of the population had access to the electricity network in 2000. The Statistical yearbook for Latin America and the Caribbean in 2001, published by the Economic Commission for Latin America and the Caribbean (ECLAC), reports that 99.50% of households had access to the network in 1999. In addition, the *Encuesta Permanente de Hogares* (EPH), published by the *Instituto Nacional de Estadísticas y Censos* (INDEC), reports that 99.10% and 99.57% of urban households had access to electricity in 2001 and 2002 respectively. Figures are unavailable for rural households.

Therefore, it can be surmised, based on the information above, that the level of coverage of electricity services in Argentina is relatively high, at least in urban areas. This is confirmed by comparing data with other Latin American countries, as shown in Table 3.2.

[34] The following analysis is characterized by scarce data availability.

Table 3.2 – Access to Electricity in Latin American Countries

Country	Households reporting access to electricity		
	Total	***Urban***	***Rural***
Argentina (2002)	n.a	99.57%	n.a.
Brazil (2002)	96.25%	99.42%	79.48%
Costa Rica (2002)	98.41%	99.81%	96.30%
Guatemala (2000)	73.11%	95.34%	56.20%
Jamaica (2000)	86.88%	92.04%	79.49%
Mexico (2000)	97.18%	n.a.	n.a.
Peru (2002)	71.90%	93.70%	30.80%

Source: Argentina - Instituto Nacional de Estadísticas y Censos (INDEC), Encuesta Permanente de Hogares (EPH); Brazil –Instituto Brasileiro de Geografia e Estatística (IBGE), Pesquisa Nacional por Amostra de Domicílios (PNAD) several issues, and Brazilian Census (2000); Costa Rica – Instituto Nacional de Estadística y Censos (INEC), Encuesta de Hogares de Propósitos Múltiples 2002; Guatemala – Instituto Nacional de Estadística (INE), Encuesta Nacional de Ingresos y Gastos Familiares (ENIGFAM) 2000; Jamaica – Planning Institute of Jamaica (PIJ), Jamaica Survey of Living Conditions (JSLC) 2000; Mexico – Instituto Nacional de Estadística, Geografia e Informática (INEGI), Encuesta Nacional de Ingresos y Gastos de los Hogares (ENIGH) 2000; Peru – DHS (Demographic and Health Surveys), Instituto Nacional de Estadística e Informática (INEI), Encuesta National de Hogares (ENAHO) 1999, and Household Energy Use in Developing Countries-A Multicountry Study-2003-ESMAP-Table A.2.5

It is important to emphasize, however, that access indicators for Argentina are very likely to have deteriorated considerably after 2002 owing to the economic crisis.

Another useful indicator to be considered in an analysis of access in the sector is the breakdown of cooking fuels used by Argentinean families. The only available information comes from the *Censo Nacional de Población, Hogares y Viviendas 2001*, also published by INDEC. It reports that 95% of households used modern fuels to cook with in 2001, with only 5% using solid fuels. This is in line with the electricity coverage ratios discussed above, and indicates that prior to the economic and social crisis that started in 2001 the use of solid fuels was not widespread in Argentina.

Concerning then the ***affordability of electricity***, given the lack of available data on the percentage of income spent on electricity by Argentinean households, the following formula has been used to obtain some consistent information about this topic:

(i) multiply electricity consumption per capita – kWh per capita – by electricity price – US$ per kWh – to calculate expenditure in electricity per capita; and

(ii) divide the result by GDP per capita to calculate the percentage of GDP per capita spent on electricity[35].

Thus, with this procedure, a proxy has been defined to estimate the proportion of household income spent on electricity in Argentina. In particular, it appears that in 2000 and 2001[36] the values for household expenditure on electricity are 2.36% and 2.44% of income, respectively. Those are relatively high numbers compared to those of Mexico, for instance, which are 1.20%

[35] The figures on electricity consumption per capita and GDP per capita are available in the World Development Indicators 2004, published by the World Bank.

[36] Information about residential prices is only available for the years 2000 and 2001.

and 1.40% for the same years. Moreover, Argentina's GDP per capita dropped dramatically in 2002 and 2003 due to the economic crisis and the resulting currency devaluation. Therefore, it is very likely that the weight of electricity expenses in a household's budget increased significantly after 2001.

The available data on the costs of electricity in Argentina allows a comparison to be made with the costs in other countries. From 2000 to 2001, *residential prices* decreased from 8.9 US Cents/kWh to 8.6 US Cents/kWh, while *non-residential prices* decreased from 7.50 US Cents/kWh to 6.9 US Cents/kWh. As indicated in Table 3.3, which shows non-residential and residential prices in other Latin American countries, the figures for Argentina were slightly above the average of its counterparts in 2000 and 2001, coming second only to Jamaica.

Table 3.3 – Residential and Non-Residential Tariffs

	Average electricity end-user prices (UScents/kWh)			
	2000		2001	
Country	***Residential***	***Non-residential***	***Residential***	***Non-residential***
Brazil	8.68	5.68	7.64	5.07
Costa Rica	5.3	6.8	6.4	7.6
Guatemala	8	7.6	7.9	7.5
Jamaica	10.49	8.26	10.14	7.64
Mexico	6.8	5.1	7.5	5.3
Peru	10.8	6.17	10.2	5.98
AVERAGE	8.35	6.6	8.3	6.52

Source: Brazil – ANEEL (Agência Nacional de Energia Elétrica); Costa Rica – ECLAC Istmo Centroamericano: Estadísticas del Subsector Eléctrico; Guatemala – OLADE (Organización Latinoamericana de Energía); Jamaica – EIA (Energy Information Administration, U.S. government) and OLADE; Mexico – EIA and OLADE; Peru – OSINERG (Organismo Supervisor de Inversion en Energia)

The ***quality of electricity services*** in Argentina is closely linked to the form of regulation, based on incentives, to which the companies are subject. In fact, the concession contracts signed by Edenor, Edesur and Edelap established price caps and indexing mechanisms as well as the required quality levels and penalties for failure to reach them. In particular, there are two types of penalties:

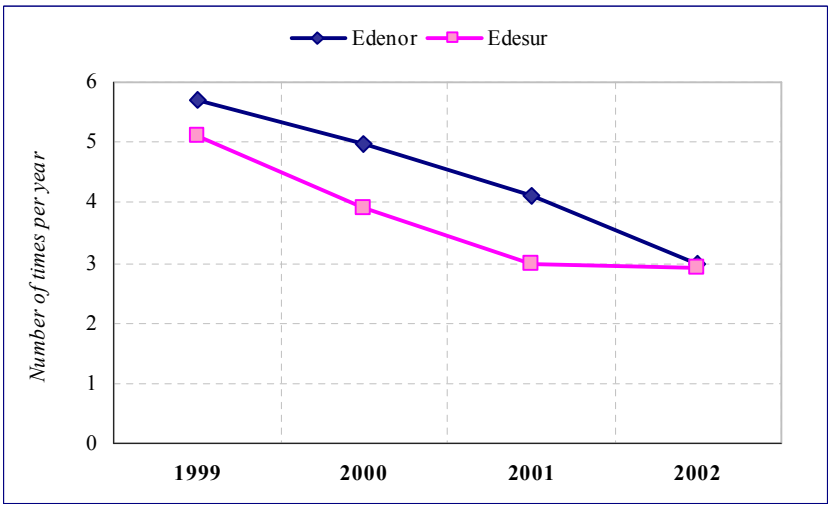
(i) those designed to compensate individual users for losses incurred due to power failures; and

(ii) those incurred for non-compliance with obligations, the proceeds of which go to the National Treasury.

One of the dimensions of quality monitored by the regulator, through the measurements of *quantity and duration of interruptions*, is technical service. Data are available only for Edenor and Edesur according to the indicators used to gauge this dimension. The first indicator, "*Frecuencia Media de Interrupción por kVA* (FMIK)", measures the number of times per year an interruption of service occurs, while the second one, "*Tiempo Total de Interrupción por kVA* (TTIK)", measures the total duration of such interruptions per year.

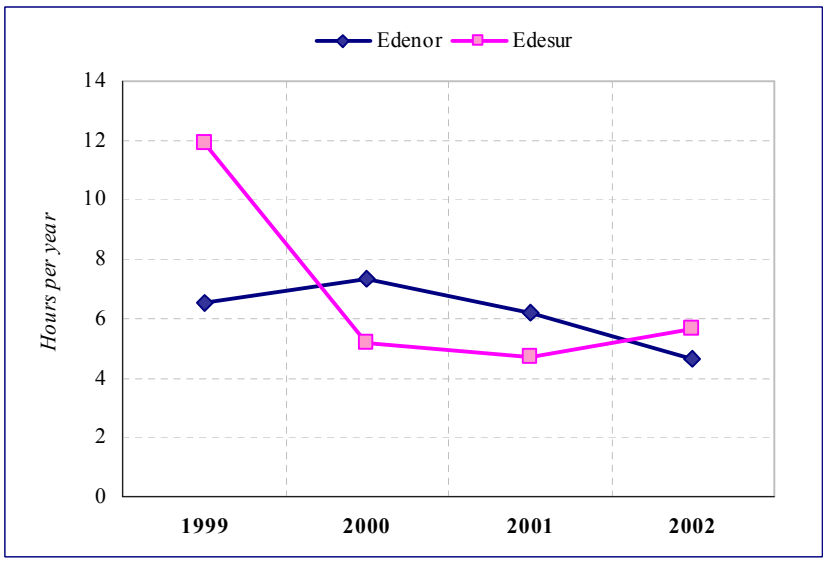
It should be noted that both companies achieved significant improvements in relation to both indicators from 1999 to 2002 despite an increase in duration of interruptions on the part of Edesur from 2001 to 2002. In particular, the duration of interruptions decreased by 29.03% and 52.27% for Edenor and Edesur respectively from 1999 to 2002. Moreover, the number of interruptions per year dropped by 47.99% for Edenor and 4.55% for Edesur. However, even with these positive results, it is important to stress some elements which signal a deterioration in the quality of service in the latter period. For instance, data from Edenor show that its FMIK has increased from 2.97 in 2002 to 3.26 in 2003, while its TTIK rose from 4.62 to 5.11. Moreover, both companies' recent annual reports point out that the quality of service has decreased as a consequence of the economic crisis Argentina has experienced.

Figure 3.3 – Frequency of Interruptions



Source: Edenor, Memoria, Estados Contables 2003; Edesur, Annual Reports

Figure 3.4 – Duration of Interruptions



Source: Edenor, Memoria, Estados Contables 2003; Edesur, Annual Reports

Therefore, in absolute terms, both companies have a respectable record relating to quality of service. It is important, however, to have a relative measure of their performance. This can be achieved by observing the quality standards set in the companies' concession contracts, reproduced in Table 3.4.

Table 3.4 – Quality standards

	Frequency of interruptions (maximum number of interruptions per semester)	**Duration of Interruption** (maximum duration of interruption)
High voltage	3	2 hours
Medium voltage	4	3 hours
Low voltage (small and medium demand)	6	10 hours
Low voltage (large demand)	6	6 hours

Source: Edenor and Edesur concession contracts

In terms of frequency of interruptions, both companies were below the lowest threshold in 2002. With regard to duration of interruptions, in 2002 they were below the maxima allowed for low voltage but over the maxima for medium and high voltage.

However, it is important to note that the wholesale market operator – *Compañía Administradora del Mercado Mayorista Eléctrico* (CAMMESA) – estimated risks of interruption to supply over the period 2004-2006, during which no increase in generation capacity could occur, according to different scenarios of demand growth, exports and gas availability. These predictions suggested that the risk of interruption to supply was "limited" in 2004, "possible" in 2005 and "significant" in 2006, while there would be a supply deficit in 2007 if new generation and transmission projects were delayed.[37]. Demand for electricity has been driven by GDP growth and is not very flexible in terms of price. This suggests that price adjustments alone would have a small impact on the imbalance. The creation of a suitable environment for further investment in transmission and generation will be crucial.

With regard to ***technical efficiency,*** it is important to compare the situation in Argentina with those of other Latin American countries – analyzing data on performance regarding *losses in transmission and distribution*.

[37] CAMMESA's projections assumes average rainfall. The supply-demand gap would thus be further exacerbated by poor hydrology as hydropower accounts for about 50% of energy production.

Table 3.5 – Electricity Transmission And Distribution Losses for LA Countries (% of Total Production)

Country/Year	1998	1999	2000	2001
Argentina	15.13%	14.78%	12.81%	13.59%
Brazil	16.82%	17.60%	18.20%	17.24%
Costa Rica	7.89%	7.67%	6.85%	7.20%
Guatemala	20.53%	15.31%	24.70%	23.00%
Jamaica	9.91%	9.82%	9.38%	8.47%
Mexico	14.58%	14.36%	14.05%	14.45%
Peru	12.89%	12.05%	11.48%	10.76%
Average	13.96%	13.08%	13.92%	13.53%

Source: World Development Indicators 2004 – The World Bank

As indicated in Table 3.5, Argentina's losses are comparable to those of Mexico, lower than those of Brazil and Guatemala and higher than those of Costa Rica, Jamaica and Peru. Moreover, the worst aspect is that the figures for Argentina, despite those for 2000, are consistently lower than the average of the countries considered (including Argentina).

Considering *energy consumption as a proportion of GDP*, it is apparent that, after having increased from 137.72 in 1998 to 144.29 in 1999, the figures for Argentina decreased to 139.74 *kg of oil equivalent per 1,000 PPP GDP* in 2000, the most recent year for which data are available. Also, as shown in Table 3.6, the Argentinean economy is substantially more efficient than its Latin American counterparts in terms of the quantity of energy necessary to produce one unit of GDP. Thus making a one-to-one comparison, it can be concluded that Argentina has been more efficient, in terms of energy consumption, than Brazil, Guatemala, Jamaica and Mexico, and less efficient than Costa Rica and Peru.

Table 3.6 – Energy Consumption per Unit of GDP

	Energy consumption per unit of GDP (Kg of oil equivalent per 1000 PPP GDP)		
Country	***1998***	***1999***	***2000***
Argentina	137.72.	144.29	139.74
Brazil	160.13	157.09	148.48
Costa Rica	87.37	80.81	85.49
Guatemala	142.78	147.82	141.73
Jamaica	426.48	419.54	424.93
Mexico	20.99	197.02	182.94
Peru	110.21	113.67	105.71
Average (without Argentina)	157.99	185.99	181.55
Regional average	182.35	185.57	186.35
Higher middle-income average	152.12	155.04	152.81

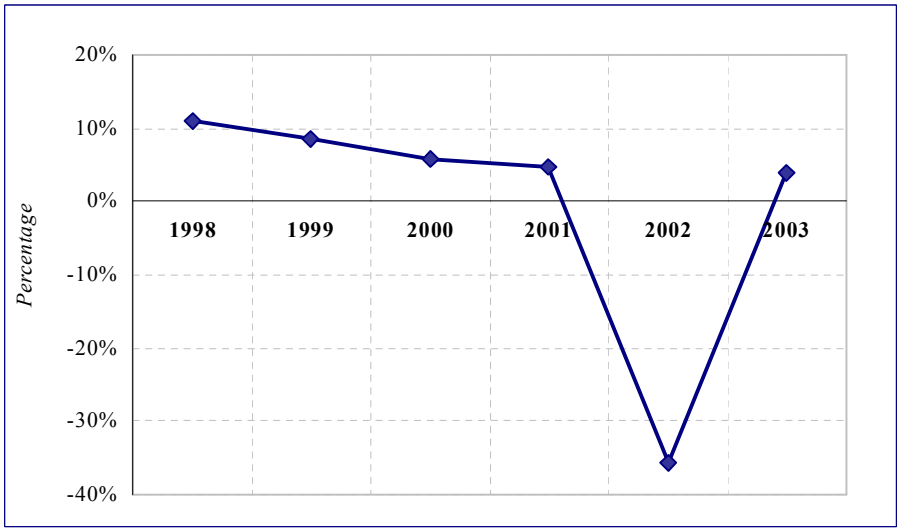
Source: United Nations Conference on Trade and Development (UNCTAD), United Nations Statistical Division (UNSTAT)

3.2.2. ECONOMIC EFFICIENCY AND PRIVATE SECTOR FINANCING

In order to assess the ***financial health of main providers*** operating in the electricity sector, figures for the return on equity of a sample of companies whose shares are traded in stock exchanges have been analyzed. The sample is composed of six electricity companies, including those engaged in distribution, transmission and generation.

The returns on equity, as indicated by Figure 3.5, have decreased significantly from their peak in 1998: from 11.13% in 1998 to 3.95% in 2003. 2002 was the worst year for electricity companies, with the average return on equity falling to -35.71% due to the severe economic crisis. The recovery in 2003, although significant, cannot be considered a sign of good financial health in the sector as it is still overly affected by regulatory uncertainty, which will be discussed in the next section.

Figure 3.5 – Return on Equity



Source: Reuters

Another interesting indicator to examine is *private investment in the energy sector* in current US dollars and as a percentage of GDP during the period between 1998 and 2002. According to the data in Table 3.7 the key issue is the dramatic drop in private investment in 2001 and 2002. Private investors were scared away by the crisis of the Argentinean economy that started in 2001 and continued through 2002.

Table 3.7 – Private Investment in Energy

	1998	1999	2000	2001	2002
Private Investment in Energy (current US$)	3,299,800,000	1,715,900,000	2,099,500,000	545,300,000	299,800,000
Private Investment in Energy (% GDP)	1.10%	0.61%	0.74%	0.20%	0.29%

Source: World Development Indicators 2004 – The World Bank

With regard to the ***fiscal dependence of the sector***, data from Argentina's public budget helps to explain the relationship between the Argentinean energy sector and public expenditure. The figures analyzed follow the functional classification of the Argentinean budget, which aggregates expenditure on energy, fuels and mining.

