

2.3 Procedures for Formulating the Report

The goals and guidelines of the long-term development and improvement plan were agreed upon between the study team and the Ministry counterparts when the local study was terminated. Among the goals and guidelines, some points which ought to be coordinated at the national plan level were explained to the coordinating group to get them coordinated.

The report has been drawn up on the basis of the goals and guidelines as well as data gathered through the local study.

Table I -2-2 Development plan study team members

Name	Duty-in-charge	Position
Masashi SHOJI	Team Leader	Engineer, Japan Telecommunications Engineering and Consulting Service (JTEC)
Keiji OKADA	Financial/ Economic Analysis	Economist, JTEC
Toshihiro HIGUCHI	Network Planning	Engineer, JTEC
Shigeji AOKI	Rural Network Planning	Engineer, JTEC
Yoshio ITO	New Services	Engineer, JTEC
Yoichi TAKAHASHI	Outside Plant	Engineer, JTEC
Taizo NAKANO	Transmission System	Engineer, JTEC
Yasuo ISHIHARA	Exchange System	Engineer, JTEC
Tomiyasu SUENAGA	Broadcasting Network Planning	Engineer, JTEC
Yutaka HARA	Broadcasting Facilities	Engineer, JTEC

Table I -2-3 Argentine side counterparts

Name	Duty-in-charge	Position
Hugo Daniel Marias	General Coordinator	Director of Communications, Ministry of Public Works and Services
Julio Cesar Arias	Chief of Telecommunications Counterpart Group	Chief of Engineering Department, Communications Director's Office
Raul Eduardo Moino	Member of Telecommunications Counterpart Group	Engineer, Service Department, Communications Director's Office
Raul Oscar Antonio Di Paolo	ditto	General Supervisor of Exchange System in Government Office, Communications Director's Office
Gustavo Marcelo Migone	ditto	Engineer, Communications Director's Office
Hernan Alejandro Palero	ditto	ditto
Oscar Alfredo Roque	ditto	Technician, Communications Director's Office
Roberto Angel Traverzaro	ditto	ditto
Ricardo Manuel Cesari	Chief of Broadcasting Counterpart Group	Chief of Study and Project Department, Communications Director's Office
Juan Fernandez	Member of Broadcasting Counterpart Group	Chief, Provincial Laboratory Division, Communications Director's Office
Jorge Ricardo Zulliger	ditto	Engineer, Provincial Laboratory Division, Communications Director's Office
Jose R. Rodriguez G.	Counterpart for Economic Study	Economist, Economic Statistics and Investigations Director's Office, Ministry of Economy

Table I - 2 - 4 Itinerary of development plan study

Item	Year-month	1986						1987										
		7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	
Work in Japan-1 Preparatory work		□																
Work in Argentina-1 Survey and study in Argentina			□															
Work in Japan-2 Analysis and drawing up of interim report					□													
Work in Argentina-2 Interim consultation										□								
Work in Japan-3 Drawing up of draft final report														□				
Work in Argentina-3 Final consultation														□				
Work in Japan-4 Drawing up of final report																	□	
Submitting of reports			† IC/R			† P/R				† IT/R				† DF/R			† F/R	

Note: IC/R Inception Report P/R Progress Report
 IT/R Interim Report DF/R Draft Final Report
 F/R Final Report

Table I - 2 - 5 Itinerary of survey and study in Argentina

Period	Telecom. group	Broadcast. group	Econom. group
Aug. 15 ~ Aug. 31	Travelling, Courtesy call to related organizations, Discussion on Inception Report, Discussion on site survey schedule, Preparation of equipment for site survey		
Sep. 1 ~ Sep. 30	Site survey, Collection of data		Travelling, Site survey, Collection of data
Oct. 1 ~ Oct. 31	Site survey, Collection of data, Study on development guideline and goal	Site survey, Collection of data, Meeting with related organizations in Bs. As., Investigations at radio and TV stations in Bs. As.	Collection of data, Data analysis, Preparation of Progress Report
Nov. 1 ~ Nov. 22	Study on development guideline and goal	Study on development guideline and goal	Collection of data, Discussion on Progress Report, Travelling
	Meeting with Argentine coordinating group, Collection of data	Meeting with related organizations, Collection of data	
	Discussion on Progress Report, Courtesy call to related organizations, Travelling		

**PART II SIGNIFICANCE OF THE DEVELOPMENT PLAN FOR THE
TELECOMMUNICATIONS AND BROADCASTING
NETWORKS IN THE PROVINCE OF MENDOZA**

CHAPTER 1 SOCIAL AND ECONOMIC STRUCTURE

1.1 Observation of Argentine Economy as Premise of the Study

Like many other countries in Latin America, Argentina has long been ailing with pertinacious high rate inflation.

But, with a miracle of Plan Austral executed June 14, 1985, the Government of the Argentine Republic successfully suppressed inflation to a certain degree and inflation rate in June 1986 was 50.1% on yearly base as shown in Table II-1-1.

Apart from Plan Austral, President Alfonsín announced a strategic plan for attaining economic growth of the country from 1985 to 1989 in the name of "Lineamiento de una Estrategia de Crecimiento Economico 1985~1989".

Major indexes planned in the above guideline are as follows :

(1) Growth rate of GDP per capita :	4.0% annually
(2) Investment :	
Public sector growth	10.6% annually
Private sector growth	13.3% annually
Average	11.9% annually
(3) Consumption :Growth of volume	2.1% annually
(4) Export :	
Items of industries	11.9% annually
Items of energy	16.7% annually
Items of agriculture	6.4% annually
Average of the total	7.9% annually
(5) Import :	
Growth of volume	9.3% annually
(6) Foreign debt :	
Nominal increase	1.2% annually
but substantial	
decrease of	18.0% annually
(7) Employment : Unemployment	4.1% annually

Table II-1-1 Trends of inflation

(%)

	Consumer's Price		Wholesale Price	
	Monthly	Yearly	Monthly	Yearly
1985 Jan.	25.1	776.3	21.2	689.0
Feb.	20.7	803.9	17.8	702.1
Mar.	26.5	850.8	27.7	765.5
Apr.	29.5	938.8	31.5	851.0
May	25.1	1,010.1	31.2	950.4
Jun.	30.5	1,128.9	42.4	1,182.2
Jul.	6.2	1,003.3	Δ0.9	999.9
Aug.	3.1	825.7	1.5	815.2
Sep.	2.0	640.2	0.6	638.0
Oct.	1.9	532.4	0.7	544.6
Nov.	2.4	463.1	0.7	466.2
Dec.	3.2	385.4	1.0	363.9
1986 Jan.	3.0	299.7	Δ0.0	282.9
Feb.	1.7	236.8	0.8	227.5
Mar.	4.6	178.6	1.4	160.1
Apr.	4.7	125.4	3.0	103.7
May	4.0	87.4	2.7	59.5
Jun.	4.5	50.1	4.6	17.2
Jul.	6.8	50.9	5.1	24.4
Aug.	8.8	59.3	9.4	34.0
Sep.	7.2	67.5	6.8	42.2
Oct.	6.1	74.2	5.3	48.6
Nov.	5.3	79.2	4.9	54.8
Dec.	4.7	81.9	3.0	57.9
1987 Jan.	7.6	89.9	5.3	66.3
Feb.	6.5	98.9	6.9	76.5
Mar.	8.2	105.6	7.8	87.6
Apr.	3.4	103.0		

Source: INDEC

Annual growth rate of GDP for each sector by the plan is shown in Table II-1-2.