Table 3.8 – Public expenditure on energy, fuels and mines

	1998	1999	2000	2001	2002	2003
Public expenditure on energy, fuel and mines (US$)	335,665,833	307,940,970	300,861,030	320,628,504	119,114,034	152,659,554
Public expenditure on energy, fuel and mines/GDP	0.11%	0.11%	0.11%	0.12%	0.12%	0.12%

Source: Secretaria de Hacienda, Ministerio de Economía y Producción, Boletín Fiscal

The values indicated in Table 3.8, show that public expenditure has been steady during recent years, remaining at around 0.11%-0.12% of GDP, even during the economic crisis of 2001-2002. In absolute terms, these percentages are low, which can be explained by the predominance of private ownership in the electricity sector in Argentina. It is also worth comparing Argentinean performance to that of Brazil and Mexico, which provide the main benchmarks. In 2001 and 2002, fiscal funds of around 1.8% of GDP were poured into the electricity sector each year in Mexico, while in Brazil public expenditure on electricity amounted to at least 0.24% and 0.78% of GDP in 2001 and 2002 respectively, signaling in both cases a stronger dependence upon public resources, especially in Mexico.

3.2.3. REGULATORY FRAMEWORK AND INSTITUTIONAL DEVELOPMENT

Electricity. The Electricity Law 24,065 and Decree 1,398/1992 created the electricity market, which previously consisted of two disconnected sub-markets, *Mercado Electrica Mayorista* (MEM) and MEM-Sur Patagónico. It defined power generation as a public-interest activity and both transmission and distribution as public utilities.

The legal framework defined an open access principle in generation, allowing the entry of private companies. The transmission grid was divided into high-tension and trunk systems, and was concessioned to the private sector for 95 years, allowing a possible prorogation of 10 years. Electricity distribution was divided among several regional companies. At the federal level, the three distribution areas were concessioned to Edenor, Edesur and Edelap for 95 years, allowing a possible prorogation of 10 years. The other distribution companies remained under provincial jurisdiction. About half of them were also concessioned. The regulatory framework established open access to the transmission grid, and defined the obligations of service provision in the distribution areas. Large users, e.g. industrial users, were granted to possibility of buying electrical power directly from generators, bypassing distribution companies.

The Law also created the regulatory agency *Ente Nacional Regulador de la Electricidad* (ENRE) at the time of privatization. The board members are appointed by the president for five years, in staggered periods. ENRE is responsible for approving margins for transportation and distribution, defined in US dollars and adjusted by a compound formula of the Consumer and Producer Price Index of the United States. These margins are regulated by a price cap, adjusted every five years[38], and corrected by an "X" factor reflecting gains in efficiency, as well as the throughput of electric power, which constitute the tariffs for final users. It also supervises the

[38] In the case of distribution companies, the first adjustments should have corresponded in the tenth year.

companies, controls service quality, imposes sanctions, mediates in conflicts between agents and so forth. Several provinces created their own agencies to regulate electricity distribution.

An independent institution (CAMMESA) coordinates dispatch. There are guidelines for seasonal, weekly and daily programming of the market. The Secretariat of Energy approves seasonal prices, calculated from seasonal programming, to be paid on demand. Generators charge an hourly price. Differences accumulate in a Stabilization Fund. In addition, generators, large consumers and distribution companies can contract long-term supply in the contract market.

Expansion of the system is not mandatory to the transmission company. It may be carried out through building-operation-maintenance contracts, minor expansions or expansions by public contest. Expansions of the system has been subject to conflicts, mainly deriving from the public-good nature of expansion and the voting rules for their approval.[39]

The structure of the electricity market is relatively similar to those of other Latin American countries, such as Brazil, Guatemala, Ecuador or Chile. The latter was a pioneer of reforms in the sector in Latin America. Beginning in the 1970s and 1980s, the reforms involved the restructuring and privatization of enterprises, the creation of the Electricity Bureau – *Comisión Nacional de Energía* – and the enactment of the Electricity Law. The different stages in the sector were unbundled – generation, transmission and distribution – and subject to open access requirements. An independent operator is in charge of dispatch and coordination of both contract and spot transactions in each electricity system, *Sistema Interconectado Nacional* (SIN) and *Great Northern System* (SING). Margins of natural monopoly activities are regulated by price caps.

Chile is currently facing some challenges in the contract market, and is not an exception in this respect. Specific problems relate to incentives to distribution companies to contract power, creation of more competitive conditions, the liberation of nodal prices and the application of the regulatory model for distribution margins.

In Argentina, until January 2002, wholesale prices were set competitively on the basis of interaction between supply and demand, and contract prices reflected such conditions. With the exit to convertibility, the government froze all prices and margins at their nominal 2001 values in domestic currency. However, generation costs of marginal plants increased significantly, due to increases in wholesale prices, the exchange rate, etc., which mismatched generation prices and seasonal prices. The Stabilization Fund has been running deficits since 2003, because of non-adjustment of seasonal prices. The government contributed public funds in years 2003 and 2004 to keep seasonal prices low, and changed the spot-pricing rules to reduce the deficit. In 2004, the government began adjustments by increasing energy prices for large users in February 2004 and medium users in September 2004. Energy prices for residential users, as well as all transmission and distribution margins, are still frozen and form part of the global renegotiation of contracts. In addition, summer 2003-2004 and winter 2004 witnessed the first shortfall of natural gas for power generation and, of course, other uses. Although the shortage was a consequence of increased demand and negative shocks, it is expected to continue in the coming years, especially in winter. Finally, as already mentioned, capacity has not been a serious concern so far, although it is expected to become relevant from winter 2005 onwards.[40]

Hydrocarbons. The deregulation of the oil sector, through Decrees 1055/89, 1212/89 and 1589/89, and the privatization of the former state-owned enterprise *Yacimientos Petrolíferos Fiscales* (YPF) are the most important changes which have affected performance in the Argentinean market for hydrocarbons. The state has changed its strategy and started a market-oriented reform process, moving away from public ownership, through the privatization of YPF

[39] Source: FIEL (1999).
[40] Source: CAMMESA (2003).

– completed in 1999 – and the tendering of oil and natural gas areas. The government retained its role in economic and environmental regulation.

The main changes introduced by deregulation included the concession of marginal areas, negotiation with the private sector for the exploitation of YPF's main areas, free disposal of the oil produced and of revenues obtained from oil exports, and the concession of abandoned areas to provinces. In addition, Decree 2178/92 provided for the assignment of permits to explore particular areas (for a maximum of 10 years, with a possible five-year prorogation) and concessions for production (for 25 years, with a possible 10-year prorogation). The state – currently, the provinces – charges a 12% royalty rate on production.

Transportation is carried out through unrestricted common carrier, granting a minimum capacity reserve to the transporter. The Secretariat of Energy regulates charges by a price cap, under the principle of no discrimination.

The main downstream actors are refineries, wholesale distributors of gasoline and lubricants and gas stations at the retail level. Entry is allowed at all levels provided that safety and environmental standards are met, and prices are set freely in the market. Decree 1,212/1989 establishes that gas stations could be installed without restrictions other than safety requirements.

In 2002, the government imposed temporary restrictions and taxes on exports of hydrocarbons – contradicting concession rights – and increased the tax rate in 2004, with the aim of assuaging the impact of international oil prices on the domestic prices of derivatives, especially gasoline.

Natural Gas. In 1992, the government unbundled the state-owned *Gas del Estado* in generation, transmission and distribution, deregulated the production segment and granted transportation and distribution licenses for private operation. Law 24,076 of Natural Gas, and Decree 1,732/1992 are the instruments that establish the main regulatory framework of the sector.

The government handed production to the private sector, through competitive concessions, in the three main production basins in the country – *Noroeste*, *Neuquina* and *Austral*. Natural gas transportation was divided into regions and licensed to two regional companies, *Transportadora de Gas del Norte (TGN)* and *Transportadora de Gas del Sur (TGS)* for 35 years, which could be extended for 10 additional years. Distribution was divided into eight areas (nine since 1999) and licensed to private distribution companies for 35 years, with the possibility of a further 10-year extension. The industry is vertically and horizontally unbundled as restrictions were imposed on joint ownership of production, transportation and distribution.[41] Large users, e.g. industrial users or electric power generators, may buy gas directly from producers, bypassing distribution companies both commercially and physically.

Despite separation according to region at the levels of distribution, and, to a lesser degree, transportation, regulation of transportation and distribution is centralized at the federal level and is carried out by *Ente Nacional Regulador del Gas* (ENARGAS), an autarkic entity created at the time of privatization. The board members are appointed by the president for five years in staggered periods. ENARGAS is responsible for approving tariffs for transportation and distribution – margins are defined in US dollars and adjusted by the Producer Price Index of the United States. These tariffs are regulated by a price cap, adjusted every five years, and corrected by an "X" factor of efficiency gains and a "K" factor to finance investment projects, as well as the automatic pass-through of the upstream natural gas price, resulting in the approved tariffs for final users. It also verifies safety and quality requirements, environmental conditions, etc. Upstream activities are supervised by other federal and provincial agencies, but prices and entry are freely determined.

[41] No investor can hold 50% or more of the existing stock of two companies acting in two different vertically related segments of the industry.

This regulatory framework, together with that of the electricity sector, is considered one of the most successful examples of regulation in Argentina. Nevertheless, it has not been without problems. The regulator faced important challenges in relation to numerous issues, such as the transfer of the higher cost of natural gas to final prices, the recognition of an increase in transportation and distribution costs due to increases in the price of retained gas, the use of transportation capacity, the mechanism of reference price for the natural price at wellhead, or the suspension of adjustments in transportation and distribution margins in 2000 – although in this case the decisions came from the Ministry of the Economy.[42]

Until January 2002, upstream prices were set competitively by various producers, although the most important – YPF, acquired by *Repsol* in 1999 – commercialized an important share of the gas produced, raising some concerns about the degree of genuine competition in the market.

Along with the exit to convertibility, the government froze all prices and margins at their pre-devaluation nominal values, despite a significant real depreciation of the currency. Prices remained frozen until April 2004, although they were increased by some contractual arrangements at the end of 2003. In May 2004, the government and producers agreed upon a path of upstream prices. This differentiated between prices for small users, which remained frozen, and large users, which were free, and transitional users, which would become large users by mid-2005. Transport and distribution margins are still frozen at the pre-convertibility levels, and form part of the global renegotiation of contracts. In addition, summer 2003-2004 and winter 2004 witnessed the first shortfall of natural gas, mainly caused by increased demand – a consequence of depressed prices and the recovery of the economy following the crisis – and negative shocks in the electricity sector. The shortage is expected to continue into winter 2005, and capacity constraints may become binding depending upon whether or not additional investments in transportation are undertaken.

3.3. POLICY OPTIONS AND IMPLICATIONS

Argentina has made substantial progress in the recent past with regard to the condition of its infrastructure sectors, including energy. This can be largely attributed to the reform and privatization of the electricity sector initiated in 1992.

As discussed in the previous section, household access to electricity services, especially in urban areas, is considerably high. A comparison with other Latin American countries such as Brazil, Costa Rica, Guatemala, Jamaica, Mexico and Peru shows that in 1999 Argentina had the highest rate of access. Looking at more recent data, it may be concluded that the percentage of urban households[43] with access to electricity in Argentina was among the highest in the sample, very close to those of Brazil and Costa Rica.

Another major accomplishment has been the improvement of service quality achieved by electricity distribution companies. For instance, in 1992 Edesur, one of the three large distribution companies in Argentina, reported interruptions amounting to 20.65 hours per year and a total number of interruptions of 8.35. By 2002, those figures had been reduced by 72.49% and 64.91% respectively.

The results regarding the relationship between access, quality of service, and affordability were not shown. Although the percentage of GDP per capita spent on electricity in Argentina is relatively high - for instance, higher than Mexico's, a country with a similar level of development - non-residential and residential electricity prices in Argentina were only slightly above the average of its Latin American counterparts in 2000 and 2001. This can be in part

[42] For a detailed discussion on early regulatory issues, see FIEL – 1999.
[43] There is no available data for rural households.

attributed to the mechanisms of the wholesale energy market and the *price cap* system, but also to the parity between the peso and the dollar. However, Argentina's GDP per capita dropped dramatically in 2002 and 2003 due to the economic crisis and to the resulting currency devaluation, probably increasing the weight of electricity expenses within the household budget after 2001.

In terms of technical efficiency, Argentina's performance is better than that of the other Latin American countries studied. The Argentinean economy needs substantially less energy to produce one unit of GDP than the average for the benchmark countries. In fact, in this category it is outstripped only by Costa Rica and Peru. Considering the electricity sector alone, Argentina's performance is in line with that of its Latin American counterparts. Losses in transmission and distribution grids are very similar to those in Mexico, lower than those in Brazil and Guatemala, but higher than those in Costa Rica, Jamaica and Peru.

In summary, reform and privatization of the electricity system and other infrastructure sectors in Argentina has led to major investments, most of them financed by the private sector, which have increased both the quality and the coverage of services. In other words, the efficiency of infrastructure investments was considerably high. However, the level of public and private investment in infrastructure has been reducing dramatically in recent years, due to the economic crisis. For instance, private investment in energy as a percentage of GDP was 1.1% in 1998, but shrank to 0.29% in 2002. This has had a seriously damaging effect upon the condition of the infrastructure and services in Argentina which, if not reversed, may undo the substantial progress made in the recent past.

Sources of private financing of energy projects have dwindled due to the lack of predictability or reliability of regulatory structures, another consequence of the economic crisis. Financing through public funds has played a relatively small role in recent years, with public expenditure hovering around 0.11%-0.12% of GDP, indicating low fiscal dependence in the sector. Thus, given Argentina's fiscal situation, it is very unlikely that public funds will become a significant source of finance for the energy sector. It is therefore crucial for the government to successfully conclude the renegotiation of public utility concessions in order to draw back private investment. Moreover, this will become increasingly important on account of the gas crisis already affecting Argentina, with the reduction of gas reserves due in part to the lack of adequate investment.

The successful renegotiation of contracts with private companies is also a precondition for the success of any public policy targeted towards the electricity sector. There is an urgent need for a policy addressing the disconnection of many households due to nonpayment of bills, especially affecting those in the lowest income groups. In addition, the number of defaulters also increased substantially. In other words, affordability has become a serious problem. One reason for this is the high level of the fixed component of electricity tariffs, accounting for almost 50% of the total bill. There are several possible solutions that could be implemented, such as:

(i) offering consumers a menu of tariffs combining different levels of the fixed and variable parts of the tariff;

(ii) decreasing taxes on electricity services;

(iii) allowing consumers to pay bills more frequently; and

(iv) targeting subsidies more efficiently.

Whichever the course chosen, however, policy design has to be such that electricity companies are partners in the endeavor. A good approach would be to allow them to earn a fair rate of return on their capital, which has not happened in recent years. In 2002, for instance, the average return on equity was -35.71%, increasing to 3.95% in 2003.

3.4. PRIORITIES FOR FUTURE REFORMS

Any reform of infrastructure sectors such as energy can only take place after Argentina comes out of the severe crisis that caused its economy to crash and impoverished so many of its citizens. Devaluation and other emergency measures introduced by President Duhalde disrupted the Argentinean economy by dramatically changing the rules that had governed it. In this chaotic context, the government attempted to renegotiate the terms of the concessions for public utilities granted during the 1990s. Tariffs previously stated in dollars had to be converted to pesos at a rate of one-to-one and could no longer be indexed to prices in other countries. This was perceived and publicized by regulated companies as a breach of contract. The renegotiations were complicated by the fact that Argentina had bilateral trade and investment treaties providing foreign investors with certain forms of protection, which extended into the successive government of President Nestor Kirchner.

The new government did not initially seem to be interested in reaching a deal with the regulated companies, probably because it had other more important issues to deal with, such as the negotiation of a new agreement with the International Monetary Fund. In November 2003, a law was passed extending the renegotiation of contracts until December 2004. The law also authorized the Executive Branch to decide rate increases and other transitory changes regardless of the regulatory framework. In 2004, the regulator, ENRE, formally authorized Edenor, Edesur and Edelap to apply tariff increases in the range of 15% to 35% to large customers. However, residential prices did not change.

The next stage of the renegotiation process should consist of public hearings, the outcome of which is expected to be a series of new contracts between the government and the companies, which will then have to be approved in Congress. Also, the Minister of the Economy is to close transitional two-year agreements with the companies, including provisions for tariff increases. In return, the companies would have to agree to withdraw the lawsuits they have filed against the government in collaboration with international organizations.

The government is currently considering the possibility of approving a 20% increase in electricity distribution prices. On the other hand, the companies would be required to use part of their increased revenues to expand their services. From the companies' standpoint, this would amount to a new concession contract, since no more investments remain to be made according to their original contracts. They are only required to make the investments necessary to meet the quality standards set by the regulator. Needless to say the companies are not satisfied with the way the renegotiation process is being conducted.

As a consequence, there is currently almost no investment in energy generation, and the concessions for transmission and distribution of gas and electricity are under stress due to the freezing of tariffs and uncertainty about the renegotiation process. The main priority for the government should therefore be to reach an agreement with the regulated companies allowing them to run their businesses autonomously, to comply with concession obligations, and to earn a fair return on their capital. Moreover, it is necessary to strengthen the regulatory and judicial institutions in order to reassure the private sector that their investments will not be expropriated in the case of another disruptive macroeconomic event.

The government is also concerned about the difficulties faced by low-income households in maintaining their electricity service. For this reason, the treatment of social policy in tariff design is a very delicate and important part of the renegotiation process. The government intends to redesign tariff structures to ensure basic service access and affordability for low-income households. However, this must follow the principles of fiscal neutrality and economic efficiency and improve the targeting and reach of the subsidies.

Finally, the other most important aspect is the need to face the gas crisis that could affect Argentina in the future. Furthermore, particularly in the short term, the government should support the implementation of the aforementioned energy conservation plan by providing adequate publicity and information. This could be complemented by supply-side action on the part of the government, such as:

(i) the importation of about 4 MMm3/day from Bolivia, subject to completion of rehabilitation works on the existing pipeline by June 2004;

(ii) temporary reduction of exports to Chile by a maximum of 5 MMm3/day; and

(iii) other gas saving measures – importation of electricity from Brazil, reduction of electricity exports to Uruguay and flexibility for price increases.