By the execution of Plan Austral, inflation was calmed somehow to a minimum level beyond expectation, it also inevitably invited deep setback of economy. Table II-1-3 shows growth rate of production volume of typical industrial items. Except for wheat flour and crude steel, heavy decreases are to be seen in most of the items.

Thus, resulted GDP growth rate per capita for 1985 was 4.4% decrease from the previous year as shown in Table II-1-4. But GDP per capita 1986 tended upwards (0.4% increase in the first quarter of 1986) and the volume of industrial productions rose 18.5% in the first quarter of 1986. But inflation rate was also rising beyond the plan of the Government of the Argentine Republic as well.

Table II-1-5 shows the forecasting of 6 economists for 1986 Argentine economy reported by an economic magazine "Mercado, April 24, 1986".

Every economist, interviewed by the magazine forecasted a very low level of growth rate of GDP per capita against the government's projection of 4% which had officially been announced to the public.

On the contrary, these economists saw higher than 50% inflation rate against the government lower projection of 2% monthly, 27% annually.

Recent economic trends have shown us that these economists projected rather accurately.

The Government of the Argentine Republic have repeatedly been asserting that their economic policies have been just to the point.

It is said that they are now shifting from stability concentration economic policy to growth incentive policy quite gradually and delicately on bit by bit base and thus it would often happen on these instances of turning points that some unadjustable turbulence would arise escaping the policy, though it should mostly be short-lived.

Table II - 1 - 2 Projection of GDP growth rate for each sector

Yearly growth rate (%)

	1984	1985	1986	1987	1988	1989	Average growth rate
GDP Total	2.4	2.5	4.0	4.0	4.0	4.0	3.70
Agriculture, forestry	3.5	4.0	3.1	3.1	3.1	3.2	3.30
Mines & quarries	0.3	4.0	5.0	5.0	5.0	5.0	4.80
Manufacturing	4.4	1.2	5.3	5.3	5.3	5.3	4.47
Construction	Δ20.9	14.0	8.8	7.0	7.0	6.0	8.52
Electricity & water	6.8	2.5	5.0	5.0	5.0	5.0	4.50
Finance & services	2.9	1.7	3.3	3.3	3.3	3.3	2.98

Source: Lineamiento de una Estrategia de Crecimiento Economico

Table II - 1 - 3 Industrial production

Industrial production (output of selected products)	1985	% change	
		1985/1984	1 Qtr 1986/ 1 Qtr 1985
Wheat flour ('000 tons)	3,962	2.5	2.1
Beer ('000 litres)	3,963	-0.2	31.2
Cotton yarn ('000 tons)	100	-12.8	36.5
Cement ('000 tons)	4,610	-11.8	8.3ac
Crude steel ('000 tons)	2,941	10.9	26.9a
Motor vehicles ('000)	138	-17.7	6.6ab
Tractors (units)	6,377	-47.5	52.9a
Tyres (mn)	3.9	-27.1	-17.5
Electricity ('000 kWh)	5.5
Sulphuric acid ('000 tons)	224	-11.5	-11.1
Polyethylene ('000 tons)	160	-15.3	64.8

a: First four months.

b: Passenger cars and light utility vehicles only.

c: Shipments to clients.

Source: The Economist Intelligence Unit.

Table II - 1 - 4 GDP growth rate of each sector

(%)

Sector	1983	1984	1985				
			I Q	II Q	III Q	IV Q	Year total
Agriculture, forestry	1.9	3.7	0.6	Δ1.0	Δ4.2	Δ7.7	Δ3.4
Mines & quarries	2.1	Δ0.9	Δ5.2	Δ5.5	Δ2.8	0.9	Δ3.2
Manufacturing	10.8	4.0	Δ3.5	Δ13.1	Δ19.1	Δ4.5	Δ10.4
Electricity, gas & water	8.0	6.5	0.5	1.9	Δ2.3	5.9	1.4
Construction	Δ6.8	Δ20.1	Δ14.2	Δ2.8	12.1	2.4	Δ0.5
Commerce, restaurant & hotel	3.5	4.8	0.6	Δ6.4	Δ16.0	Δ9.4	Δ7.6
Transportation & communication	4.1	4.3	Δ1.6	Δ1.0	Δ7.2	Δ5.4	Δ3.8
Finance & insurance	Δ7.5	0.9	Δ1.4	Δ3.2	Δ3.3	Δ0.4	Δ2.1
Public, social & service	1.9	2.2	2.0	1.6	1.8	2.0	1.9
GDP Total of Sectors	3.4	2.3	Δ1.2	Δ4.6	Δ8.2	Δ3.7	Δ4.4

Source: Banco Central

It should be also taken for granted that, by pushing forward most effectively and substantially, the present economic policy and plan of the Government of the Argentine Republic would finally be attainable in the long run.

1.2 Social and Economic Structure of the Province of Mendoza

1.2.1 Social structure of the province of Mendoza

Population of the province of Mendoza is over 1,300 thousand and its share in the nation is approximately 4.3% since the total population of Argentina is 30,430 thousand in 1985.

The province of Mendoza is No.4 big province in Argentina in population with about 150 thousand km² territory which covers 5.3% of Argentine continent portion.

Table II-1-5 Economic trends forecasting of 1986 by specialists

	GDP growth rate	Rate of inflation	Public prices	Foreign exchange (U.S. Dollar/Austral)
	%	%	%	
Economist A	1	80	55	1.30
Economist B	2.5	50	40	1.20 ~ 1.30
Economist C	2	60	65	1.32
Economist D	1	50 ~ 55	50 ~ 55	1.12 ~ 1.20
Economist E	2	85 ~ 95	60 ~ 70	1.28 ~ 1.36
Economist F	0.2	80 ~ 90	85 ~ 95	1.05 ~ 1.15

Source: (Magazine) Mercado April 24, 1986

Total urban population in Argentina was 84% in 1983 and that of the province of Mendoza was approximately 73% in 1980.

Recent tendency of population movement is also creeping concentration of people from rural areas, especially in the suburban areas of Mendoza city—Gran Mendoza—. (See Table II-1-6)

Population growth rate of the province of Mendoza has been higher than that of Argentine total in recent years. (See Table II-1-7 and Table II-1-8)

Socially active population (age between 15~64) of the province of Mendoza is 61% (1986, estimation), 790 thousand people of which rate is similar to that of Argentine total. (See Table II-1-9)

The province of Mendoza has lower level of population for agriculture comparing with that of Argentina though the province of Mendoza is famous for its wine related sector. Together with the level of Argentine total, the province of Mendoza holds conspicuously higher portion in the tertiary sector.