The combination of such demand and supply options would be enough to compensate for the gas peak demand increase that could be as much as 20 MMM3/day in the winter of 2004 compared to the winter of 2003. This would allow the same level of supply interruptions to large interruptible consumers – industries and power plants – given adequate rainfall and a mild winter.

In the medium term, instead, the aim is to maintain and improve upon the results of the energy conservation program, through comprehensive energy efficiency initiatives, as the Argentinean economy has become more energy-intensive in recent years. The country's energy consumption was 25% higher in 2000 compared to 1994, though still relatively low compared to other countries such as Brazil, Chile and Mexico. This is due to the importance of non-energy-intensive commodity production in Argentina's economy.[44] While for many industries energy expenditure represents a small part of total costs – with some exceptions such as cement and paper (using gas), aluminum (electricity) and textiles (electricity and gas) – there is significant energy-saving potential in most industries through low cost measures with a short payback time. A comprehensive energy efficiency program would include actions such as communication and information campaigns, dissemination of best practices, installation of efficient equipment by energy service companies, regulatory and tariff incentives, equipment labeling, building norms, and training and education programs.

[44] Argentina's energy intensity in 2001 (7,000 Btu/US$1995) was about two thirds of that of the United States'. Carbon intensity (0.1 kg/US$1995) was about half that of the United States'.

4. WATER AND SANITATION

4.1. OVERVIEW

Until the beginning of the twentieth century, Argentina's water and sanitation sector depended mainly on private initiatives. In 1912, the government nationalized the provision of these services with the creation of *Obras Sanitarias de la Nación* (OSN), a state entity in charge of the study, construction and management of sanitation services for most of the country. Then, in 1964, the *Servicio Nacional de Agua Potable* (SNAP) was created within the Ministry of Public Health, in order to take charge of the operation of the system, with the aim of serving small communities and to creating users' cooperatives.

In 1978, the *Secretaria de Recursos Hídricos* was created under the Ministry of Public Services and Works, but it was later transformed into the *Subsecretaría de Gestión de Recursos Hídricos* (SSGRH), and to which SNAP and OSN were subordinated. In 1988, SNAP became the *Junta Federal de Agua Potable y Saneamiento* (COFAPS), which eventually evolved into the *Ente Nacional de Obras Hídricas de Saneamiento* (ENOHSA) and the *Junta Federal de Saneamiento* (COFESA).

The provision of basic sanitation services remained nationalized until the 1980s, when the government decided to decentralize the provision of services. The provinces, through provincial institutions or provincial state companies, became responsible for these services, although in some provinces responsibility for water and sanitation was attributed to municipalities and local users' cooperatives. The OSN became responsible for the provision of basic sanitation services in the Greater Buenos Aires region only, which includes the federal capital, Buenos Aires, and another 13 municipalities within the region and connected by the same water and sewerage system. In 1991, a year before the beginning of the privatization process, this region had a population of about 8.6 million people, of which approximately 70% were served by the water supply and 58% by the sewerage system.

Over the years, service provision by OSN in Greater Buenos Aires has manifested a series of problems similar to those of many other companies operating in Latin America and in the rest of the world:

(i) great loss of invoicing in the distribution network;

(ii) high number of employees per 1,000 connections, a low productivity efficiency index; and

(iii) low consumption index.

Because of poor performance, the poor administration of basic sanitation services and insufficient public resources for making the necessary investments, the privatization of services in this sector, and of OSN in particular, began to be seen as the only solution to the problems. The privatization of water and sewerage services, which had been initiated in 1991 in the province of Corrientes, and was followed in 1992 by the services provided by OSN in Greater Buenos Aires, was expanded. At the same time, regulatory entities were established. There was an increase in the transferal of service management from the provinces to the municipalities, resulting in the creation of municipal operator institutions or users' cooperatives; in some cases the municipalities authorized the assignation of responsibility for services to the private sector.

In fact, the private sector provides a large part of basic sanitation services, although the state continues to exercise a regulatory function. Despite some advances in coverage and recovery of investments due to sector reforms, several problems still remain:

(i) deficiencies in coverage, mainly in low-income groups; and

(ii) inadequate service quality, especially regarding sewerage treatment.

This means that not all the privatization objectives have been reached, and a number of problems need to be resolved to enable the sector to reach adequate levels of technical efficiency and universal service provision.

4.2. ASSESSMENT OF THE KEY POLICY AREAS

4.2.1. ANALYSIS OF THE TECHNICAL DIMENSIONS OF THE SECTOR

The first key element to be considered in assessing the technical dimensions of the sector is the coverage of services in terms of the percentage of the population with access to these utilities.

First, in considering the ***access to water the network***, it is important to note that, as indicated in Table 4.1, in 2000 only 67% of the Argentinean population was directly connected to the network, the percentage increasing to 78.55% when including the population reporting reasonable access to improved water sources. The remaining 21.45% of the population was not served by any other source. Second, and equally important, is the difference between urban and rural areas in terms of access to services. In 2000, 72% of the urban population reported a direct connection to the network, rising to 84.70% when combined with those reporting reasonable access to water sources. However, in rural areas only 29.82% of the population had access to water sources (27.43% with direct access to the network combined with a further 2.39% with reasonable access).

Table 4.1 – Water coverage: Percentage of population – 2000

	Total	Urban	Rural
With Connection	67.00	72.00	27.43
Without Connection - **Reasonable Access** [1] - **Without Service**	33.00 11.55 21.45	28.00 12.70 15.30	72.57 2.39 70.18

Source: Pan American Health Organization

[1] *Availability of at least 20 litres of safe water per person per day from a public water point (public standpipes, rain water collection, etc.) located within 200 meters from users*

It is also important to compare conditions in Argentina with:

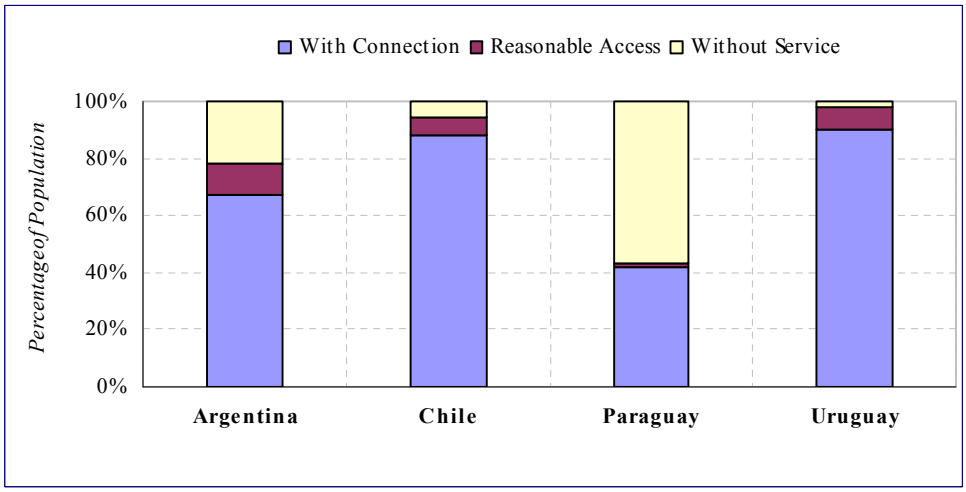
(i) the performances of those countries which, along with Argentina, compose the Southern Cone, namely Chile, Paraguay and Uruguay; and

(ii) the values presented by the benchmark groups subject to the current analysis, namely the regional average and the performances of higher middle-income countries.

First, it is apparent that Argentina is the worst of the countries in the Southern Cone for providing water coverage, with the exception of Paraguay. In fact, as indicated in Figure 4.1, Uruguay and Chile reported that only 2.25% and 5.82% of their respective populations did not

have access to water in 2000; the figure for Argentina was far higher and was exceeded only by Paraguay, in which 56.38% of the population was without service.

Figure 4.1 – Water Coverage – 2000



Source: Ernst & Young Italy and Cohen&Co. elaborations on data from Pan American Health Organization

[1]This is the sum of the percentage of the population with direct access to the network and the percentage of population with at least 20 litres of safe water per person per day from a public water point (public standpipes, rain water collection, etc.) located within 200 meters from users.

Table 4.2 – Water Coverage: Percentage of population – 2000

	Costa Rica	Argentina	Brazil	Mexico	Higher middle-income countries
With Connection	89.22	67.00	75.28	84.99	79.12
Without Connection	10.78	33.00	24.72	15.01	20.87
Reasonable Access	5.77	11.55	13.74	1.55	8.15
Without Service	5.01	21.45	10.99	13.46	12.72

Source: Ernst & Young Italy and Cohen&Co. elaborations on data from Pan American Health Organization

[1]This percentage is the sum of the one of people having direct access to the network with the percentage of population having at least 20 litres of safe water per person per day from a public water point (public standpipes, rain water collection, etc.) located within 200 meters from users.

Second, Argentina's performance also appears highly unsatisfactory by comparison with both the regional average and that of the main benchmark group, the higher middle-income countries. In fact, as shown in Table 4.3, overall values for Argentina in 2000 were lower than the regional average and that of the higher middle-income countries. In particular, Argentina's level of coverage in rural areas was 29.80%, and therefore far behind the regional average and that of the higher middle-income countries, at 62.73% and 63.43%, respectively. Compared with Brazil and Mexico, which are considered to be the main benchmarks for Argentina in the region, the country showed very poor performance, especially relating to rural areas.

Table 4.3 – Water Coverage: Total, Urban and Rural Areas

	Argentina	Brazil	Mexico	Higher middle income	Regional Average
Access to improved water sources[1]	78.60	89.00	86.50	87.28	84.98
Urban Areas	84.70	95.70	94.50	93.63	95.17
Rural Areas	29.80	65.00	64.60	62.73	63.43

Source: Ernst & Young Italy and Cohen&Co. elaborations on data from Pan American Health Organization

[1]*This is the sum of the percentage of the population with direct access to the network and the percentage of population with at least 20 litres of safe water per person per day from a public water point (public standpipes, rain water collection, etc.) located within 200 meters from users.*

The situation is more serious with regard to ***sanitation services***. Because of the environmental factors connected with sanitation services, the problem of collecting and treating sewage is a serious issue for the sector. Moreover, the percentage of the population in Argentina with direct access to sanitation services is even more limited than in relation to the provision of water. Table 4.4 shows that in 2000 nearly 84% of the population had access to the services, considering both connection and on-site installations, but only approximately 49% were connected to the network. As in the water service sector, there are serious discrepancies between urban and rural areas. In urban areas almost 55% of the population had a connection to sanitation services and about 34% of the population had on-site waste water disposal installations, giving a total of nearly 89% of the population with access to sanitation. However, in rural areas only 1% of population had a direct waste water disposal connection and nearly 47% had access to on-site sanitation systems, leaving 52% of the population without service.

Table 4.4 – Sanitation coverage: Percentage of population – 2000

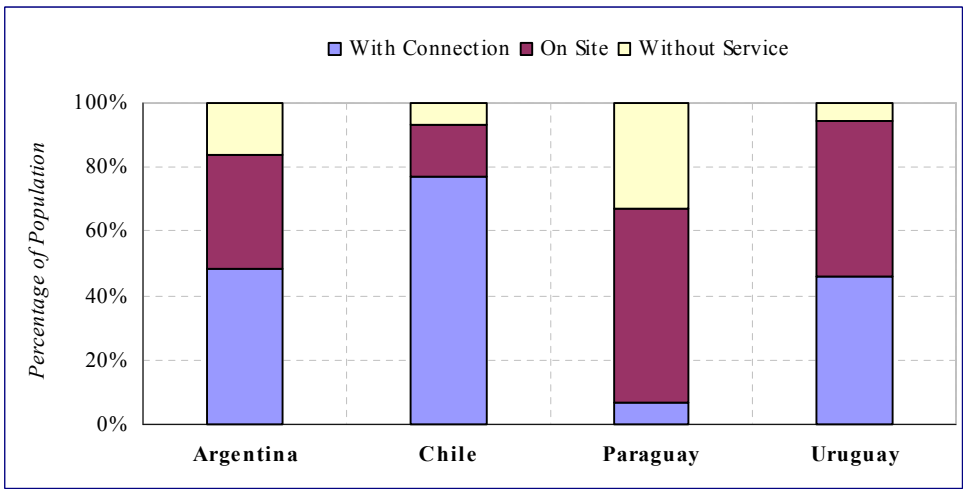
	Total	Urban	Rural
With Connection	48.69	54.70	1.00
Without Connection - **OnSite** [1] - **Without Service**	51.31 35.26 16.05	45.30 33.82 11.48	99.00 46.69 52.31

Source: Pan American Health Organization

[1]*On site sanitation system includes any of the following technology: connection to septic systems; latrines, wet or dry, etc. Obs.: Adequate disposal of human excreta refers to use of a private or shared satisfactory sanitary means of excreta disposal, as above, hygienically separating human excreta from human contact.*

Furthermore, comparing Argentina's performance with that of the other Southern Cone countries, it is evident that the situation in relation to sanitation is quite different from water services coverage. In 2000 coverage in Argentina, considering only direct connections, was higher than in Paraguay and Uruguay but far behind Chile. However, regarding the proportion of the population with no access to any kind of sanitation service, the Argentinean value of 16.05% was worse than that of Chile, at 6.64%, and Uruguay, at 5.63%, but still remained higher than the Paraguayan performance of 32.88%.

Figure 4.2 – Sanitation Coverage – 2000



Source: Pan American Health Organization

[1]*On site sanitation system includes any of the following technology: connection to septic systems; latrines, wet or dry, etc. Obs.: Adequate disposal of human excreta refers to use of a private or shared satisfactory sanitary means of excreta disposal, as above, hygienically separating human excreta from human contact.*

Table 4.5 – Sanitation Coverage: Percentage of Population – 2000

	Costa Rica	Argentina	Brazil	Mexico	Higher middle-income countries
With Connection	21.01	48.69	47.50	58.35	43.88
Without Connection	78.91	51.31	52.50	41.65	56.09
On site	72.51	35.26	37.72	14.12	39.90
Without Service	6.48	16.05	15.18	27.53	16.31

Source: Ernst & Young Italy and Cohen&Co. elaboration on data from Pan American Health Organization

Also comparing Argentina with the regional average and the main benchmark group, the higher middle-income countries, Table 4.6 shows that in terms of sanitation coverage (direct access to the network or on-site sanitation system), the country performed worse than both benchmark groups, both in rural and in urban areas. Furthermore, Argentina was shown to be far behind the main benchmark countries, Brazil and Mexico.

Table 4.6 – Sanitation Coverage: Percentage of Population – 2000

Access to improved sanitation[1]	Argentina	Brazil	Mexico	Higher middle income	Regional Average
Urban Areas	88.50	93.60	94.50	89.48	90.43
Rural Areas	47.70	53.00	64.60	57.48	65.37

Source: Ernst & Young Italy and Cohen&Co. elaborations on data from Pan American Health Organization

[1]This percentage is the sum of people with direct access to the network and the percentage of the population with access to on site sanitation systems.

Lack of coverage in the water and sanitation services therefore constitutes a serious problem for Argentina; however, it is important to highlight the greater deficit in service provision for low-income groups. In fact, according to Foster:

(i) in the first quintile of income, only 40% of metropolitan dwellings had access to a sewerage system; and

(ii) in the fifth quintile coverage reached approximately 80%.

Regarding access to water sources in the metropolitan region, these values reached 70% and 90% respectively.

However, the low level of coverage is not the only problem faced by the Argentinean water and sanitation sector. The level of ***service quality*** is unsatisfactory, with regard to the percentage of collected sewerage treated and the wide environmental problems that this situation causes. Table 4.7, comparing the percentage of sewage treated in the Southern Cone countries, shows that Argentina reaches a level of 10.00% – lower than Chile at 16.70% and far behind the Uruguayan figure of 76.92%, but higher than Paraguay at 8.00%. In addition, it should be noted that, according to the Pan American Health Organization (PHO – 2000), the level of water treated is different between Argentina's regions. In fact, while in some provincial capitals, such as Mendoza, Córdoba, Tucuman, and San Juan, the level of sewage treated was very high, in Buenos Aires and Rosario, the two largest urban areas of the country, sewerage treatment practically did not exist, with sewage discarded into rivers. As a result, Argentina experiences greater environmental problems, especially regarding superficial water contamination, than might be expected given its level of development.

With regard to the other indicators analyzed in relation to service quality, the data for Argentina, as indicated in Table 4.7, were similar to those of the other Southern Cone countries.

Table 4.7 – Water and Sanitation Sector: Quality Indicators – 2000 – Selected Countries

	Argentina	Chile	Paraguay	Uruguay
Water supply time (hours per day)	24	24	n.a.	24
Urban water decontamination degree (%)	98.0	100.0	100.0	100.0
Collected sewage treated (%)	10.0	16.7	8.0	76.92

Source: Pan American Health Organization

In addition, two important indicators need to be considered when evaluating ***service providers' technical efficiency***:

(i) *unaccountability of water*, which refers to the water produced but not charged for; and

(ii) *percentage of drinkable water supply systems working in rural areas*, which indicates the share of the existing water supply systems utilized in rural areas.

In Argentina in 1999 almost 33% of water was unaccounted for, reflecting measurement problems in water distribution and difficulties in applying charges.

With regard to the water supply systems in rural areas, Argentinean performance is satisfactory since in 2000 all of them were functioning, according to the PHO; this result was also achieved by Uruguay. By comparison, the percentage of rural systems operating in Chile and Paraguay were 93% and 98%, respectively.

In conclusion, the main problems and deficiencies in the Argentinean water and sanitation sector are the following:

(i) low access both to water and sanitation services, mainly in rural areas, where the cost of providing services is higher than in urban areas;

(ii) environmental problems, with very low levels of collected sewage treated; and

(iii) low technical efficiency of the services, with measurement problems in water distribution and difficulties in applying charges.

A large amount of investment is required and the sector needs to be restructured in order to improve efficiency.

4.2.2. ECONOMIC EFFICIENCY AND PRIVATE SECTOR FINANCING

To analyze the ***economic efficiency*** of the water and sanitation sector – or rather, the capacity for investment and the recovery of costs by providers – the first information to be examined is the level of production and distribution costs sustained by the providers, and the tariffs applied to the consumers.

Concerning the costs, it is important to state that the indicator considered – *water production and distribution cost* – includes neither the capital cost of investments nor non-invoiced and non-received water loss. In addition, according to PHO information reported in Table 4.8, in 2000 the mean cost of producing and distributing drinkable water in Argentina was US$ 0.25 per m³, similar to the values given for the other Southern Cone countries – US$ 0.26 per m³ and US$ 0.25 per m³ for Chile and Paraguay respectively. The slightly higher cost of US$ 0.32 per m³ was reported for Uruguay.

The mean tariff paid for drinkable water in Argentina was US$ 0.48 per m³, while that of sewerage services, which is a percentage of the water tariff and is measured according to water consumption, amounted to US$ 0.31 per m³. Table 4.8 shows that the drinkable water tariff is higher in Argentina than in the benchmark countries considered, although data for Uruguay are unavailable. In addition, Argentina's sewerage tariffs are higher than those of Chile and Paraguay, but much lower than Uruguay's. It should be noted that Uruguay offered the highest levels of quality and coverage in water and sanitation services among the Southern Cone countries, which explains its higher costs and tariffs.

Table 4.8 –Production and Distribution Costs and Tariffs: US$/m3 – 2000

	Argentina	Chile	Paraguay	Uruguay
Water production and distribution costs	0.25	0.26	0.25	0.32
Mean tariff: drinkable water	0.48	0.38	0.35	-
Mean tariff: sewerage	0.31	0.19	0.17	0.58

Source: Pan American Health Organization

It is important to state that, as previously noted, coverage of water and sanitation services in Argentina is low, and quality unsatisfactory, despite the high levels of tariffs. In addition, the Argentinean tariff system is relatively confusing, in that it involves two collection methods.

A significant percentage of the system is based on the presumed consumption model, established by the former OSN. This model is characterized by a tributary profile as its main objective is water collection and estimation of consumption according to user features, including location of residence, type of dwelling, terrain and dwelling size. This model is therefore similar to other models which estimate tax values on urban property, but the inspiring principle is far from the idea of payment for a determined service. Moreover, this model also represents an attempt at introducing cross-subsidy mechanisms, with higher purchasing users paying more than users in the low-income groups.

The above system coexists with the one of payment for measured service, based on payments according to consumption – measured – of water and sewerage. This method began to receive attention in the 1990s with investments in hydrometers, when concession contracts began to foresee limits for transforming the "estimated accounts" into real measures. The tariff depends on two elements:

(i) a fixed part, which depends on factors linked to the concept of presumed consumption and may include a minimum established consumption level; and

(ii) a variable part, which depends on effective consumption.

It should be noted that in many cases the minimum established consumption level is higher than the average residential consumption, raising the tariffs for small users and/or stimulating wastefulness. This aspect is relevant considering that the average expenditure for water and sewerage equals 2.6% of family income in Argentina; it reaches almost 5% in the first quintile and about 1.2% in the fifth quintile[45], thus generating payment distortions for poorer families.

[45] Source: OPSM research (2002) mentioned by Foster (2004).

In an analysis of the presence of the private sector in Argentinean water and sanitation sector it is important to note that, as mentioned previously, the low level of efficiency of Argentinean water and sanitation systems created an opportunity for privatization in the 1990s. Privatization aim to increase investment in the sector and to improve service quality and efficiency. Several kinds of providers have participated in the sector, including joint-stock companies of private capital, cooperatives and local associations, municipalities (linked to the town hall), provincial companies and organizations. However, after a decade of private participation, some indicators remain unsatisfactory. Table 4.9 documents the composition of the market according to the different kinds of providers, indicating the percentage of population to which each provider offered service in 2002. Private providers are clearly prevalent, providing more than 60% of the population with access to services, followed by the municipal providers, which served nearly 34% of the population.

Table 4.9 – Argentina: Number of Basic Sanitation Services Providers per Type – 2002

Type of provider	Percentage
Municipal	33.7
Provincial	1.1
Provincial State Soc.	0.2
Municipal State Soc.	0.1
ENOHSa management	0.1
Joint-stock State Capital	0.1
Other Public	2.2
Total Public	**37.3**
Joint-stock Private Capital	1.3
Cooperative	38.9
Vicinal Union	2.1
Vicinal Group	18.3
Other Private	2.0
Total Private	**62.7**
Total	**100.0**

Source: Sistema Permanente de Información de Saneamiento Argentino SPIDES

This large number of providers, each with different management methods, causes significant differentials in technical and economic performance indicators. The historical national index with regard to invoicing loss – unaccounted for water, for instance – had previously been at about 50%; this value has been now reduced to an average of 26% due to increasing private participation. However, it is important to specify that whereas for the private companies, whose water and energy collection is carried out jointly, this indicator reaches a value of 7%; for municipal providers the value observed is about 60%.

In addition, while in private companies the tariff covers all the costs sustained – fixed, operational, maintenance, capital – in public companies the tariff covers operational costs only. Thus, in the case of the private companies, the cost of investment is recovered in business, enabling the advancement of resources. In public companies, however, since business does not create a surplus for financing investments, resources for financing investments may come either from consumers' contributions or from the transfer of budgetary resources.

A peculiar characteristic of the private sector in water and sanitation in Argentina is that the major joint-stock companies act mainly in large urban centers, and tend to target investments to those groups showing high purchasing power in order to achieve profits. However, concessions contracts did not clearly regulate the expansion and universalization of service. Therefore, aside

from increasing service quality, the expansion of sanitation services into marginal areas represents the main challenge for this sector. Nevertheless, to achieve such results, it will be necessary to investigate specific public policies directing resources for this purpose or introducing incentive mechanisms and/or subsidies in concessions contracts so to foster investments in marginal areas.

In this respect, regarding the values in Table 4.10, it is worth noting the differences between urban and rural areas in terms of the cost of water and sanitation services. In all cases considered, connection costs in rural areas are far higher than those in urban areas. This points to the need to create an effective policy of intervention aimed at stimulating necessary investments in the sector, especially in rural areas where there are also problems associated with the higher costs incurred by operators, and also to consider the possibility of adequate public investment to solve the problem of access in rural areas.

Table 4.10 – Costs for the Improvement of Access to Water and Sanitation Services in Urban and Rural Areas

	Urban Areas	Rural Areas
Mean cost to enable a domestic connection to drinkable water (US$ per person)	130.00	250.00
Costs in instituting a public source of water (US$ per person)	90.00	170.00
Costs for a domestic connection to sewerage system (US$ per person)	250.00	400.00

Source: Ernst & Young Italy and Cohen&Co. elaboration on data

4.2.3. REGULATORY FRAMEWORK AND INSTITUTIONAL DEVELOPMENT

Until the end of the 1980s, the government had traditionally provided water and sanitation services in Argentina through *Obras Sanitarias de la Nación* and provincial or municipal entities. In the early 1990s, there was an important shift towards fostering private investment in the sector, mainly because persistent deficits created a public perception of poor performance. In fact, in the beginning of the 1990s, two service provision concessions were granted. The first was in the metropolitan area of Buenos Aires – *Aguas Argentinas* – and the second in the province of Corrientes – *Aguas de Corrientes*. The process continued in other provinces throughout the following years.

The legal framework for the metropolitan concession was based on Law 23,696 of the State Reform[46], which included OSN as a candidate for concession, Decrees 1,443/1991 and 2,408/1991 and Resolutions from the ex-Secretariat of Public Works and Communications, which defined the rules for the concession process and awarded the contract to *Consorcio Aguas Argentinas* (AASA). This company provides water and sanitation services to the city of Buenos Aires and the 13 municipalities of Greater Buenos Aires.

Given the multi-jurisdictional character of the concession area – the capital city and cities of the province of Buenos Aires – the regulatory agency *Ente Tripartito de Obras y Servicios Públicos* – (ETOSS) was composed of representatives of the nation, the province of Buenos Aires and the city of Buenos Aires. ETOSS's main objectives are to monitor the service quality, represent

[46] This section is based on the metropolitan area served by *Aguas Argentinas*.

consumers and ensure the implementation of the contractual agreements. ETOSS's revenues are collected from fees on company revenues – revenues from fines go to end-users. The board members, who are appointed by the respective Executives (nation, province of Buenos Aires and city of Buenos Aires), stay in office for six years, and can be re-elected. ETOSS permits discretional decisions, given that such decisions are subject only to ex post auditing rather than open hearings.

The AASA concession contract established that tariffs and charges should allow the concessionaire to cover its operation, maintenance and investment costs, and a reasonable return from efficient operation. Charges are revised every five years and are adjusted according to the five-year plans for improvements and expansion of the system.

The method of service provision followed the same pattern as in other Latin American countries, but in terms of the government level at which regulation was defined, it was similar to countries such as Mexico, and quite different to Chile. This latter followed a policy of centralization of norms, after several years of decentralized regulation and provision. The most significant reforms in Chile were initiated in the late 1980s with a new regulatory framework for the sector, centralizing a great part of the regulations on provision. This framework was based on the electricity sector, with the application of a price cap regulation with a reasonable return under efficient operation – "*empresa modelo*". In 1989, it created the regulatory body *Superintendencia de Servicios Sanitarios* (SISS). SISS was in charge of inspecting the sector and regulating charges and fees. This institution enabled the pre-existing dual role of operator and regulator to be broken up. In 1989 public operators were converted to corporations, and in 1997 they were privatized after an important re-accommodation – increase – of prices. The privatizations pursued a double objective:

(i) obtaining private resources to finance infrastructure and services; and

(ii) facilitating the exit of government from productive activities.

However, there was some debate as to whether the government should have granted concessions instead of privatizing the companies.[47]

As mentioned above, the AASA concession contract was comprehensive with regard to tariffs and charges, revision of charges, investment plans, etc. However, according to several evaluations, the original contract presented several flaws[48]:

(i) the regulation of both ends and means – quality of water *vis-à-vis* investment plans;

(ii) the mechanism of – extraordinary – tariff review, which was triggered by external factors but provided for price adjustment based on real costs, and gave room for negotiations on which costs should be included or not;

(iii) the regulatory framework established that the remuneration for services and investments should consider an adequate return on capital, without distinguishing between its own and third party capital; and

(iv) the price system based on property value rather than consumption, which biased effort to increase the value of the cadastral base and created cross-subsidies.

There were also other causes of conflict, such as the projections of cash flow, requests for speeding up investments, environmental contingencies, etc. All these conflicts finally ended in a two-year renegotiation of the contract between 1997 and 1999. Additional conflicts arose directly after the renegotiation, due to modifications to the second five-year investment plan and the tariff schedule defined in the first renegotiation. A second renegotiation started in 2001 and

[47] Source: Fischer and Serra (2003), "*Efectos de la Privatización de Servicios Públicos en Chile: Caso Sanitario, Electricidad y Telecomunicaciones", Serie Estudios Económicos y Sociales, IDB.*

[48] Source: FIEL (1999) and Artana *et al*. (2000).

was interrupted by the breach of contract accompanying the exit to convertibility.[49] The AASA contract is currently under global review.

4.3. POLICY OPTIONS AND IMPLICATIONS

The main issues Argentina needs to deal with in the water and sanitation sector are low coverage, especially in rural areas, poor service quality and the need to improve the system of sewage treatment on account of its serious environmental impact.

In fact, the participation of the private sector has enabled the generation of resources (coverage of costs through tariffs), permitted an increase in investment and obtained an adequate level of efficiency, e.g., in reducing the bulk of non-invoiced water. However, these positive aspects have been restricted only to areas offering profits to private entities; this means that investments have been made in large urban centers where there are groups with high purchasing power. When public providers maintain the administration of the water and sanitation sector, they have trouble in generating resources since the tariffs that are applied, when possible, cover only operational costs. Public providers have become insufficient in expanding the sector and also in maintaining the system in many cases.

The autonomy of provinces implies that each of the several regulatory bodies is able to formulate various concessions contracts, specifying differing performance limits, types of services provided, tariff rules, expansion and coverage limits, and so on. This has given rise to the development of a highly heterogeneous system with unspecific features, and has generated great difficulty in defining a suitable intervention policy. Moreover, the absence of a coordinated "National Policy" hinders attempts to define appropriate sources of financing to enable the expansion of services to marginal areas.

Another important issue is that during the 1990s the Argentinean government was concerned about the low service coverage in the country. The Convertibility Law of 1991 permitted the definition of tariffs in dollars for public services and facilitated the revision and renegotiation of concessions contracts (also establishing expansion limits for services). In January 2002, the Convertibility Law was repealed and the exchange crisis of 2001/02 brought about a major depreciation of the national currency, which would have caused a significant tariff increase in the national currency if the regulations had been maintained. The government decided to convert those tariffs into "pesos", without compensation for the serious depreciation of currency. This decision gave rise to an as yet unconcluded process of contract renegotiation which has contributed to the stagnation of investments and to a lack of change in the indicators presented.

4.4. PRIORITIES FOR FUTURE REFORMS

The future of the Argentinean water and sanitation sector depends heavily on some important objectives which must be reached in order to guarantee sustainable development in the sector:

(i) definition of appropriate financing sources for the expansion of water and sanitation services to the marginal population in rural areas and to low income groups, both by establishing incentives to private providers and by offering support to the municipal providers to improve efficiency and to find resources for investment;

[49] The contract renegotiation between AASA ended up in an agreement. It must be noted that in other cases the renegotiation ended up in legal battles and international arbitrations (*Aguas de Aconquija* in the province of Tucumán and *Azurix* in the province of Buenos Aires).

(ii) creation of a national regulatory agency to unify and assist provincial agencies, to define basic parameters for this sector, to establish uniformity of quality rules for services across the several provinces, and to monitor the application of a common national policy on water and sanitation;

(iii) development of a policy to provide for the strengthening of provincial institutions and to study training and technical qualifications in the sector, with the participation of research centers and universities;

(iv) development of an information system to keep track of the several service providers and to facilitate benchmarking;

(v) encouragement of increased community participation in order to overcome conflicts more easily, to better define rules and to guarantee the continuity of policies independently of political changes;

(vi) adaptation of concessions contracts to the new macroeconomic context, providing guarantees of profitability to private operators, and redefining the service provision with regard to quality and expansion of coverage. The contracts could also start to include instruments of social policy such as social tariffs and subsidies, specifying the development of partnerships with the public sector to reach social objectives;

(vii) creation of environmental policies to stimulate the better use of water and to reduce the negative environmental impact of inadequate service provision; and

(viii) collaboration between government and private operators to deal with the need for resources for investment. Creation of resources in this sector may thus be obtained through gains in efficiency and the coverage of costs by tariffs, utilizing fiscal resources for social policy ends.

5. TELECOMMUNICATIONS

5.1. OVERVIEW

In 1990, Decree 60-90, created two large companies, *Sociedad Licenciataria Norte S.A.* and *la Sociedad Licenciataria Sur S.A.*, dividing basic telephony services into vertically integrated companies. This was essential at the time as the industry was poorly managed under the state-owned company, ENTel. Therefore, the government decided to adopt a policy of privatization process establishing a temporary duopoly for seven years (with a possible extension of up to three years) for telecommunications. In addition to voice transmission, the monopoly was also extended to international services, including data transmission, telex, direct rented lines and value-added services. A public bid was held in 1990 and the winners were Telefónica de Argentina, to serve the southern parts of the country, and Telecom Argentina, to serve the northern areas. Telintar, an entity co-owned by Telecom Argentina and Telefónica de Argentina was formed to provide long-distance services throughout the country. Telintar's assets were divided between the two companies in May 1999.

In 1990, the new regulatory framework established that *Secretaria de Telecomunicaciones* would formulate telecom policy. It also created the *Comision Nacional de Telecomunicaciones* (CNT), a quasi-independent regulatory body that operated as a decentralized entity of the Ministry of Communications and issued licenses, had antitrust powers and issued technical standards. In 1996, the government transferred all regulatory powers to the Secretariat of Communications, and CNT was merged with the *Comisión Nacional Correos y Telégrafos* in *Comisión Nacional de Comunicaciones* (CNC). CNC concentrated powers of control in telecommunications and postal services.

The gradual liberalization of the market began in 1997, and public telephony was opened to competition in 1998. In June 1999, CNC awarded six new Personal Communications Services (PCS) licenses among 19 interested bidders. Then, in November 1999, two new consortia entered the fixed telephony market to compete with the incumbents. One consortium was led by GTE (the operator of CTI Móvil) and the other by BellSouth (controller of Movicom). Full competition was introduced in November 2000 with deregulation affecting cellular communications, paging, truck radio, data communications, cable television and value-added services markets.