This type of population structure is rather similar to that of Western European countries beyond the level of other Latin American countries. (See Table II-1-9)

Table II - 1 - 6 Population: Intercensus growth, by districts. Province of Mendoza 1947/1960, 1960/1970, 1970/1980

Districts	Census		
	1947/1960	1960/1970	1970/1980
	(%)	(%)	(%)
The province	40.0	18.1	22.0
Capital	11.9	8.6	0.1
Gral. Alvear	36.7	10.6	6.0
Godoy Cruz	57.1	31.1	25.9
Guaymallen	63.8	25.9	29.3
Junin	21.7	5.4	15.2
La Paz	7.3	8.1	14.4
Las Heras	92.1	31.2	41.2
Lavalle	38.8	1.6	37.7
Lujan de Cuyo	38.8	21.9	31.7
Maipu	33.0	21.9	35.6
Malargue	(1) -	22.8	45.1
Rivadavia	39.9	8.7	14.7
San Carlos	27.8	6.8	7.5
San Martin	57.9	15.9	32.9
San Rafael	21.8	11.0	9.1
Santa Rosa	27.1	11.1	27.3
Tunuyan	40.5	13.7	18.5
Tupungato	28.8	36.0	17.8

Other conspicuous point of socially active population structure of the province of Mendoza is a protruding increase in women with occupation in any age classes. Especially in the age class between 30 to 49 years old, the portion has grown almost double from 1947 to 1980. (See Table II-1-10)

Table II - 1 - 7
Argentine population -
years 1970~1985

Years	Population until December 31st each year	
	(Inhabitants) (1)	Growth rate (%)
1969	23,600,026	-
1970	23,962,313	1.5
1971	24,352,400	1.6
1972	24,763,918	1.7
1973	25,189,330	1.7
1974	25,621,098	1.7
1975	26,051,685	1.7
1976	26,480,368	1.6
1977	26,912,173	1.6
1978	27,348,183	1.6
1979	27,789,481	1.6
1980	28,237,149	1.6
1981	28,693,618	1.6
1982	29,158,165	1.6
1983	29,627,147	1.6
1984	30,096,918	1.6
1985	30,563,833	1.6

Table II - 1 - 8
Population of the province of
Mendoza - Years 1970~1985

Years	Population until December 31st each year, thousands inhabitants	
	(1)	Growth rate (%)
1969	966.7	-
1970	977.4	1.1
1971	994.7	1.8
1972	1,012.7	1.8
1973	1,031.8	1.9
1974	1,055.6	2.3
1975	1,078.7	2.2
1976	1,101.5	2.1
1977	1,125.5	2.2
1978	1,150.3	2.2
1979	1,175.5	2.2
1980	1,201.2	2.2
1981	1,226.2	2.1
1982	1,249.7	1.9
1983	1,272.0	1.8
1984	1,294.0	1.9
1985		

Source: (1) INDEC: Years 1969 ~ 1980:
MDZ/RC "Estimacion proyecciones de poblacion
1950 ~ 2025"
Years 1981 ~ 1985: INDEC estimation

Table II-1-9 Socially active population in Argentina

		Socially active		Share of each sector					
		Population (Rate)		Primary		Secondary		Tertiary	
		1980	1983	1980	1983	1980	1983	1980	1983
		%	%	%	%	%	%	%	%
Argentine total (1)		-	61	-	13	-	28	-	59
Province of Mendoza (2)		61	-	9	-	32	-	59	-
Refer- ence	Japan	-	68	-	12	-	39	-	49
	U.S.A.	-	67	-	2	-	32	-	66
	West Germany	-	69	-	4	-	46	-	50

Source: (1) World Development Report, 1985

(2) Statistics of Mendoza Gov.

As shown in Fig. II-1-1, population structure by age classes of the province of Mendoza forms the best possible pyramid structure one can ever expect. Besides, Argentina is known for its high level of literate stratum of society as shown in Fig. II-1-2, which shows that the level is far higher than the level of Spain. The province of Mendoza is no exception of the level of the chart and Fig. II-1-3 tells us that the education level from the point of attendance rate of pupils in primary schools is supposed to be one of the highest.

Other statistics show that the number of medical doctors for inhabitants is one medical doctor for 344 inhabitants. Also very high level and better than some European countries.

Thus, human resources in the province of Mendoza are idealistically well fitted both in the age structure and higher level of education and the most important thing among them all is that it is foreseen that this tendency will hold its position until the year 2000. (See Table II-1-11)

Table II-1-10 Specific rates of socially active population of 14 years and more, by sex and great age groups of the province of Mendoza 1947/1960/1970/1980

Years	Both Sexes			Males			Females		
	14 ~ 29	30 ~ 49	50 & more	14 ~ 29	30 ~ 49	50 & more	14 ~ 29	30 ~ 49	50 & more
1947	52.3	58.9	49.1	80.8	98.0	84.4	22.5	15.8	9.0
1960	56.1	57.7	39.2	83.8	91.5	70.1	29.3	17.1	7.6
1970	50.9	58.6	37.8	75.2	96.1	67.0	28.3	21.2	9.4
1980 (1)	53.4	62.6	34.4	76.2	98.9	61.8	31.7	28.2	9.9

(1) Malargue is not included

Source: National Census of Population 1947 and 1960 INDEC.
 National Census of Population, Family and Housing 1970. DEC sample.
 National Census of Population and Housing 1980. INDEC.
 National Census of Population and Housing 1980. DEIE sample.

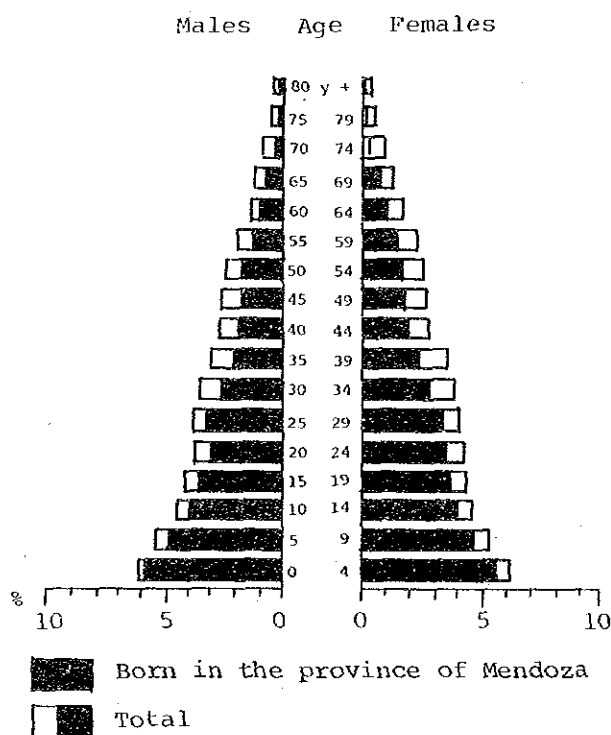
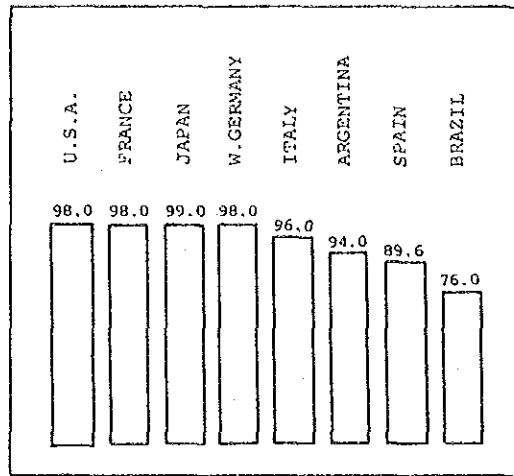
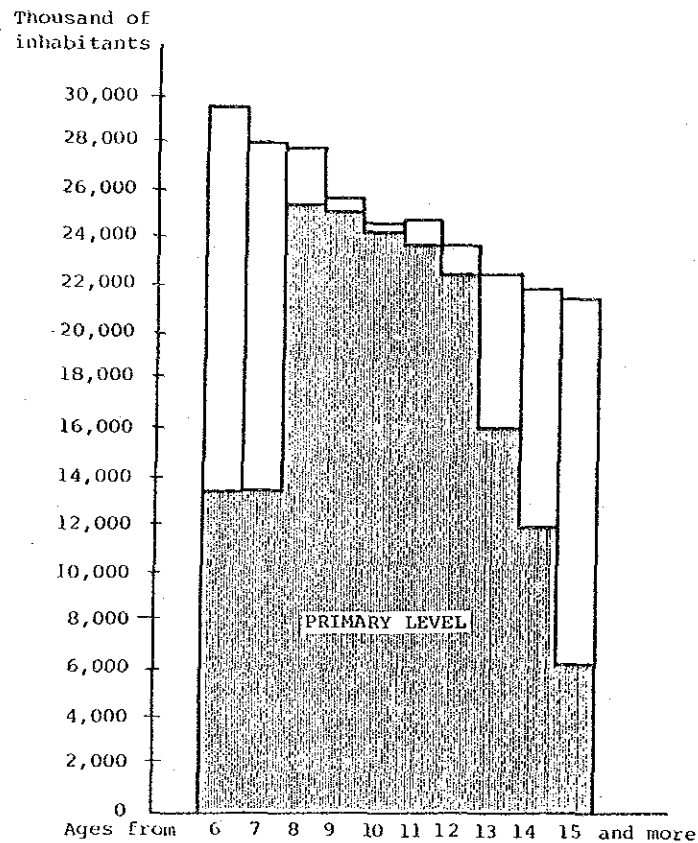


Fig. II-1-1 Structure by age and sex of the total native and non-native population-Province of Mendoza 1980-



Source: "Radiodifusion en la Argentina"
 Jorge Noguera,
 Editorial Bien Comun

Fig. II - 1 - 2 Percentage of literate stratum of society



Source : Anuario Estadístico
 Mendoza 1981~1984

Fig. II - 1 - 3 Population incorporated to the education. -Province of Mendoza 1983-By age and educational level

Table II-1-11 Structure of population by age groups in the province of
Mendoza

(According to projection of population,
- average hypothesis
(Functional groups)

	1980	1985	1990	1995	2000
	(%)	(%)	(%)	(%)	(%)
0 ~ 4	12.28	12.11	11.50	10.51	9.96
5 ~ 14	19.70	20.54	21.26	20.87	19.71
15 ~ 64	61.60	60.53	60.17	60.98	62.48
65 and more	6.42	6.52	7.07	7.64	7.85

Population until 30/6 of each year.

Source: Est. Especiales N° 139

1.2.2 Economic structure of the province of Mendoza

Share of the province of Mendoza for GDP (Producto Bruto Interno) in Argentina has been showing a little bit of increase on yearly base as shown in Table II-1-12. But the components of GDP of each field like agriculture, mines, industries and commercial...etc... from 1977 until 1983 shown in Tables II-1-13 and II-1-14 vary by the year. Most conspicuous is the decreasing tendency of agriculture and industries and the stronger position of mines (petroleum and uranium included) in the economy of the province of Mendoza.

Taking into account substantial influences correlatively strengthening the economy of the province of Mendoza as shown in Fig. II-1-4, the positions of wine related fields, fruits relative components and petroleum related industries share a great deal but still we cannot deny the degrading position of wine related fields again.

Table II - 1 - 12 Gross domestic product at constant prices of 1970,
Province of Mendoza-Nation 1977~1983

Concept	1977	1978	1979	1980	1981	1982	1983
National GDP	10,731,000	10,361,000	11,097,900	11,219,400	10,555,300	9,958,100	10,198,600
Provincial GDP	354,816	469,847	510,784	393,098	341,641	403,928	424,378
Provincial share (%)	3.31%	4.53%	4.60%	3.50%	3.24%	4.06%	4.16%

Source: Provincial GDP: DEIE

National GDP: 1977 ~ 1982 BCRA., in Anuario Estadístico de la Republica Argentina 1981 ~ 1982.
INDEC

National GDP: 1983 ~ BCRA, to the 3° quarter of 1983 in the bulletin of the DGI N° 364.

Table II - 1 - 13 Gross domestic product of the province of Mendoza
1977~1983, at constant prices of 1970

Great divisions	1977	1978	1979	1980	1981(*)	1982(*)	1983(*)
Total	354,816	469,847	510,784	393,098	341,641	403,928	424,378
1. Agriculture	24,597	21,029	91,348	42,270	9,107	13,381	10,273
2. Mines & quarries	36,332	67,030	43,173	28,053	34,498	65,433	91,006
3. Manufacturing	122,763	201,962	182,939	84,960	93,809	128,188	129,685
4. Electricity, water & gas	11,301	12,492	11,422	15,043	20,139	12,923	12,979
5. Construction	29,444	31,456	29,381	30,373	16,905	22,659	26,305
6. Commerce	40,043	40,366	41,917	44,148	41,323	55,842	44,634
7. Transportation	15,368	18,136	14,906	19,093	15,055	16,563	17,444
8. Finance	39,004	34,172	46,772	72,897	59,259	48,229	49,914
9. Services	35,964	43,204	48,926	56,261	51,546	40,710	42,138

Notes: (1): *Temporary figures.

(2): In the years 1977/1980 the IPI was used, general total, published by the BCRA.
In the years 1981/1983 an estimation made by DEIE was used.

Source: DEIE

Table II - 1 - 14 Relative participation of the major divisions in the gross domestic product of the province of Mendoza, 1977~1983

Great divisions	1977	1978	1979	1980	1981	1982	1983
	(in percentage)						
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1. Agriculture	6.9	4.5	17.9	10.8	2.7	3.3	2.4
2. Mines & quarries	10.3	14.3	8.5	7.2	10.1	16.2	21.4
3. Manufacturing	34.6	43.0	35.8	21.6	27.5	31.7	30.6
4. Electricity, gas & water	3.2	2.6	2.2	3.8	5.9	3.2	3.1
5. Construction	8.3	6.7	5.7	7.7	4.9	5.6	6.2
6. Commerce	11.3	8.6	8.2	11.2	12.1	13.8	10.5
7. Transportation	4.3	3.8	2.9	4.9	4.4	4.1	4.1
8. Finance	11.0	7.3	9.2	18.5	17.3	12.0	11.8
9. Service	10.1	9.2	9.6	14.3	15.1	10.1	9.9