The main features of the Argentinean telecommunications sector at present are the following:

(i) the tariff system has remained frozen since 2002, due to the effects of the economic crisis; a new renegotiation of licenses should begin in 2005, along with the introduction of a new service price system;

(ii) full liberalization is still to be reached throughout the country; and

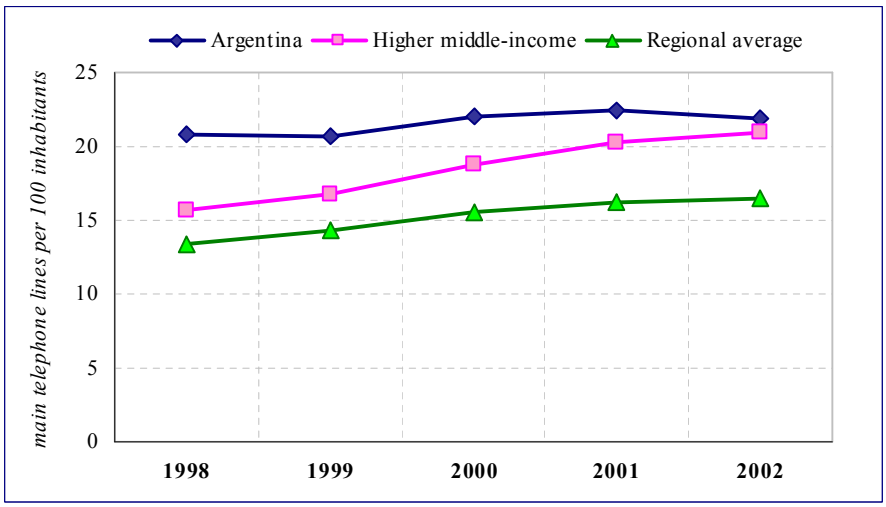
(iii) there is a difference in the levels of service coverage between the most dynamic areas of the country – i.e. southern Argentina and Greater Buenos Aires – and the marginalized areas – i.e. northern Argentina.

5.2. ASSESSMENT OF THE KEY POLICY AREAS

5.2.1. ANALYSIS OF THE TECHNICAL DIMENSIONS OF THE SECTOR

In analyzing the technical dimensions of the telecommunications sector, the first important aspect to evaluate is ***service coverage*** in the country. As seen in Figure 5.1, during the period 1998-2002, Argentina's service coverage level in terms of fixed lines steadily increased until 2001, when it reached a value of 22.38 "*main lines per 100 inhabitants*". Then, in 2002, this figure dropped to 21.88, showing a decrease in performance of about 2%, presumably due to the effects of the crisis Argentina underwent in those years. It is important to emphasize, however, that in the period 1998-2002 the number of Argentinean mainlines per 100 inhabitants was both consistently higher than the regional average and that of the countries with similar levels of development, i.e. the higher middle-income countries. In particular, when analyzing the data for 2002, it is evident that the number of *main lines per 100 inhabitants* in Argentina (21.88) was decidedly higher than the regional average of 16.50, and although it had decreased that year, it was still above the higher middle-income countries' average of 20.98.

Figure 5.1 – Fixed Density



Source: World Telecommunication Indicators 2004 – International Telecommunication Union (ITU)

The increasing trend in fixed telephony service coverage indicated in Argentina in the period 1998-2001 already had started in 1990, when Telefónica de Argentina won exclusive seven-year rights to operate fixed-line services in the south and in central Buenos Aires. It had acquired the most dynamic areas in the country, including the financial district of the capital, and due to the privatization process, beginning with the entry of Telefónica into the sector, the Argentinean telecommunications sector increased the mainlines per 100 inhabitants from 11 in 1991 to 21.88 in 2002.

With regard to the telecommunications infrastructure stock, it is important to note that by the end of 2003 Telefónica de Argentina, which owns the greatest share of the market in fixed telephony, had a telecommunications network of approximately 4.24 million lines in service (LIS), including ADSL, demonstrating an increase of 0.5% from the 4.22 million LIS it held in

2002. Furthermore, although by mid-2004 the penetration of ADSL had increased 140% from the year before, the Argentinean figure is lower than those for comparable services in Chile or Peru; this appears to be a negative aspect characteristic of the telecommunications sector in Argentina.

The other major operator present in the fixed telephony market is Telecom Argentina, which operates the fixed-line network in the north of the country as well as in the outer parts of Buenos Aires. Given that these regions are poor, the company has a smaller market share than its rival, *Telefónica*. In fact, by end of 2003 Telecom Argentina claimed to have 3.65 million LIS, an increase of 2% since 2002.

In addition to the two operators mentioned above, the following main competitors are also present in the market:

(i) Movicom BellSouth; and

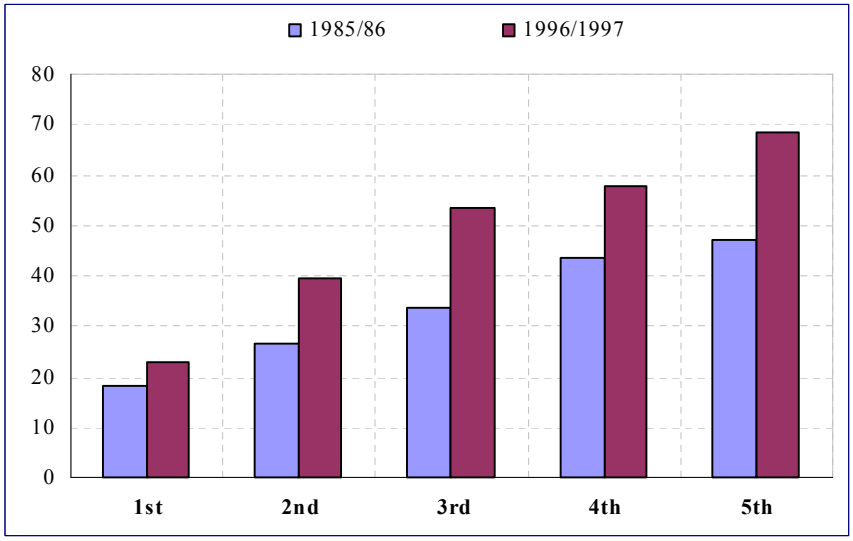
(ii) Compania de Telecomunicaciones Integrales.

Movicom BellSouth, formerly known as *Compañía de Radiocomunicaciones Móviles* (CRM), has been offering mobile services in Argentina since 1989, and in January 1999 it was awarded a license to compete in the fixed-line market from November 1, 1999. Integrales, however, is one of the newer operators which entered the market in May 1999 so as to take advantage of liberalization in the Argentinean fixed-line market.

Following the liberalization of the public telephony sector, some 135 rural cooperatives – each of them owning a small market share – were formed throughout the country with the aim of providing telecommunications services in communities with fewer than 300 people. The establishment of these rural cooperatives was due to the fact that the country's main problem relating to fixed telephony is the disparity of service between the different areas. In fact, at the end of 1997, fixed-line penetration reached a value of 22.8 in the southern region, while in the northern area the value was only 17.7. These figures, rather than reflecting disparities between the performances of the two companies operating in the different zones – Telefónica de Argentina and Telecom Argentina respectively – express the differences in wealth between the two regions. Income, as illustrated in Figure 5.2, represents an important element in determining the expansion of telecommunications service throughout the population. While the most dynamic areas in the country are concentrated in the southern regions, some of the most marginalized areas are located in northern Argentina, for example in Chaco Province.

Furthermore, it should be noted that the gradual liberalization of the market beginning in 1998, which introduced the rural cooperatives, did not give rise to significant increases in coverage in rural zones as the new entrants concentrated their operations in the most promising areas of the country. Wide discrepancies in coverage still exist between the different regions of the country.

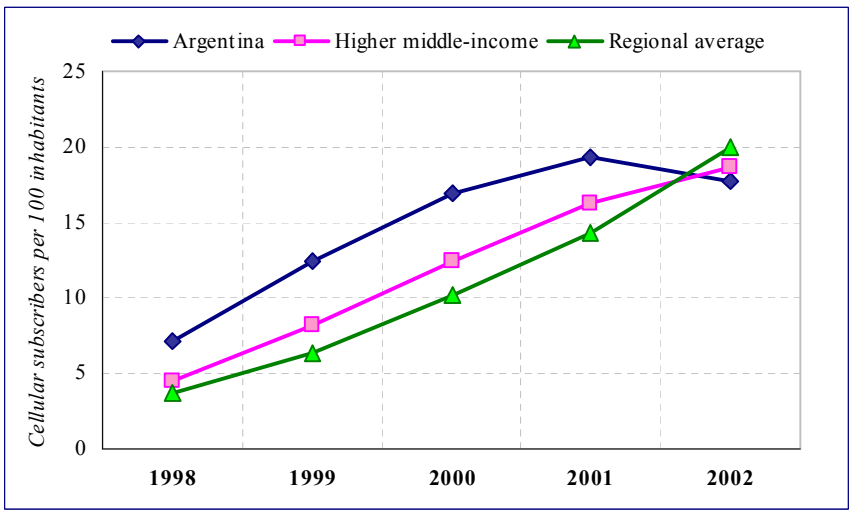
Figure 5.2 – Access by Income Group (per Quintile)



Source: INDEC

With regard to mobile telephony services, it is interesting to note that until 2004 Argentina was one of the few Latin American countries where the number of mobile subscribers was still below fixed LIS. In fact, by April 2004, mobile terminals (8.9 million) had surpassed fixed LIS (8.7 million). This has been helped by the changes in relative prices due to devaluation and to the diversification of prepaid services. Argentina's economic recovery in 2004 also brought about an impressive increase in mobile subscribers of about 50%– and an 86.9% increase in traffic – in one year, while fixed lines only increased by 5% in the same period.

Figure 5.3 – Mobile Penetration



Source: World Telecommunication Indicators 2004 – International Telecommunication Union (ITU)

However, the trend enabling mobile services to surpass fixed services, in terms of diffusion throughout the country, had already started in the period 1998-2001. In fact, as indicated in

Figure 5.3, during this period the *number of cellular subscribers per 100 inhabitants* increased more than twofold, from 7.21 to 19.26, with Argentina outperforming both the higher middle-income countries and the regional average. Moreover, growth in mobile services was faster than in the fixed-line segment, which had grown by about 7% in the same period. Then, in 2002 mobile service diffusion growth stopped abruptly because of the macroeconomic difficulties deriving from the economic crisis. At this stage Argentina demonstrated a mobile density of 17.76, lower than both the regional average of 20.01 and the higher middle-income countries' average of 18.59. Nevertheless, as indicated by the data previously mentioned, although the economic recovery was slow, it still led to mobile phones overtaking fixed lines during 2004.

The rapid spread of mobile phones was initially due to the introduction of *"calling party pays"* (CPP)[50] in 1997; however, this system was not provided by all mobile operators. Nevertheless, this helped to increase use throughout the country, more than in the United States and Europe – 400 minutes per month. At the end of September 1999, Argentina's Communications Ministry ordered all mobile service providers, which had been identified in June 1999 through the government's sale of Personal Communications Services (PCS) licenses, to adopt the practice of *"calling party pays"*.

With respect to the bid for licenses, the four companies participating paid over the minimum price the government had set:

(i) a minimum of US$ 50 million for each of the two licenses issued in the north;

(ii) US$ 40 million for each of the two licenses in the south; and

(iii) US$ 300 million for each of the licenses in the capital.

One of the two Buenos Aires licenses was won by the 50/50 joint venture of Miniphone of Telecom Argentina and Telefónica de Argentina, which bid US$ 350 million, while the other was secured by GTE, the majority shareholder of *Compañía de Teléfonos del Interior* (CTI), for US$ 301 million. Telefónica de Argentina and Movicom Bellsouth won licenses to operate in northern Argentina, with bids of US$ 56 million and US$ 53 million respectively, while Movicom and Telecom Argentina secured the concessions in the south, bidding US$ 46 million and US$ 43 million.

The resulting market structure was another main factor contributing to the widespread mobile phone use throughout the country. In fact, the number of cellular subscribers in Argentina increased by about 70% in 1999, bringing penetration of cellular telecommunication to around 12% in the same year. The bulk of this growth came from the prepaid segment, which saw a rise of more than 400% over the year. The number of prepaid service users rose from 385,000 in 1998 to almost two million by the end of 1999, making up nearly half – 46% – of the country's total installed base. Six months later, further growth was witnessed in the mobile sector, with more than 5.56 million customers signed to the country's four networks, taking mobile penetration above 15% for the first time.

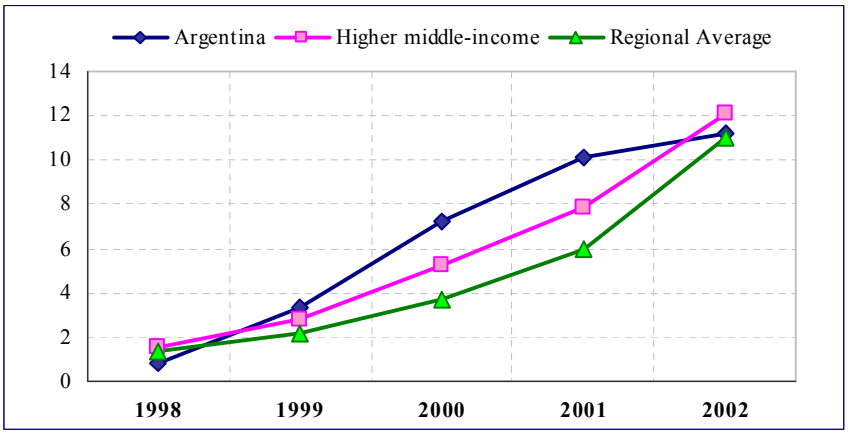
Another important feature of the market structure is that Miniphone, which had become the country's second largest mobile communications company with 820,000 subscribers by the end of September 1999, was subsequently divided between Telefonica and Telecom due to differences of opinion regarding how it should operate between the two shareholders. Therefore, Miniphone's subscriber base was divided equally between the two parent companies and its subscribers were absorbed into their respective cellular operations, Telefónica Comunicaciones Personal – operating under the banner of Unifon – and Telecom Personal. Customers were able to keep their telephone numbers and service agreements.

[50] Calling Party Pays (CPP) is the arrangement whereby the mobile subscriber does not pay for incoming calls.

Finally, it should be noted that, in 2004 the number of competing companies operating in Argentina dropped to three: in March 2004 Spain's Telefónica acquired BellSouth's Latin American companies and received governmental approval to merge Unifón and Movicom BellSouth.

Internet access in Argentina has also suffered from the effects of the economic crisis in 2001/2002. In fact, as indicated in Figure 5.4, Argentina's performance in 2002 was worse than that of the higher middle-income countries but similar, even slightly superior to the regional average. But in the period 1999-2001, after having started with an inferior position in 1998 with respect to the two benchmark groups – the number of *Internet users per 100 inhabitants* in Argentina was approximately one half of the regional average and that of the higher middle-income countries – always showing higher values when compared with the other benchmark groups in Latin America. Argentina demonstrated a sharply increasing trend in relation to this indicator between 1998 and 2001, with the number of Internet users per 100 inhabitants increasing more than tenfold. In 2002, the growth rate for this indicator was 11%, whereas the higher middle-income countries and regional average showed increases of 54% and 87% respectively, closing the gap that had been developing throughout the previous three years.

Figure 5.4 – Internet Users per 100 Inhabitants



Source: World Telecommunication Indicators 2004 – International Telecommunication Union (ITU)

Regarding the ***affordability*** of telecommunications services, as indicated in Table 5.1, the "*cost of a local phone call – US$ per 3 minutes* – in the period 1998-2001 was higher the regional average and that of the higher middle-income countries. In particular, in 2001 the average cost in Argentina was US $ 0.09, compared to US$ 0.08 paid on average in the higher middle-income countries and the regional average of US$ 0.07. This indicates the difficulties in terms of cost encountered by Argentina in acceding to telecommunications services by comparison with the main benchmark groups.

A specific consideration has to be made regarding the situation in 2002. Table 5.1 it would appear to indicate that the Argentinean situation improved significantly in 2002 since there was a tariff decrease of about 70% in one year, with the value for this indicator dropping to US$ 0.03, approximately the same level as the higher middle-income countries and above the regional average. However this decrease should be interpreted considering the events that had erupted in Argentina in 2001. In fact, the sudden decrease of the cost of a local phone call was due to the abandonment of the Convertibility Law and, therefore, of the fixed exchange rate with the US Dollar equal to one peso ($) under full convertibility. With the repeal of the

Convertibility Law, the currency stabilized at $ 3 per US dollar and the government made an unprecedented change in its public utilities policy by freezing tariffs and charges at their pre-devaluation level in pesos. The decrease can be attributed to a monetary effect determined by the fluctuation of the exchange rate and not to a real cut in the tariff level.

Table 5.1– Cost of Local Phone Call (US$ per 3 Minutes)

	1998	1999	2000	2001	2002
Argentina	0.10	0.09	0.09	0.09	0.03
Higher middle-income average	0.08	0.07	0.08	0.08	0.03
Regional average	0.07	0.07	0.07	0.07	0.05

Source: Ernst & Young Italy and Cohen&Co. elaboration on World Development Indicators 2004 data

Moreover, the same decrease of about 70% also appears when considering the *"cost of a cellular local call – US$ per 3 off-peak minutes"*. In fact, the data in Table 5.2 show that the Argentinean value for this indicator went from US$ 1.23 in 2001 (the same value for all years considered) to 0.39 US$ in 2002. This sharp decrease confirms what has already been said about the trend of tariffs in the fixed telephony sector – that changes were due to the economic crisis and the fluctuations in the exchange rate. Apart from this, it is important to mention that the Argentinean values in the period 1998-2001 were generally higher those of the higher middle-income countries and the regional average, and the drop that occurred in 2002, which more or less equaled the benchmarks, was due to the monetary causes already mentioned.

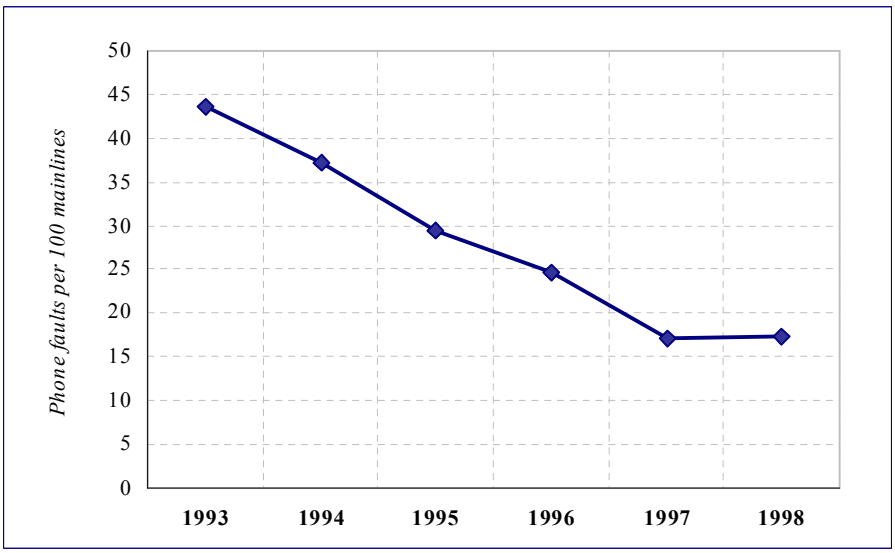
Table 5.2– Cost of cellular Local Call (US$ per 3 Off-Peak Minutes)

	1998	1999	2000	2001	2002
Argentina	1.23	1.23	1.23	1.23	0.39
Higher middle-income countries	0.74	0.66	0.67	0.67	0.31
Regional average	0.67*	0.53	0.51*	0.49*	0.36*

Source: Ernst & Young Italy and Cohen&Co. elaborations on World Development Indicators 2004 data

In relation to ***quality of service,*** the first indicator to be considered is the percentage of *"phone faults per 100 mainlines"*. According to ITU data, as illustrated in Figure 5.5, the Argentinean value for this indicator decreased in the period 1993-1998, from over 40% in 1993 to 17% in 1998, which was nonetheless a high level. However, the decrease of about 60% during this period certainly signaled good performance, especially in view of the privatization of the service.

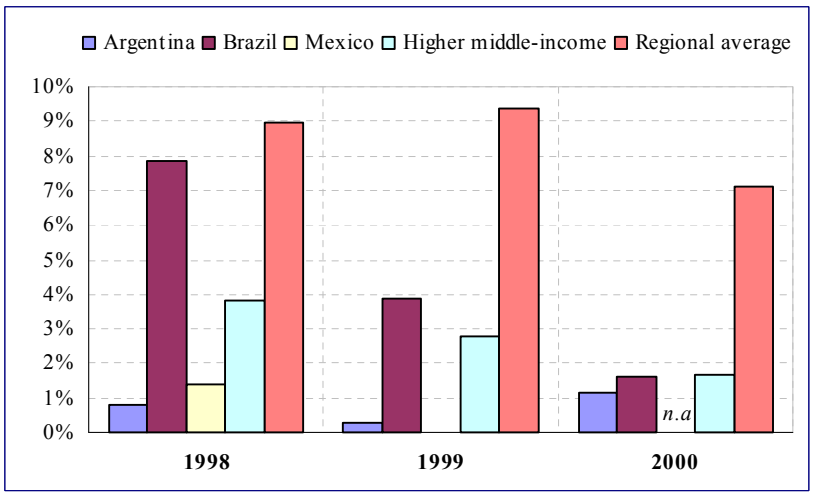
Figure 5.5 – Phone Faults



Source: World Telecommunication Indicators 2004 – International Telecommunication Union (ITU)

The other main indicator in the analysis of the quality of the telecommunications service is *"unmet demand"*. As demonstrated in Figure 5.6, in the period 1998-2000 performance in Argentina was better than both the regional average and that of the higher middle-income countries. This means that the country had a more efficient system in responding to market demand for new installations by comparison with the main benchmark groups considered. Moreover, the figures presented by Argentina are far better than those of Brazil, especially when considering years 1998 and 1999, and of Mexico for 1998 (the only year in which data are available). The negative aspect is that Argentina had the only increasing trend for unmet demand in the period considered. In fact, Argentina's value of unmet demand increased by about 48% between 1998 and 2000; moreover, the increasing trend is concentrated only in the period from 1999 to 2000, compared to decreases of 21% and 56% for the regional average and the higher middle-income countries respectively. Moreover, Brazil had decreased unmet demand by 80%, explaining the shrinking gap between the two countries. In effect, in 2000 unmet demand for Argentina was 1.17% compared to 1.59% for Brazil, while in 1998 the values for Argentina and Brazil were 0.79% and 7.84% respectively.

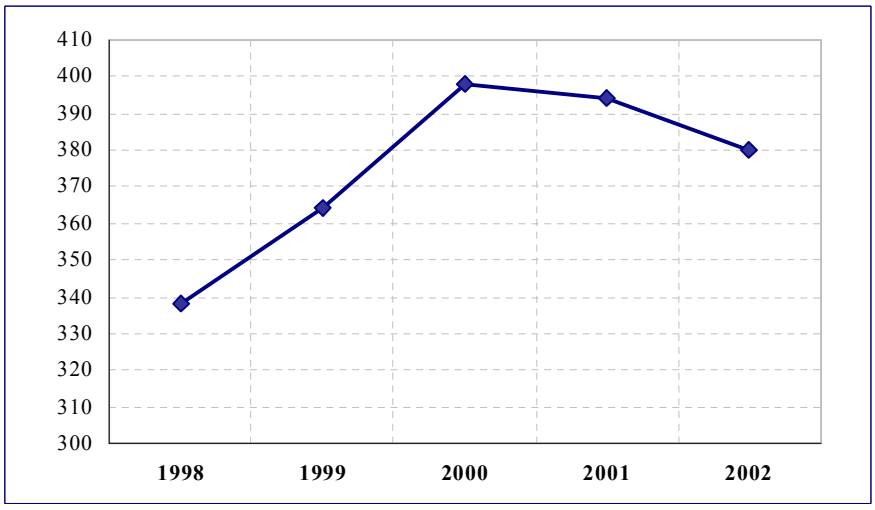
Figure 5.6 – Unmet Demand



Source: World Telecommunication Indicators 2004 – International Telecommunication Union (ITU)

It is also important to state that, according to the data reported in Figure 5.7, the ***technical efficiency*** of the sector improved markedly in the years from 1998 to 2000, with the *"number of main lines per employee"* rising from 338 in 1998 to 398 in 2000. However, despite this positive performance, the country registered a negative performance in 2001 and 2002, with the number of mainlines per employee decreasing to 380 in 2002. Moreover, it should be noted that the digitalization of the main-line system increased from 18% in 1991 to almost 100% in 1998 in accordance with the obligations in concession contracts for privatized companies.

Figure 5.7 – Lines in Service per Employee



Source: Secretaria de Comunicaciones

5.2.2. ECONOMIC EFFICIENCY AND PRIVATE SECTOR FINANCING

The privatization process within the telecommunications sector in Argentina began in 1990 with the Law of the Reform of the State, passed by Congress in 1989, authorizing the sale of ENTel and other public enterprises. Regulations issued in 1990 to implement the law declared that the government would facilitate open entry and promote competition in all telecommunications services with the temporary exception of "basic" telephone service[51]. In that moment privatization was essential for Argentina since ENTel, due to the combination of low tariffs and inefficiency, suffered an operating deficit of roughly US$ 1.5 billion in 1989. Moreover, the chronic lack of investments meant that Argentina had only 3.1 million lines for a population of 30 million. Moreover, the waiting time for a new line was measured in years, the connection charge for a new line was US$ 1,500 and, moreover, a house that already had a line sold for roughly US$ 3,000 more than one without; and an office with a line commanded a premium of as much as US$ 10,000.

The main issue to be resolved by the regulation accompanying the privatization process was the adjustment of tariffs for basic telephone service to a level that offered a reasonable return on investment before the *Licentiatarias del Servizio Basico* (LSBs) were sold. In order to meet this requirement the government raised tariffs by 320% in real terms – 710% in nominal terms – between December 1989 and December 1990. The increase restored real tariffs to approximately their 1985 levels, before the beginning of the period of high inflation. It was established also that the tariff system in the period following privatization would be administered according to the following scheme:

(i) ***Transition period*** – two years after the transfer. The LSBs could adjust their prices monthly to keep pace with changes in the Consumer Price Index (CPI). In addition, they could increase their real prices every six months if the government regulatory agency determined that such increases were necessary to provide the LSBs with a 16% rate of return on their investment;

(ii) ***Period of exclusivity*** – the next 5 years. During this period prices would be governed by a "price cap" formula. The maximum increase permitted each year would be the change in the CPI minus 2% points;

(iii) ***Extension of the period of exclusivity*** – the next 3 years. If the LSBs were granted an extension, the price cap would be the CPI minus 4% points; and

(iv) ***After the period of exclusivity***. At the end of the period of exclusivity, prices would not be regulated except in the areas of the country with no competition in basic services. In those areas, the regulatory agency would determine the price cap formula.

Based on this scheme, in 1991 the government applied the *"dollarization"* of tariffs, in accordance with the Convertibility Law passed in April 1991. The solution negotiated by the government with the LSBs, and also with the other affected utilities, was to maintain the tariffs in dollars if the government ever abandoned the one-for-one exchange rate set in the Convertibility Law. In addition, prices would be adjusted by the United States CPI rather than the Argentine CPI. The effect therefore was to set tariffs for basic telephone service in US$ adjusted by U.S. inflation.

"Tariff rebalancing" in 1997 constituted another important moment. The LSBs had long pressed the government to "rebalance" the tariff structure by reducing international and long-distance charges and increasing the basic monthly charge for residential and business telephones. This was due to the fact that in Argentina the traditional policy was to impose high mark-ups on long-distance and international calls, and on other services used heavily by

[51] Basic service included local hard-wire service and domestic long-distance and international calling but excluded mobile telephony and data transmission.

businesses, so that basic residential rates could be kept low. Also the tariffs charged to urban and rural consumers were similar; this meant that rural subscribers typically received more cross-subsidies than urban subscribers as many more kilometers of telephone lines were required to connect a rural customer to the local exchange. Moreover, at the time Argentinean operators faced increasing competition on international calls from call-back services. With call back, in fact, customers in Argentina who wanted to make international calls would dial an exchange in the United States signaling the number they wished to call without actually completing the call. The United States exchange would then place the call at cheaper U.S. rates. Call-back services were cumbersome to use, but frequent callers found them worthwhile given the LSBs' high mark-ups on international calls. The issue of "tariff rebalancing" thus became more urgent in 1997, when the government and the LSBs were discussing whether the LSBs' period of exclusivity should be extended for another three years. The LSBs argued that they needed to rebalance their rates to prepare for the onslaught of long-distance competition that would come once exclusivity ended. Therefore, after a heated debate, the government allowed a sharp reduction in long-distance charges and a significant increase in the basic monthly charge.

The situation changed again after the eruption of the financial crisis in 2001. Specifically, on January 6, 2002, the Law on Public Emergency and Reform of the Exchange System was approved determining the exit from the Convertibility Law, after eleven years, and the devaluation of the national currency. Thus, as mentioned previously, the government made an unprecedented change in governing contract rules, by freezing tariffs and charges for public utilities in pesos at their pre-devaluation level. Furthermore, 2002 and 2003 were transition years in this respect, since all contractual renegotiations were postponed. With the exception of upstream prices of natural gas and electric power (adjusted during 2004) and some contract rescissions (*Correos Argentinos*, and the suspended case relating to the railway company *Metropolitano* in charge of the *San Martín* line), all important definitions will be carried out from 2005 onwards.

Also, it is worth noting that, since the beginning of the privatization process in 1990, in spite of all the problems described in the tariff system, approximately US$ 25 billion[52] has been invested by private entities in Argentina's telecommunications sector. The funds invested by the private entities in this sector, as indicated in Table 5.3 and in Figure 5.8, show an irregular trend in the years 1990-2002, with the highest values recorded in 1991 and in 1999. This was because these two years marked the most important events in the privatization and liberalization of Argentina's telecommunications sector. The first immediately followed the sale of ENTel (characterized by the necessary investments by the new market operators), and the second, in 1999, took place when two new consortia – Movicom Bellsouth and Compania de Telecomunicaciones Integrales – entered the fixed telephony market to compete with the incumbents. Moreover, the government's sale of PCS licenses took place in the same year, which means that the private sector made significant inroads into the mobile telephony market. Also, it should be noted that the trend of investments is also correlated with the economic situation of the country. In fact, the trend in private investments shows two negative collapses, in 1996-1998 and in 2000-2002. The first decreasing trend resulted from a slowdown in the Argentinean economy but also from the weakness of major international players, while the second one was due to the economic crisis that the country experienced in 2001.

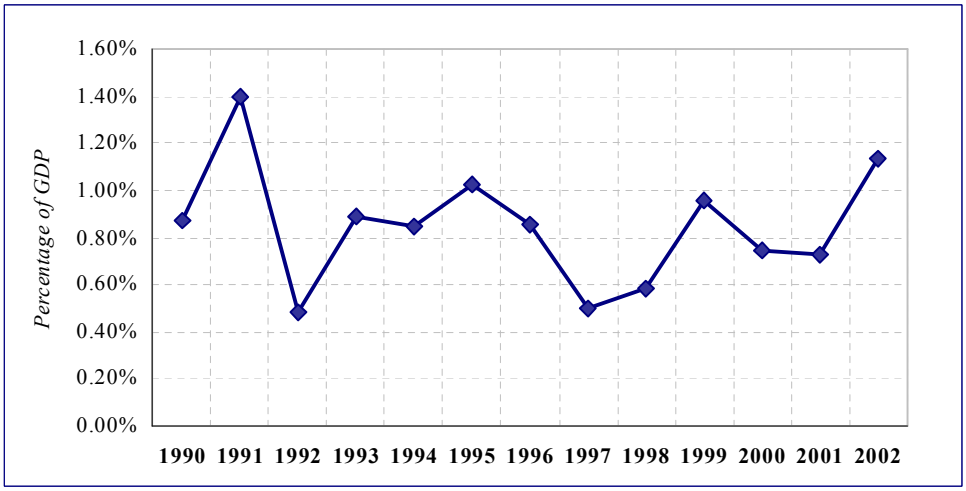
[52] Current US$.

Table 5.3 – Private Investment in the Telecommunications Sector

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Million US$	1,238	2,648	1,111	2,095	2,170	2,645	2,328	1,464	1,739	2,703	2,112	1,951	1,155

Source: World Development Indicators 2004 – The World Bank

Figure 5.8 – Private Investment in Telecom as a Percentage of GDP



Source: World Development Indicators 2004 –The World Bank

In this scenario, it is important to state how investments deriving from privatization led to a major improvement in coverage and quality of service. In fact, within ten years, the number of installed lines increased from 3 to 8 million, 5 million cellular telephones were put in service, the number of public telephones quintupled and the network became 100% digitalized. Also, between 1990 and 1997, the waiting time for telephone repairs dropped from 23 days to 2, and the waiting time for a new line dropped from 23 months to 2 weeks, with the connection charge for a new line cut from US$ 1,500 to US$ 250.

Concerning the ***financial health of main providers***, since 1999 the financial performance of some operators had started to decline. Telecommunications, in particular, recorded stagnant revenues and a 4% fall in net profits; this was related to the introduction of lower price caps on fixed-line tariffs, which shaved 6% off its long-distance and 14% off its international revenues.

In 2000, the total revenues in telecom services reached US$ 7.9 billion, roughly distributed as follows:

(i) US$ 5 billion to basic telephony; and

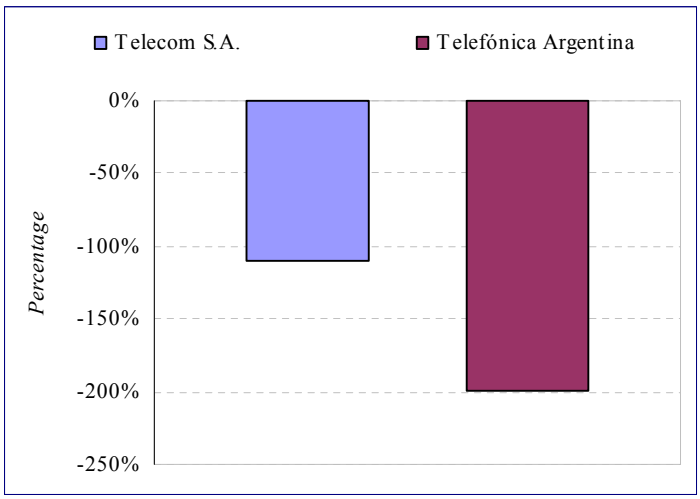
(ii) US$ 2.9 billion represented by mobile sector revenues.

Financial havoc was triggered in the telecom sector after the government defaulted in its external obligations and tariffs were frozen at the pre-devaluation exchange rate, thus plunging the entire utilities sector into a negative net asset position and curtailing investment. In fact, as

already explained, the government's response to the economic crisis was the Public Emergency Law, according to which any rate and tariff index clauses or any index mechanism incorporated into the agreements executed by the government with telecommunication service providers were void and not applicable, and establishing that rates and tariffs be frozen. In particular, in the case of Telefònica de Argentina, this decision implied that the frozen tariffs were 46% below the level stated in concession contracts according to indexing rules. Capital expenditure also decreased to 7% of revenues in 2003 – halving the 2001 levels– and the LIS decreased almost 10% due to the recession in 2002.

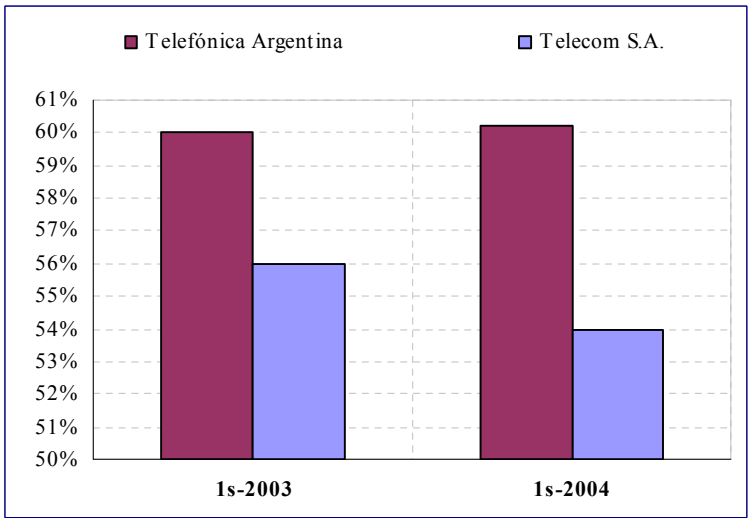
In addition, according to the Pyramid Research analysis, even if the aforementioned financial pressures increased competition in all telecom segments, lowered prices and spurred demand from lower segments, margins would be slim and profitability would also remain a challenge even though companies, as indicated by Figures 5.9 and 5.10, still enjoy positive Earnings Before Interest, Taxes, Depreciation, and Amortization (EBITDA) margins. Moreover, some operators have defaulted on their obligations. Telecom Argentina, for instance, defaulted on its outstanding debt of around US$ 3.1 billion, with more than 95% denominated in U.S. dollars. CTI Movil also entered into renegotiation agreements with its creditors following a lengthy lawsuit.