Source: DEIE

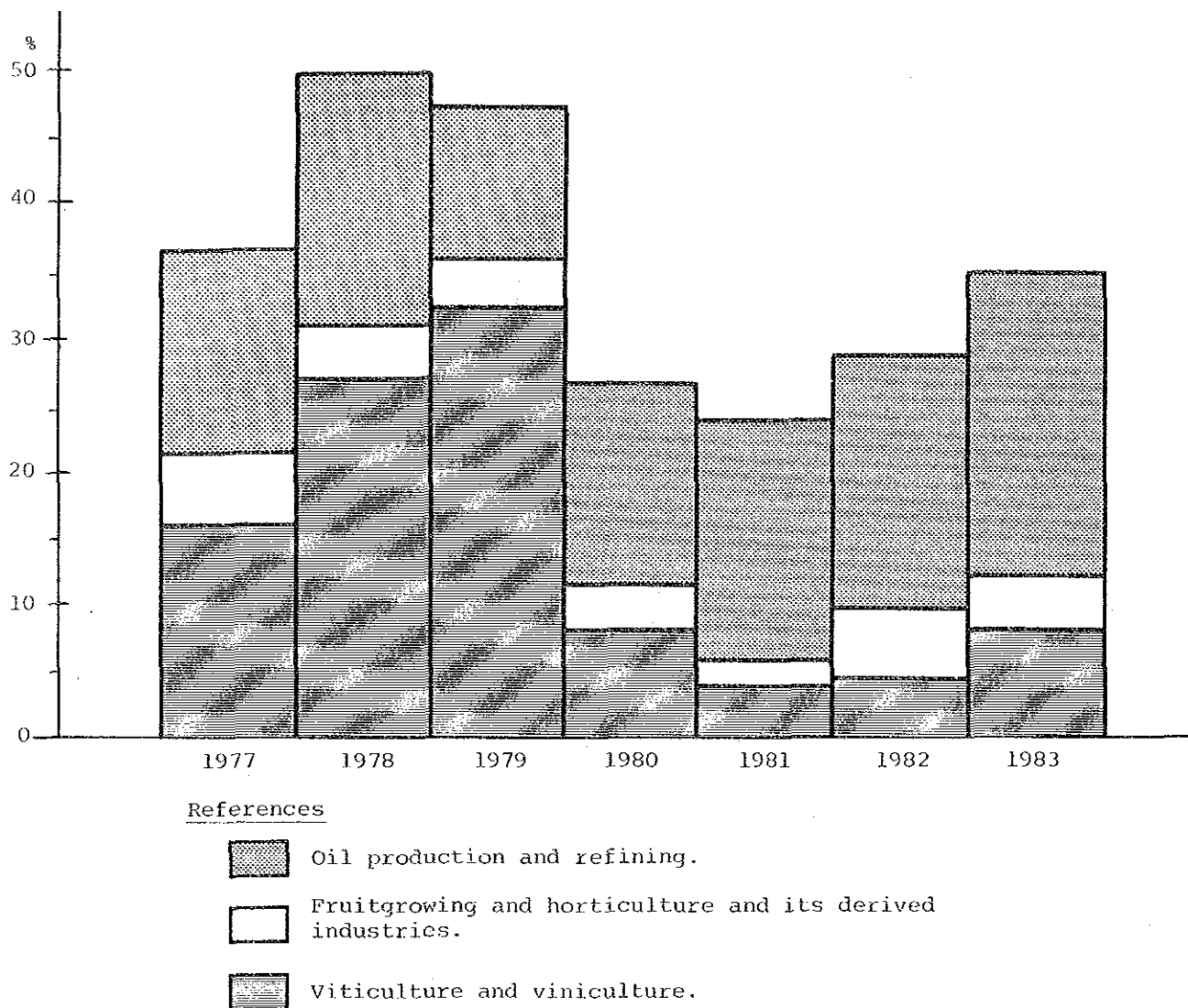


Fig. II-1-4 Relative participation of the principal components of the gross domestic product of the province of Mendoza-1977~1983-

Tables II-1-15 and II-1-16 show GDP per capita of Argentina (national) and of the province of Mendoza. These tables show static position of Argentine economy and of the economy of the province of Mendoza. But rise and fall of GDP per capita and their patterns are rather different between them and lead us to notice that the economic structure of the province of Mendoza is unique and is sometimes apart from the trends of the total.

Table II-1-15 National GDP per capita at constant prices of 1970

Year	GDP (1)	Average population	GDP per capita
	Thousand Argentine pesos	Inhabitants	Thousand Argentine pesos
1970	8,797,000	23,781,169	0.370
1971	9,122,100	24,157,356	0.378
1972	9,288,200	24,558,159	0.378
1973	9,619,800	24,976,624	0.385
1974	10,213,600	25,405,214	0.402
1975	10,128,700	25,836,391	0.392
1976	10,081,500	26,266,026	0.384
1977	10,731,000	26,696,270	0.402
1978	10,361,000	27,130,178	0.382
1979	11,097,900	27,568,832	0.403
1980	11,219,400	28,013,315	0.401
1981	10,555,300	28,465,383	0.371
1982	9,958,100	28,925,891	0.344
1983	10,198,600	29,392,656	0.347
1984			
1985			

Source: (1) National GDP: 1970 ~ 1982: Anuario Estadístico de la Rep. Arg. 1981 ~ 1982 - INDEC
Year 1983: DGI Bulletin

Through comparison of Tables II-1-14 through II-1-17, GDP of agriculture in total Argentina shares 13.8% and that of the province of Mendoza is only 2.4% in 1983. On the other hand, mines (petroleum and uranium included) of total Argentina is 1.9% and that of the province of Mendoza is 21.4% in the same year.

Concerning other areas like industries, construction and commerce, the above-mentioned tables show not much of significant gaps between the province and Argentine total except for finance sector where the province of Mendoza holds 11.8% share against 3.7% of Argentina total.

Table II-1-16 GDP of the province of Mendoza, per capita at constant prices of 1970

Year	GDP	Average population	GDP per capita
	Thousand Argentine pesos	Thousands of inhabitants	Thousand Argentine pesos
1970	352,890	972	0.363
1971	388,393	986	0.394
1972	429,291	1,004	0.428
1973	416,725	1,022	0.408
1974	416,561	1,044	0.399
1975	386,147	1,067	0.362
1976	349,434	1,090	0.321
1977	354,816	1,114	0.319
1978	469,847	1,138	0.413
1979	510,784	1,163	0.439
1980	393,098	1,188	0.331
1981	341,641	1,214	0.281
1982	403,928	1,238	0.326
1983	424,378	1,261	0.336
1984			
1985			

Source: DEIE
MDZ/HG

The province of Mendoza represents the wine related industries in Argentina since it holds the greatest portion of wine production in this country.

Problem lies in wine consumption tendency of Argentina in the past decade.

Table II-1-18 shows the wine consumption tendency from 1970 to 1983.

People in Argentina are now gradually leaving from wine consumption together with livestock consumption as shown in Table II-1-19 perhaps by the change of life style or by the long and scaring duration of inflation. Thus, wine related sector in the agricultural production is losing its position year after year in the province of Mendoza as shown in Table II-1-20 and

Table II-1-17 Relative participation of the major divisions in the gross domestic product of Argentine total, 1960~1984

	(%)						
	1960	1970	1980	1981	1982	1983	1984
Agriculture & forestry	16.8	13.5	11.4	12.5	14.3	13.8	13.8
Mines & quarries	1.1	1.8	1.7	1.8	2.0	1.9	1.9
Manufacturing	32.5	35.6	34.1	30.8	31.1	33.0	33.6
Electricity, gas & water	1.3	2.3	3.4	3.6	3.9	4.1	4.2
Construction	4.2	4.4	6.3	5.8	5.0	4.4	3.4
Commerce, restaurant & hotel	17.2	17.8	17.3	17.9	15.5	15.3	15.6
Transportation & communication	7.6	7.5	7.0	7.2	7.5	7.4	7.5
Finance & insurance	4.2	3.6	4.5	4.6	4.3	3.8	3.7
Public, social & service	15.1	13.6	14.3	15.7	16.6	16.2	16.1
GDP total	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: ECLA: Economic Survey of Latin America (1960 ~ 1970)

FIEL: Indicadores de Coyuntura (1980)

Table II-1-18 Apparent consumption of wine in the country Argentina 1970~1983

Years	Consumption of national wines	Consumption per inhabitant
	(hl)	(l)
1970	21,447,002	97.79
1971	20,215,113	85.30
1972	19,076,705	79.74
1973	17,754,454	72.54
1974	19,189,560	77.20
1975	21,124,037	83.68
1976	21,748,263	84.76
1977	23,158,163	88.45
1978	21,911,068	81.59
1979	20,664,487	76.32
1980	21,071,880	76.28
1981	21,022,645	74.67
1982	21,003,872	73.64
1983	20,549,958	71.11

Source: Instituto Nacional de Vitivinicultura.

Table II-1-19 Slaughter of livestock in the province of Mendoza, classified by cattle and sheep. Number of heads and meat obtained 1980/1983

Years	Total slaughter		Cattle		Sheep	
	Heads	Weight	Heads	Weight	Heads	Weight
		Thousand kg		Thousand kg		Thousand kg
1980	453,007	77,614.4	304,032	74,007.0	148,975	3,607.4
1981	429,221	73,880.3	290,071	69,363.0	139,150	4,517.3
1982	316,077	50,052.8	197,051	46,041.3	119,026	4,011.5
1983	267,937	42,841.5	162,933	39,888.6	105,004	2,952.9

Source: DEIE, based on monthly reports from Slaughterhouses and Cold-storage houses of Mendoza.

on the contrary, vegetable production sector extends its share in place of the decreasing wine related sector. Though, total agricultural production is yet in downward direction in value in the province.

Between the year 1971 and 1983, the province of Mendoza was No.1 petroleum producing province in Argentina as shown in Fig. II-1-5 but it is said that total volume of oil resources unexcavated in the province of Mendoza is rather limited and expansion of oil production in the province has little future probability.

Uranium resources are abundant in the province of Mendoza and its share in Argentina is dominant and ever expanding as shown in Table II-1-21.

Potential volume of other mineral resources is supposed to be limitless with more varieties and much volume slept underground in the province of Mendoza than we can expect, only problems lie in that exploitations for them are still at the foot of primary stage.

Except for telecommunications, infrastructures of the province of Mendoza seem to be well equipped and suffice conditions for the future "take off" of economy of this province.

Table II - 1 - 20 Livestock and agriculture production value added to constant prices of 1970, province of Mendoza, 1980~1983

Sectors	1980		Relative partic.		1981		Relative partic.		1982		Relative partic.		1983		Relative partic.	
	\$a.	%	\$a.	%	\$a.	%	\$a.	%	\$a.	%	\$a.	%	\$a.	%	\$a.	%
Livestock and Agriculture Production	41,454	100	8,454	100	12,588	100	10,121	100	10,121	100	10,121	100	10,121	100	10,121	100
1. Agricultural Sector	40,246	97.1	6,865	81.2	10,477	83.2	9,958	98.4	9,958	98.4	9,958	98.4	9,958	98.4	9,958	98.4
1.1 Viticulture	32,767	79.0	4,894	57.9	1,310	10.4	3,851	38.0	3,851	38.0	3,851	38.0	3,851	38.0	3,851	38.0
1.2 Horticulture	2,793	6.8	372	4.4	4,602	36.6	3,772	37.3	3,772	37.3	3,772	37.3	3,772	37.3	3,772	37.3
1.3 Olive growing	830	2.0	571	6.7	1,225	9.7	1,458	14.4	1,458	14.4	1,458	14.4	1,458	14.4	1,458	14.4
1.4 Fodder and Cereal	997	2.4	320	3.8	825	6.5	260	2.6	260	2.6	260	2.6	260	2.6	260	2.6
1.5 Fruit trees	2,750	6.7	596	7.1	2,407	19.1	578	5.7	578	5.7	578	5.7	578	5.7	578	5.7
1.6 Essential Crops	54	0.1	(1)112	1.3	(1)108	0.9	19	0.2	19	0.2	19	0.2	19	0.2	19	0.2
1.7 Bulrush	55	0.1					20	0.2	20	0.2	20	0.2	20	0.2	20	0.2
2. Livestock Sector	1,208	2.9	1,589	18.8	2,111	16.8	163	1.6	163	1.6	163	1.6	163	1.6	163	1.6

(1) For the years 1981 and 1982 an overall figure is given for the sectors 1.6 and 1.7.

Source: DEIE

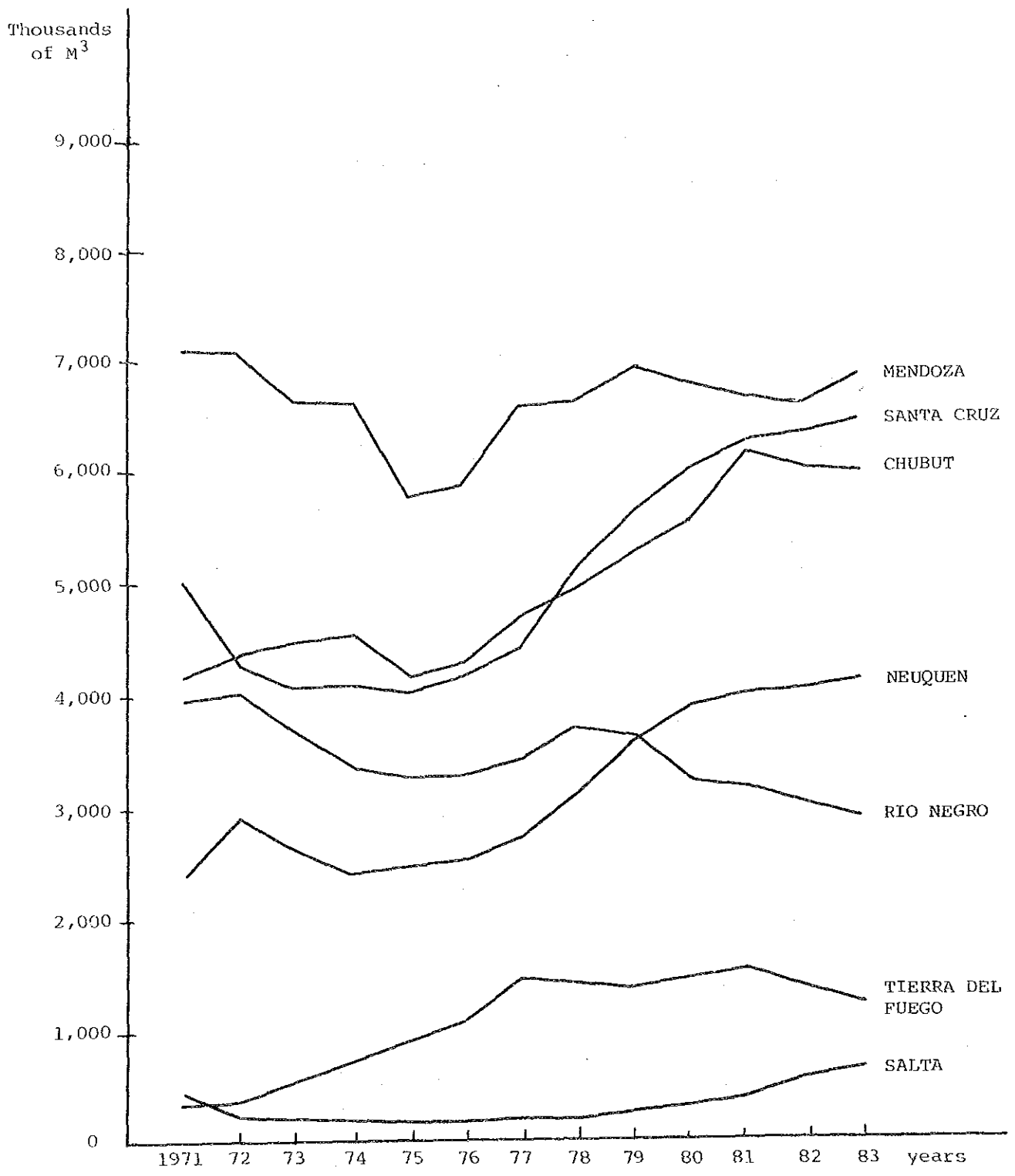


Fig. II - 1 - 5 Petroleum production of Argentine provinces 1971~1983

Table II-1-21 Uranium :Production of the province of Mendoza and Argentina 1971~1983

Years	Mineral of Uranium	
	Province of Mendoza	Argentina
	(tons)	
1971	18,033	37,985
1972	16,283	37,007
1973	14,794	36,416
1974	12,100	30,143
1975	11,317	31,587
1976	36,542	141,494
1977	70,000	187,521
1978	116,596	253,456
1979	179,420	326,960
1980	355,650	397,723
1981	289,009	289,009
1982	465,787	-
1983	-	-
1984	-	-

Source: Mendoza: until the year 1974 Mining Statistics of the Argentine Republic, from 1975 Direccion Provincial de Minería of the province of Mendoza. For Argentina Mining Statistics of the Argentine Republic.