Figure 5.9 – Net profit/Sales – 2002



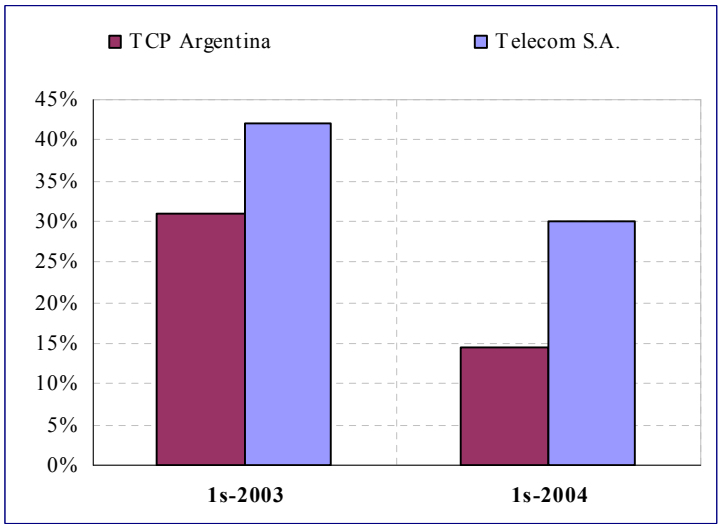
Source: Telecom and Telefónica Argentina

Figure 5.10 – Fixed Telephony EBITDA Margin (Telefónica Argentina vs Telecom. Argentina)



Source: Telecom and Telefónica Argentina

Figure 5.11 – Mobile Telephony EBITDA Margin



Source: Telecom and Telefónica Argentina

Because provision of telecom services is fully private, there is no strong ***fiscal dependence of the sector***. Rather, the previous administration's universal service policy, aimed at expanding telephony service to low income and rural families and at increasing public phone availability, called for all telecommunications providers to pay a 0.5% tax to sustain network expansion. However, participants in the industry stated that universal service policies were not being effectively administered. The funds collected went to the general treasury and should then have been passed on to the regulatory agency, the *Comision Nacional de Comunicaciones* (CNC), to fund universal service objectives. Instead, budget constraints apparently limited distribution to the CNC, hindering the agency's ability to implement its universal service objectives.

5.2.3. REGULATORY FRAMEWORK AND INSTITUTIONAL DEVELOPMENT

The government, through Decree 506/1992, established guidelines for the provision of mobile telecommunications services. The basic service area was divided into two balanced regional monopolies and granted to *Telecom* and *Telefónica de Argentina*. Licenses conferred exclusivity for seven years – two years of transition and five of exclusivity – which were extended for three further years.[53] Law 23,696 constituted the legal framework for privatizations – respecting Telecommunications Law 19,798. Decrees 731/1989, 59/1990, 62/1990 and 2,332/1990 initiated the reform process for the privatization of ENTel and the liberalization of telecommunications services, with the exception of basic telecommunication services.

Parallel to the privatization of telecom services, the government created the regulatory agency *Comisión Nacional de Telecomunicaciones* (CNT) by Decree 1,185/1990. The agency was responsible for regulating, controlling, supervising and verifying all aspects relating to telecommunications, although its lack of autonomy was strongly questioned. In 1996, the government transferred all regulatory powers to the Secretariat of Communications, and CNT was merged with the *Comisión Nacional Correos y Telégrafos* in *Comisión Nacional de Comunicaciones* (CNC). CNC concentrated powers of control in telecommunications and postal services.

In 1997, by Decree 92/1997, the government established a rebalancing of the telecommunications charges – an increase in monthly fees, the elimination of free communication time, the reduction of interurban and international telecommunication rates, the introduction of discounts to retired and low-consumption users, etc. With these changes, it pursued the reduction of cross-subsidies and the improvement of the incumbents' competitive position.

Between 1997 and 1999, the government redefined the regulations of licenses by Decree 264/1998 and Resolution Secretariat Communication 16,200/1999, interconnection through Decrees 92/1997 and 266/1998, and universal service through Resolution Secretariat Communication 18,971/1999. The main characteristics of these regulations were the limited unbundling possibilities and high access charges, which gave incentives for duplication in the network, although the possibility of entry was limited by restrictions in terms of areas of coverage, effective coverage within an area, etc. The incumbents remained responsible for the non-remunerated commitment of universal service obligation, which was not an effective burden given the existing cross-subsidies from the rebalancing in 1997.

In 2000, the government approved the new regulation of licenses by Decree 764/2000. The new Decree appeared to favor the facilitation of entry, given the reduced requirements for market entrants[54], and greater unbundling. Interconnection was permitted by means of an interconnection fee, based on a questionable long-run incremental cost formula. The universal service became a remunerated responsibility financed from companies' revenues, but applicable when the company faced sufficient competition.[55]

The reforms in this sector accompanied the wave of deregulation and privatization as in other Latin American countries – Mexico, Chile, Guatemala and Brazil, for example. One of the precursors in privatization reforms in Latin America was Chile. The country initiated reforms in the 1970s-1980s, by creating a regulatory agency in 1977, and created a regulatory framework

[53] Several minor areas were covered by local cooperatives. The cooperatives were granted an exclusivity license for a term similar to that of the two main operators.

[54] Flexibility of areas, release from financing the universal service if their share of the local market is small, diversity of company's objectives, inexpensive license fees, no investment requirements.

[55] Source: Urbiztondo (2000) for these critiques. Also, Di Gresia *et al*. (2004) discuss the reasons for the delays in implementing universal service.

for the sector in 1982. Between 1985 and 1988 it defined objective and non-discriminatory access, continuity and quality criteria for the granting of concessions, and privatized the fixed-link and long-distance companies, CTC and ENTel. The regulatory framework defined regulated charges for fixed telephony and access, the latter since 1994. Competition started to develop with the entry of mobile telephony operators, multi-carriers and cable TV companies in telephony and broadband.

Chile is currently facing some challenges with respect to the regulation model, which is not without design faults – specifically, the "*empresa modelo*" is based on a real enterprise, a problem that may also arise in Mexico with long-run incremental cost remuneration – and the lack of sanctions for failure to deliver relevant information, the allocation of common charges, asymmetries in access charges, etc.[56]

In order to complete the description of the sector's evolution in Argentina, it remains to be added that in January 2002, the government devaluated the domestic currency and converted all charges to domestic currency, but at pre-devaluation values. Currently, basic service licensees and the government signed a letter of understanding to maintain the price schedule until December 2004. The renegotiation of contracts is still underway.

5.3. POLICY OPTIONS AND IMPLICATIONS

In the telecommunications sector the project of full liberalization was achieved in 2000, although the government retained some controls on the tariff schedule in areas where there is no effective competition. Therefore, one of the main issues Argentina has to deal with relates to the need to extend full liberalization throughout the country.

Moreover, this aim is also important in achieving the objective of the "universalization" of services. The poorer areas – i.e. the rural regions, especially in the north of the country – continue to lag behind the more dynamic areas of Argentina in terms of diffusion of services and easy access to telephony. Therefore, since the policy of universal service, according to Decree 764/2000, is financed by the operating companies' revenues, with responsibility applicable when companies face sufficient competition, the aim of full liberalization could also be interpreted as a way of extending service coverage throughout the country. In addition, the funds collected for the universal service policy by the general treasury, which were to be passed to the regulatory agency (CNC) to fund universal service objectives, have not been effectively administered in recent years. Argentina's budget constraints apparently limited contributions to the CNC, thus hindering the agency's ability to implement its universal service objectives.

Because of the economic crisis and following devaluation, tariffs for telecommunication services were frozen and a letter of understanding was signed to maintain the price schedule at the pre-devaluation levels until December 2004; the licenses of the operators should be renegotiated in 2005. Therefore, finding a good solution for the definition of the tariff scheme in 2005 is one of the main issues to resolve. Moreover, this appears to be more and more important considering the difficulties experienced by the market operators in terms of profitability and the consequent crisis in facing their obligations and the need for constant investments. Also, since the universal service policy is funded through providers' revenues, a comprehensive definition of the system could be important for obtaining full service coverage.

With regard to competition in the mobile sector, efforts should be made in order to sustain competitiveness in the field, as the merger of Unifón and Movicom BellSouth in 2004, which has reduced the number of operators in the mobile market, could create problems in market dynamics and efficiency.

[56] Source: Arellano (2004), "*Evolución de los Servicios Públicos en Chile*", presentation in LAURIN.

5.4. PRIORITIES FOR FUTURE REFORMS

The future of the Argentinean telecommunications sector depends heavily on some important priorities which must be addressed in order to guarantee sustainable development in the sector:

(i) sustaining the full liberalization of the sector throughout the country, enabling the extension of competition into marginalized areas;

(ii) strengthening efforts for the realization of the universal service policy aimed towards reaching full service coverage;

(iii) enabling the *Comision Nacional de Comunicaciones* to effectively utilize the funds gathered by mean of market operators' revenues for the purpose of "universalization";

(iv) definition of an adequate strategy for the renegotiation of the license contracts, especially regarding the frozen tariffs system, with the aim of favoring the recovery of profitability for providers and improving their capacity for investment, while considering the need to respect consumer requirements; and

(v) maintenance of an adequate level of competition in the mobile market in spite of the recent merger that has reduced the number of competitors.

6. REGULATION: THE WAY FORWARD

This chapter takes stock of the analysis in previous sections. The Argentinean government undertook important steps during the 1990s in the reform of infrastructure through the introduction of private participation in the provision of services.

In the *road sector*, the reforms involved concession of national roads and of the roads providing access to Buenos Aires. However, contracts were repeatedly put to renegotiation, due to matters such as tolls and charges, royalties, subsidies, extensions of concession lengths, and the revision of investment plans. The interaction between the *Direccion Nacional de Vialidad* (DNV), within the Secretariat of Transport, and the private operators that manage the rest of the national roads, may have created conflicts with the regulatory functions of the *Órgano de Control de Concesiones Viales* (OCCOVI), also within the Secretariat of Transport.

Major restructuring was carried out in the *port sector*, involving the decentralization of infrastructure and services to the provinces. The state retained the infrastructure of Puerto Nuevo, but the operation of its terminals was granted in concession to private companies. The province of Buenos Aires negotiated the concession to operate the port Dock Sud. The strong competition that developed between terminal operators in Puerto Nuevo and the operator of Dock Sud ended in government intervention to reduce royalties (although arguably without justification). The deregulatory and decentralization experience is considered positive.

After having deregulated the *air transport* system and privatized the national airport system, the government declared a state of emergency in domestic airline transportation and introduced controls in pricing and other commercial practices. The renegotiation of the contract with *Aeropuertos Argentina* has been suspended.

In the *railway sector*, a regulatory framework was designed for passenger transportation, but not for load transportation. The main problem created by the lack of a regulatory framework is that the concessionaire was granted the power to "approve or reject" regulatory conditions and changes (for infrastructure, investments, etc.), although the competitive aspects had already been left to the market itself.

Both in load and passenger transportation services, there have been renegotiations to revise optimistic projections in relation to the evolution of demand, investments and financing (e.g. charges to final users or government subsidies) and concession lengths (e.g. the extension of the concession period from 10 to 24 years in the case of *Trenes de Buenos Aires Mitre* and *Sarmiento*).

The reforms in the *electricity sector* were considered successful in creating a fully-fledged electricity market with private interaction at all stages and appropriate regulation by the *Ente Nacional Regulador de Electricidad* (ENRE). However, the government intervened in the market by freezing the spot price, converting contracts to the peso (at pre-devaluation values), and freezing all transmission and distribution margins. The Stabilization Fund, which balanced seasonal and spot prices, has been running deficits since 2003, as seasonal prices have not been adjusted. This required the injection of public funds in 2003 and 2004 to keep seasonal prices low. In addition, the government changed the pricing rules to reduce the deficit. Increases in energy prices for industrial users occurred after two complete years following devaluation, and the increases in energy prices for commercial users in September 2004, while energy prices for residential users and distribution and transmission charges are still frozen.

At the moment, the most important consequence of the interventions in the market has been a shortage of natural gas (which is significant in a system that has a high proportion of gas-fired

turbines). Although bottlenecks or other investment-related problems have not arisen yet, they may become relevant in the coming years.

In the *oil and derivatives sector*, a process of full deregulation took place. The main problems in this sector are related to government interventions to reduce the impact of international oil prices on domestic derivatives prices (especially gasoline), such as the imposition of taxes on export of hydrocarbons (contradicting concession rights).

The *natural gas sector* was also considered successful in creating a regional market with private interaction at all stages, and in terms of the appropriate regulation by the *Ente Nacional Regulador del Gas* (ENARGAS). In 2002, the government froze upstream prices, contract prices (at their pre-devaluation levels in domestic currency) and transport and distribution margins. In May 2004, the government agreed with producers a path of upstream prices, differentiating those for small users (still frozen), large users (free) and transition users, which would become large users by mid-2005. Transport and distribution margins are still frozen at the pre-convertibility levels, and are part of the global renegotiation of contracts. As mentioned above, the most important consequence of the interventions in the market has been a shortage of natural gas, mainly caused by increased demand and negative shocks in the electricity sector. The shortage is expected to continue in the coming years (especially in winter), and although bottlenecks or other investment-related problems have not arisen yet, they may become relevant in the coming years.

In the *water and sanitation sector*, the *Aguas Argentinas* contract was renegotiated twice before the government decision to revise all concessions and licenses. The renegotiations were launched on account of defects in the original contract, problems with projections of cash-flow, requests for speeding up investments, environmental contingencies, etc.

In the *telecommunications sector,* full liberalization was defined in 2000, and the government retained some controls on the tariff schedule in areas where there is no effective competition. With devaluation, the prices for telecommunications services were frozen at the pre-devaluation levels and the contracts held by licensees also became subject to renegotiation, although they had signed a letter of understanding to maintain the price schedule until December 2004.

In 2002, with the exit to convertibility, the government decided to carry out a global revision of contracts, which is still underway. So far, it has taken only partial decisions in railway transportation (such as the suspension of the contract with *Transportes Metropolitanos General San Martín,* and the letter of understanding between the government and *Ferrosur Roca*), natural gas and electricity (increase of upstream prices for commercial and industrial users) and telecommunications (keeping prices until the end of 2004).

Many concessionaires have instituted arbitration procedures at the International Center for Settlement of Investment Disputes (ICSID). The greatest challenge faced by the government is therefore the definition of clear rules, which should strengthen the good results achieved so far and correct the flaws and mistakes made during the last decade. Regretfully, the recent steps taken by the government (the Law for a *National Regime of Public Utilities* project) do not appear to move in this direction[57].

Alongside the definition of clear contractual rules for future investments in Argentina, importance should be given to the contracts in roads, railway, ports and water and sanitation, all of which were subject to renegotiations before the macroeconomic crisis in Argentina. The global revision of contracts currently underway could provide a good opportunity to define clear rules under which operators work, in order to avoid future renegotiations arising from opportunism on the part of both government and companies.

Table 6.1 summarizes the main challenges regarding regulation.

[57] See Artana et al. (2002) and Urbiztondo (2004) for more details.

Table 6.1 – Regulation: The Way Forward

SECTOR		**WAY FORWARD**		
	Sub-Sector	*Global*	*Short Term (0-2 years)*	*Medium Term (up to 5 years)*
TRANSPORT	*Roads*	Global renegotiation of contracts	* Take advantage of the current renegotiation to define tolls and charges, royalties, subsidies, avoid extensions of concession lengths, revision of investment plans, etc.	-
	Ports		* Ensure level playing field for competition	
	Airports		* Renegotiation has been suspended	
	Railways		* Take advantage of the current renegotiation to define charges, subsidies, avoid extensions of concession lengths, revision of investment plans, etc.	-
ENERGY	*Electricity*		* Definition of a path for seasonal prices for each type of consumer * Definition of a clear policy to face the shortage of natural gas at minimum cost	* Definition of a path for seasonal prices for each type of consumer
	Oil		* Offshore leasing by competitive bidding * Define the role of Empresa Nacional de Energía de Argentina ENARSA as a productive company	* Homogenize (and eventually set to zero) export tax rates on hydrocarbons and by products
	Natural gas		* Definition of a clear policy to face the shortage of natural gas at minimum cost	-
WATER & SANITATION			* Ensure independence of regulatory agency	* Ensure a contractual definition guaranteeing efficient and high-quality provision
TELECOMMUNICATIONS			* Define independence of regulatory agency * Revise the implementation of universal service	* Revise entry conditions, in favour of market entry, to foster competition

7. ESTIMATES OF INVESTMENT NEEDS

The aim of this section is to provide some indicative estimates of infrastructure investment needs in Argentina for the time period 2003-2010. We rely on a fairly simple procedure. First, we estimate the underlying relationship between infrastructural investment and a set of socio-economic variables for a sample of 40 countries. Second, we use these estimates to assess Argentina's infrastructural gap in 2002. Third, we project the country's investment needs over the full projection period, from 2003 and 2010. For this latter step, we rely also on projected values of the determinants of infrastructures over the 2003-2010 period. Finally, we convert projected physical investment needs into money terms.