CHAPTER 2 PRESENT CONDITION OF THE TELECOMMUNICATIONS AND BROADCASTING SERVICES

2.1 Telecommunications

2.1.1 Telecommunications in Argentina

The telecommunications services in Argentina are provided by Empresa Nacional de Telecomunicaciones (Telecommunications Public Corporation, hereinafter referred to as ENTEL), Compania Argentina de Telefonos S. A. (Argentine Telephone Company, hereinafter referred to as CAT) and Empresa Nacional de Correos y Telegrafos (Posts and Telegraphs Public Corporation, hereinafter referred to as ENCOTEL), under the control of the Ministry of Public Works and Services of the republic.

The telephone service is provided by the ENTEL in Buenos Aires and 17 other provinces, and by the CAT in six provinces including the province of Mendoza. The ENCOTEL provides with the monopolistic telegraph service in the republic, while the ENTEL also provides with the monopolistic telex and data transmission services in the republic.

The number of telephone main lines amounted to 2,272 thousand at the end of 1983 and the telephone density was 7.4 lines per 100 persons. There was, however, a waiting list of about 1,030 thousand.

Fig. II-2-1 shows the service areas of the ENTEL and CAT, and Table II-2-1 the number of telephone main lines for each province.

The ENTEL is promoting a plan to improve the telephone service with drastic increase of main lines and, as the first step, is executing the installation of one million main lines for five years. However, the plan does not cover the CAT's service areas.

Land mobile telephone service is not yet offered but it is under study to introduce the service in Buenos Aires.

The telegraph system has been modernized by employing an automatic message transmission system (SITRAM).

As for data communications service, construction of packet switching network is under way to introduce the service into major cities in the country.

The number of Telex subscribers amounted to about nine thousand in 1983. It shows a tendency to increase year after year, but the demand growth will be saturated as the introduction of data communications service progresses.

2.1.2 Telecommunications in the province of Mendoza

In the province of Mendoza, the provincial administration in charge of the telecommunications is the Telecommunications Director's Office of the Ministry of Public Works and Services of the province of Mendoza.

The telephone service in the province of Mendoza is provided by the CAT in the most parts as outlined above. The rest, i. e., General Alvear Department and some neighboring areas and Uspallata City, is provided by the ENTEL.

Fig. II-2-2 shows the service areas of the CAT and ENTEL.

At the end of 1986, there were 82,000 main lines in the province of Mendoza or 6.3 main lines per 100 persons, and with a waiting list of 40,000 lines the desire to improve the telephone service is strong.

There are 30 automatic and semiautomatic exchanges and 27 manual ones in the province as shown in Table II-2-2.

The central part of the Gran Mendoza area which consists of Mendoza City and neighboring cities, forms a multiple exchange area, and other areas are single exchange areas. Telephone network in the province is a star network as shown in Fig. II-2-3 and the exchanges at Mendoza, San Martin, San Rafael and General Alvear have toll switching function. Fig. II-2-4 shows the network configuration in the Gran Mendoza area.

The service areas of the central offices are rather restricted excepting urban areas of Gran Mendoza and San Rafael City. Many of the comparatively densely populated suburban districts and the wine producing areas in the suburbs are not sufficiently covered.

Most of manual exchanges are small and the service is not offered in the nighttime.

A public telephone system is provided outside the service areas of the central offices, but the areas with the system are small in number and the service is not available in the nighttime.

Therefore, there is a strong demand for improving and expanding the present telecommunications network.

Trunk circuits between the province of Mendoza and the province of San Juan are served by CAT transmission line and trunk circuits to other provinces are served by ENTEL transmission line. The interprovincial calls remain low in connection grade owing to the lack of trunk circuits and the demand for improvement is strong.

There are about 600 telex subscribers in the province of Mendoza and they are connected to an exchange in Cordoba via a concentrator in Mendoza.

The telegraph system has been modernized by employing an automatic message transmission system (SITRAM), but the terminal stations in the province have not been arranged enough and at stations which cannot communicate with the host station, the reception and transmission of telegrams is performed by regular car services.

There is no land mobile telephone service.

Private companies other than the CAT provide a radio--paging service that relays messages by means of an operator in Gran Mendoza. The number of subscribers amounts to about 1,000.

As for data communications, construction work is under way to establish a packet multiplexer in Mendoza and to house it in a packet switching exchange in Cordoba. Operation is expected to start in the near future.

Except for Gran Mendoza, cities with prefectural offices, and the surrounding suburban and cultivated land areas, the major part of the province of Mendoza consists of desert. In the middle west there are large farms (Estancias) in the desert and in other areas the population scattered over the wide desert area are mainly engaged in cattle breeding. Each population center (Centro de Poblacion) has a police station, a health center, a register office and a school. The area of influence of each population center stretches several tens of kilometers from the center, with a population of several hundreds. Consequently, the demand for subscriber telephones is mainly in the cities, suburban areas, the cultivated areas situated around the cities and the large farms.

Independent of the telephone network, the provincial government has established a HF radio system in the health centers located in the population centers in the desert.

The present problems of the telecommunications services in the province of Mendoza include coping with the waiting list, expanding telephone service areas, automatizing manual exchanges, replacing obsolete equipment, improving the interprovincial call connection service, expanding rural telephone service and improving the method of transmitting telegrams between terminal and host stations.



Fig. II - 2 - 1 Telephone service area of ENTEL and CAT

Table II-2-1 Number of telephone lines

October, 1983

Province	No. of main lines	Density (per 100 persons)
Buenos Aires	335,378	8.4
Santa Fe	189,484	7.7
Cordoba	142,222	5.9
Mendoza	75,139	6.5
Tucuman	40,470	4.2
Entre Rios	55,941	6.2
Chaco	17,613	2.5
Salta	22,520	3.4
Corrientes	19,635	3.0
Santiago del Estero	14,735	2.3
Misiones	12,393	2.1
San Juan	20,579	4.5
Jujuy	7,632	1.9
Rio Negro	19,765	5.1
Formosa	5,298	1.8
Chubut	11,398	4.3
Neuquen	9,446	3.9
San Luis	7,391	3.5
La Pampa	12,771	6.2
Catamarca	6,159	3.0
La Rioja	7,092	4.3
Santa Cruz	3,546	3.1
Tierra del Fuego	3,014	10.2
Provinces total (excl. Gran Buenos Aires)	1,039,621	
National total	2,272,000	7.4

Table II - 2 - 2 Local exchanges in Mendoza (1/3)