We consider four different types of infrastructure: electricity generating capacity, roads, railroads and telephone mainlines. In Table 7.1, we list the sources of all those variables as well as those of the socio-economic variables that are assumed to determine the demand for infrastructure stock.

Table 7.1 – Description of Variables

Variable	Notation	Source
Electricity generating capacity (000s of Kw)	Energy	Calderon and Servén (2004)
Main telephone lines in operation	Tcom	Calderon and Servén (2004)
Paved Road Length (in km)	Road	Calderon and Servén (2004)
Railroad route length (in km)	Rail	Calderon and Servén (2004)
Agriculture, value added (% of the GDP)	Agr	WDI
Manufacturing, value added (% of the GDP)	Man	WDI
Population density (people/sq. Km)	PopDen	WDI
Urban Population (% total)	Urb	WDI
GDP per capita in constant 1995 US$	GDP	WDI

The first step is to estimate a statistical relation linking infrastructure with the explanatory variables listed in Table 7.1. Table 7.2 reports the econometric estimates. We rely throughout on the GMM-IV procedure. Our sample spans from 1960 to 2001 and covers 40 countries, including East Asian, industrialized and less developed countries. The choice of the GMM estimator was dictated by the need to control for possible endogeneity problems. Dependent variables are defined as the ratio between a given considered infrastructure stock and total population, in order to avoid problems of non-stationarity in time series.

Table 7.2 – Estimated Models for Infrastructure Predictions

Dep. Var.:	RAIL	ROAD	ENERGY	TCOM
Constant	0.000571 (12,619)***	0.018174 (16,007) ***	-0.000282 (-5,144)***	-3.038919 (-6,140) ***
Lagged dep. Var.				0,000312 (8,657) **
GDPCAP	-8.86E-09 (-3,693)***	9.38E-07 (4,035) ***	1.80E-07 (11,647)***	2.82E-05 (27,264) ***
MAN	5.70E-06 (7,177) ***	3.11E-06 (4,505) ***	1.47E-06 (0,152) ***	-0.00236 (-7,820) ***
AGR	1.00E-06 (1,357)	-8.54E-07 (-1,236)	5.16E-06 (4,569) ***	-0.000423 (-1,352)
POPDEN		2.16E-06 (9,082)***		-0,000246 (-3,163) ***
POPURB	-6,37 (-11,639) ***	2,38E-06 (3,197) ***	9.70E-06 (14,802) ***	0.001499 (4,535) ***
TIME				0.001509 (5,854) ***
R^2	0.985	0.976	0.983	0.976
N. of obs.	1,037	1,031	1,018	1,064

Notes: Estimates are obtained with GMM-IV procedure with fixed effect, for which instruments are all lagged variables

**** significant at 99%; ** significant at 95%; * significant at 90%*

To forecast infrastructural investment needs for the period 2003-2010, it is necessary to project the values of the regressors in Table 7.2. Fay and Yepes (2003) rely on UN projections for population and on the Global Economic Prospects by the World Bank for the other variables. Unfortunately, those figures are only available at the regional level. We therefore follow Loayza *et al.* (2004) in relying on the dynamic simulation of simple stochastic processes (ARMA). Results are summarized in Table 7.3.

Table 7.3 – Projected Values

	GDP	Population Density	Man	Agr	Urb
2003	7,195.81	13.45	18.16	7.78	87.55
2004	7,199.73	13.59	17.77	7.78	87.86
2005	7,203.60	13.72	17.39	7.78	88.17
2006	7,207.44	13.86	17.02	7.78	88.48
2007	7,211.25	13.99	16.66	7.78	88.79
2008	7,215.02	14.12	16.30	7.78	89.10
2009	7,218.78	14.26	15.96	7.78	89.41
2010	7,222.51	14.39	15.62	7.78	89.72

For the percentage of agricultural value added, we simply assume a constant value over the projection period.

We can now project future investment needs in physical terms. To assess the required amount of spending, we use the following unit costs (Fay and Yepes, 2003):

(i) $1,900 per kilowatt of generating capacity, including associated network costs;

(ii) $410,000 per kilometre of paved roads;

(iii) $900,000 per kilometre of rail; and

(iv) $400 per telephone mainline.

Table 7.4 – Infrastructure Investment Needs (% of GDP)

	Argentina			
	Average 2004-2010	**To fill the gap (2003)**	**LAC median**	**EAP median**
Energy	1.76	2.75	0.98	1.24
Rail	0.01	0.03	0.06	0.06
Road	1.35	2.75	0.89	0.50
Tcom	0.39	0.40	0.41	0.85
Total	3.51	5.93	2.42	3.33

In Table 7.4, we distinguish between the initial level of investment needed to bring Argentina's infrastructure stock in line with its socio-economic characteristics, and subsequent investment spending required to keep pace with the changes in GDP and the other determinants of infrastructure needs. According to our estimates, Argentina should invest about 5.93% of its GDP in 2003 simply to bring the country's infrastructural stock in line with our estimated benchmark. Alternatively, we could have assumed that the large initial investment should be spread over the full projection period. From 2004 onward, further investment in infrastructure is mainly driven from the demand factors in regressions in Table 7.2 and is therefore designed so as to keep the supply and the demand in infrastructure in equilibrium.

Table 7.4 shows that the initial gap between Argentina's actual and required infrastructure is quite large compared to other Latin American countries (column 3). Most of the gap is due to the insufficient provision of infrastructure in the road and energy sectors.

Our estimated total investments are even larger than those proposed by Calderon and Servén (2004), even though they are reasonable if compared to the 4.3% of GDP devoted to public investment by middle income countries during the 1980s (Easterly and Rebelo, 1993).

8. CONCLUDING REMARKS

This country brief provides a snapshot of the current situation of the infrastructure sectors in Argentina.

The analysis of the infrastructure sectors outlined earlier gives the following results, which may suggest some actions necessary to foster the development of those sectors. Certainly, it is important to state that the analysis has been affected by the economic crisis that Argentina has undergone in recent years, since all the indicators observed show the consequences of the social and financial crisis that erupted in the country in 2001.

With respect to ***transport infrastructure***, the previous analysis shows that in recent times the transport sector has been significantly reformed in Argentina; that it has tried to bring about a decentralized management structure and a strong increase in private participation. These elements, aside from reducing the government's expenditure on infrastructure, should achieve a higher level of efficiency – especially relating to the curtailment of logistics costs and a more efficient interchange of cargo among the different modes of transport. However, much progress remains to be made in order to ameliorate the overall level of transport services in Argentina.

The first cross-sector priority with regard to the road and railway sectors is the strengthening of the regulatory structure, with the establishment of a sector regulatory agency to supervise and guide concessions and to regulate disputes. The establishment of these agencies must be associated with the formulation of well-defined concessions contracts, which must avoid arbitrary decisions and contractual doubt, besides generating incentives for the achievement of greater efficiency. Disputes caused by lack of clarity leads to breach of contracts and, ultimately, demand for public subsidies. The expansion and improvement of service quality in deficient areas should be favored, and public resources should be employed in segments of activity that in which private interest is completely absent. Finally, the proposed regulation, which outlines the multimodal elements of the Transport Sector Law – Federal Act 24,921 of January 1998 – should be adopted to address many of the administrative inefficiencies of the logistics system and to improve the predictability of transport costs in Argentina.

In regards to ***road development***, the main issue, as already mentioned, is the need to renegotiate concessions. Then, OCCOVI should be made independent and granted complete autonomy in its supervisory and regulatory functions in relation to the effective fulfillment of concessionaires' contract obligations.

In addition, another major issue is the mobilization of additional private sector financial resources in order to achieve better decentralization of activity in the sector and to attain better connections with provincial locations. In fact, until now, the bulk of private sector contributions have been channeled for the substantial improvement of the main access roads to Buenos Aires, without involving provincial locations. Moreover, the drop in toll levels in dollar terms since December 2001, and the subsequent inability to face the service debt, has meant deferrals not only in investment but also in maintenance.

In the ***railway sector***, the first issue is that a regulatory framework was designed for passenger transportation, but not for load transportation. This meant that the concessionaires operating in this specific sector were granted the power to "approve or reject" regulatory conditions and changes, although the competitive aspects had already been left to the market itself. Moreover, the absence of a regulatory framework for load transportation has created a confusing environment, making it difficult to renegotiate activities.

Another major issue is that, in spite of the transfer of activities to the private sector, in relation to both cargo and passenger transport in the metropolitan region, railroad infrastructure is still precarious since the majority of maintenance and upkeep has been concentrated in a network of about 10,000 kilometers, leaving the rest in disrepair. Therefore, it is important to rehabilitate the railway network, making the investments necessary to secure efficient freight and passenger operations, to re-organize interurban passenger rail services, and in particular, to facilitate the rehabilitation of the Belgrano freight line, Belgrano Cargas.

Another element to be considered is that while the freight railroads have seen a surge in traffic and an increase of activities since devaluation, interurban passenger services on the lines given in concession to the private sector have been largely abandoned. As at present there is little likelihood of significant private investment in passenger services, it is important to encourage private risk investment in infrastructure and operation, with the aim of sustaining public sector capital investment in this sector.

Concerning the ***port system***, the Argentinean deregulatory and decentralization experience is considered positive. In fact, widespread private participation and the establishment of a competitive system among both ports and service providers in the same port were achieved. The introduction of competition enabled gains in efficiency, and the state was exempted from some activities without having to contribute resources for the expansion and preservation of activities. However, some efforts are still needed to decrease logistics costs and to revive competitiveness against the Brazilian and Chilean ports. In particular, it is important that the port of Buenos Aires recover its predominant role in the Rio de la Plata region.

Finally, it is very important to conclude the global revision of terminal operators' contracts, which was initiated in 2002 as a result of the exit from convertibility, and is still underway.

With regard to ***airports***, it should be noted that in 2002, after the deregulation of the air transport system and the privatization of the national airport system, the government declared a state of emergency in domestic airline transportation and introduced controls in pricing and other commercial practices. At the moment the main issue is the need to conclude the renegotiation of the contract with Aeropuertos Argentina, which has been suspended.

Finally, it is also important to note that the World Bank has already defined a combination of targeted investments and policy initiatives to be considered by the Argentinean government in order to increase the effectiveness of Argentina's transport and logistics sector. According to the World Bank, the investment decisions that the government should investigate to allow for a more efficient interchange of cargo among modes of transport include:

(i) Expansion of the Retiro Intermodal Facilities. This should be developed as part of a Greater Buenos Aires Freight Transportation Master Plan, which also considers the IDB-proposed Port of Buenos Aires Improvement Project;

(ii) Analysis of the feasibility of double-stack clearance into and out of Buenos Aires;

(iii) Analysis of the comparative costs and benefits of (a) adding main tracks and reverse signaling to allow for the elimination of freight operating windows in the NCA and BAP main passenger lines; or (b) developing a consolidated intermodal rail corridor involving a mixed gauge route for NCA. After complete economic and financial impact analyses, the government should consider funding the better option;

(iv) Funding of grade crossing protection and separation projects in high volume intermodal corridors; and

(v) Construction of a third meter-gauge rail between Paso de Los Libres and Buenos Aires to compete with Brazil in terms of maritime transportation along the coast.

Due largely to the reform and privatization of the ***electricity sector*** initiated in 1992, Argentina has made substantial progress in this field in recent times. The percentage of urban households with access to electricity has reached a level among the highest in Latin America, very close to the levels in Brazil and Costa Rica, and electricity distribution companies have made improvements in service quality. Moreover, in terms of technical efficiency, Argentina's performance is better than that of the other Latin American countries studied. The Argentinean economy needs substantially less energy to produce one unit of GDP than the average for the benchmark countries, and demonstrates levels of losses in transmission and distribution in line with those of the other Latin American countries.

The results regarding the relationship between access, quality of service, and affordability were not shown. Although the percentage of GDP per capita spent on electricity in Argentina is relatively high, non-residential and residential electricity prices in Argentina were still above the average of its Latin American counterparts in 2000 and 2001. Moreover, the economic crisis and the resulting currency devaluation affected the weight of electricity expenses within the household budget after 2001. The government is concerned about the difficulties faced by low-income households in maintaining their electricity service, and the treatment of social policy in tariff design is a very delicate and important part of the ongoing renegotiation process. The government should redesign tariff structures to ensure basic service access and affordability for low-income households. However, this must follow the principles of fiscal neutrality and economic efficiency and attention should be paid to the targeting of subsidies.

However, the main issue Argentina has to face is that the level of public and private investment in the sector, which had previously increased considerably due to reform and privatization of the electricity sector, has been reducing dramatically in recent years due to the economic crisis. This has caused a seriously damaging effect upon the condition of infrastructure and services in Argentina which, if not reversed, may undo the substantial progress made in the recent past. It is therefore crucial for the government to achieve a successful resolution of the renegotiation of public utility concessions, with the aim of drawing private investments back and allowing regulated companies to run their businesses autonomously, to comply with concession obligations and to earn a fair return on their capital. Moreover, it is necessary to strengthen regulatory and judicial institutions in order to reassure the private sector that their investments will not be expropriated in the case of another disruptive macroeconomic event in the future. This will become increasingly important in view of the gas crisis that is already affecting Argentina with the reduction in gas reserves, which is due in part to the lack of adequate investment.

Finally, the other major energy issue is the need for Argentina to face the gas crisis that could affect the country in the coming years. In particular, in the short term, the government should support the implementation of an energy conservation plan through an adequate communication and information campaign, to be complemented by the government intervention on the supply side, such as importing more resources from other Latin American countries. In the medium term, instead, the aim is the maintenance and improvement of the results of the energy conservation program through comprehensive energy efficiency actions. This could be favored by the relevance of non-energy intensive commodities production in Argentina's economy and to the presence of significant energy-saving potential in most industries that could be reached through low-cost measures. A comprehensive energy efficiency program should include action such as communication and information campaigns, dissemination of best practices, installation of efficient equipment by energy service companies, regulatory and tariff incentives, equipment labeling, building norms, and training and education programs.

The main issues Argentina must deal with in the ***water and sanitation sector*** are low coverage – especially in rural areas – poor service quality, and the need to improve the system of sewage treatment due to its serious environmental impact. In order to solve these problems, the government should define appropriate financing sources for the expansion of water and

sanitation services to the marginal population in rural areas and to the low-income population. The positive aspects deriving from privatization in this sector have so far been restricted only to areas that are profitable to private providers. However, incentives could be established to encourage private entities to provide services in less profitable segments, and support could be offered to the municipal providers to help improve efficiency and find resources to invest.

Another issue to consider is the autonomy of provinces, which implies that each of the several regulatory bodies is able to formulate and control contract agreements, giving rise to the creation of a heterogeneous system with unspecific features, and generating great difficulty in defining a suitable intervention policy. Moreover, the absence of a coordinated "National Policy" hinders attempts to define appropriate sources of financing to enable the expansion of services to marginal areas. Therefore a major priority is the creation of a national regulatory agency to unify and assist provincial agencies and to define basic parameters for the sector, establishing uniformity of service quality rules across the several provinces and controlling the application of a common national policy in the water and sanitation sector.

The final important aspect to state in relation to the water and sanitation sector is that the conversion of the tariffs into "pesos", without compensation for the deep depreciation of currency, gave rise to an as yet unconcluded process of contract renegotiation which has contributed to the stagnation of investments and to a lack of change in the indicators presented. The adaptation of concessions contracts to the new macroeconomic context – giving guarantees to the private operators in relation to profitability and the fulfilment of contracts – is a main priority for the government in this infrastructure sector. Moreover, the government should also seriously consider including instruments of social policy such as social tariffs and subsidies in the new contracts.

In the ***telecommunications sector,*** the project of full liberalization was achieved in 2000, although the government retained some controls on the tariff schedule in areas with no effective competition. Thus, one of the main issues Argentina has to deal with relates to the need to extend full liberalization throughout all zones of the country.

Moreover, this purpose can also be important in enabling the achievement of "universalization" of services. The poorer areas – i.e. the rural regions, especially in the north of the country – continue to lag behind the more dynamic areas of Argentina. Since the policy of universal service is financed by the operating companies' revenues, with responsibility applicable when companies face sufficient competition, the aim of full liberalization could also be interpreted as a way of extending service coverage throughout the country.

The effective utilization of the funds gathered from market operators' revenues by the *Comision Nacional de Comunicaciones* (CNC) is an important objective to be pursued. In recent years, the funds for the universal service policy were collected by the general treasury and should subsequently have been passed on to the CNC; however, this process was not effectively administered as Argentina's budgetary constraints hindered the agency's ability to implement its universal service objectives.

With regard to competition in the mobile sector, efforts should be made to maintain competition in the field, as the merger of Unifón and Movicom BellSouth in 2004 has reduced the number of operators in the mobile market and could create a problem for market dynamics and efficiency.

Finally, one of the main issues to deal with seems to be the definition of an adequate strategy for the renegotiation of the license contracts, especially with regard to the frozen tariff system. In particular, policies are needed to favor the recovery of profitability for providers and to improve their capacity for investment, while also respecting consumer requirements. This appears to be increasingly important considering the difficulties that market operators experience in terms of profitability and the crises they consequently face in meeting their obligations and in making the necessary constant investments.

Finally, the results emerging from an estimate of investment needs indicate that Argentina is expected to spend 3.51% of GDP in infrastructure over the period 2003-2010. This estimate is even higher than the one proposed by Calderon and Servén (2004), although it is reasonable when compared to the 4.3% of GDP devoted to public investment by middle-income countries during the 1980s (Easterly and Rebelo, 1993).

Moreover, the sectors requiring the largest amounts of investment are the energy and road sectors, with 1.76% and 1.35% of GDP, respectively. The difference is sensible when considering that the rail sector is expected to invest 0.01% of GDP and the telecommunications sector 0.39% of GDP. In addition, given its economic structure and the relative projected dynamics, Argentina's estimated investments are higher than LAC and East Asian medians of 2.42 percentage points of GDP and 3.33%,respectively.

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