Year 1986

Area/depart- ment	Central office	Switching		Number of subscribers	Note
		System	Capacity		
Gran Mendoza	General Paz	Aut.	15,000	14,544	Multiple Ex.
ditto	El correo	Aut.	14,000	13,257	ditto
ditto	Dorrego	Aut.	4,096	3,887	ditto
ditto	Godoy Cruz	Aut.	9,000	7,748	ditto
ditto	Hipodromo	Aut.	4,000	3,850	ditto
ditto	Las Heras	Aut.	7,168	6,923	ditto
ditto	Loria	Aut.	2,048	1,878	ditto
ditto	Villa Nueva	Aut.	6,000	5,833	ditto
ditto	Maipu	Aut.	2,000	1,932	
ditto	Lujan de Cuyo	Aut.	2,000	1,935	
ditto	Rodeo de la Cruz	Aut.	800	726	
ditto	Fray Luis Beltran	Aut.	200	151	
ditto	Lavalle	Aut.	100	79	
ditto	Rodeo del Medio	Aut.	200	148	
ditto	Chacras de Coria	Aut.	1,000	945	
San Martin	San Martin	Aut.	3,500	3,395	
ditto	Palmira	Aut.	1,000	871	
Rivadavia	Rivadavia	Aut.	1,400	1,340	
Tupungato	Tupungato	Aut.	600	476	
Tunuyan	Tunuyan	Aut.	1,400	1,108	
San Carlos	Eugenio Bustos	Aut.	200	157	
San Rafael	San Rafael	Aut.	7,000	6,019	
ditto	El Nihuil	Semi- aut.	10	10	

Table II-2-2 Local exchanges in Mendoza (2/3)

Area/depart- ment	Central office	Switching		Number of subscribers	Note
		System	Capacity		
San Rafael	Gouge	Semi- aut.	10	8	
ditto	La Llave	Semi- aut.	40	16	
ditto	Las Malvinas	Semi- aut.	10	4	
ditto	Monte Coman	Semi- aut.	40	27	
ditto	Rama Caida	Semi- aut.	20	14	
Malargue	Malargue	Aut.	800	679	
Gral. Alvear	General Alvear	Aut.	2,400	2,027	ENTEL
Maipu	Cruz de Piedra	Man.	110	71	
San Martin	Chapanay	Man.	30	10	
ditto	Tres Portenas	Man.	30	20	
Junin	Junin	Man.	280	257	
ditto	Medrano	Man.	110	69	
ditto	Reduccion	Man.	30	9	
Rivadavia	Los Campanentos	Man.	30	19	
Santa Rosa	Santa Rosa	Man.	30	27	
ditto	La Dormida	Man.	30	26	
ditto	Las Catitas	Man.	30	25	
La Paz	La Paz	Man.	280	180	
Tunuyan	Vista Flores	Man.	100	73	
ditto	Campo Los Andes	Man.	220	33	
San Carlos	La Consulta	Man.	300	293	
ditto	Chilecito	Man.	30	23	
ditto	Pareditas	Man.	30	24	

Table II-2-2 Local exchanges in Mendoza (3/3)

Area/depart- ment	Central office	Switching		Number of subscribers	Note
		System	Capacity		
San Rafael	25 de Mayo	Man.	30	18	
ditto	Canada Seca	Man.	50	19	
Lavalle	Costa de Araujo	Man.	30	26	
Lujan de Cuyo	Agrelo	Man.	30	15	
ditto	Potreriillos	Man.	30	19	
Gral. Alvear	Bowen	Man.	100	93	ENTEL
ditto	Carmenza	Man.	20	17	ditto
San Rafael	Jaime Prats	Man.	100	13	ditto
ditto	Real del Padre	Man.	100	28	ditto
ditto	Villa Atuel	Man.	100	89	ditto
Las Heras	Uspallata	Man.	100	17	ditto
Total				81,500	

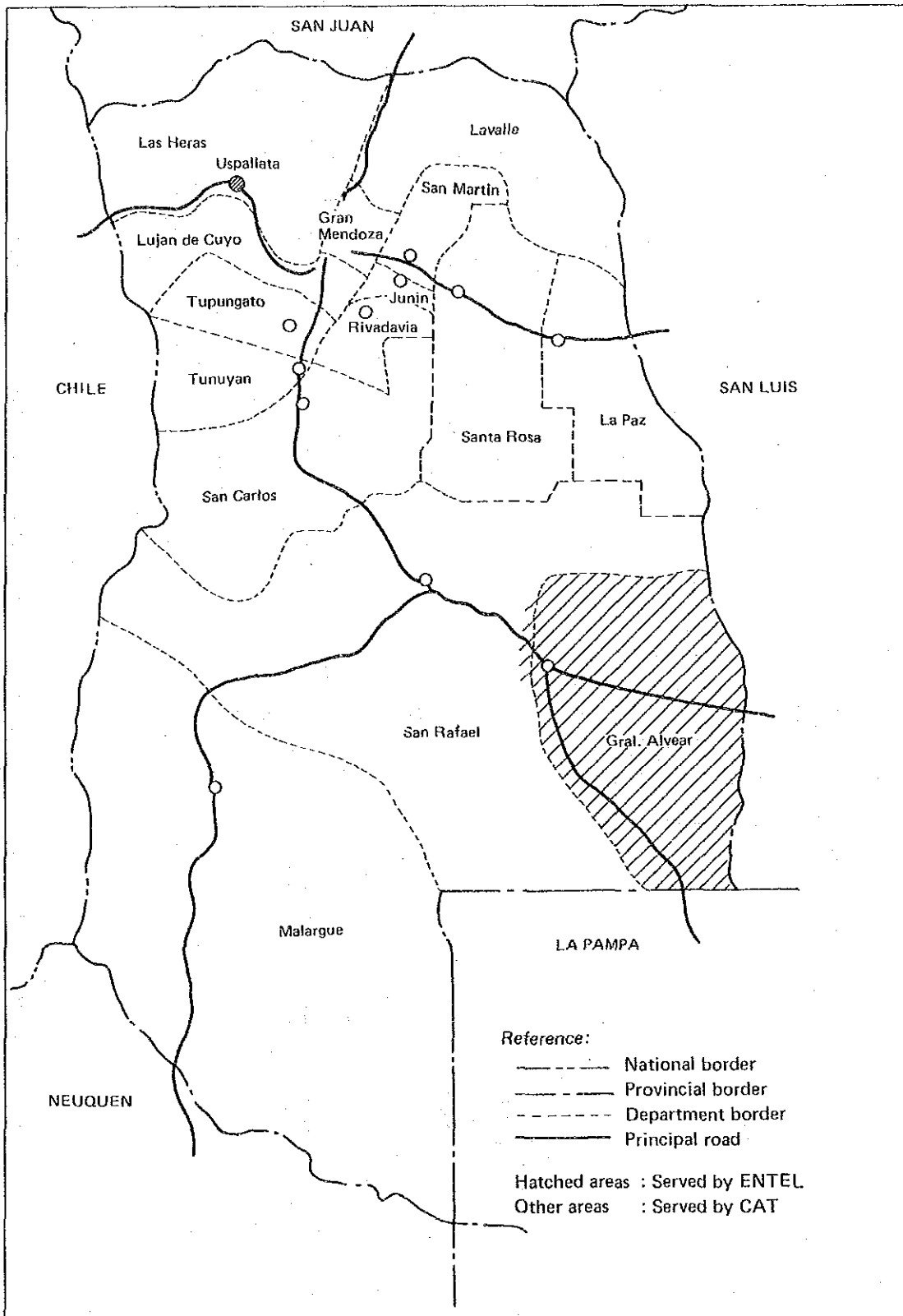


Fig. II - 2 - 2 Telephone service area in Mendoza

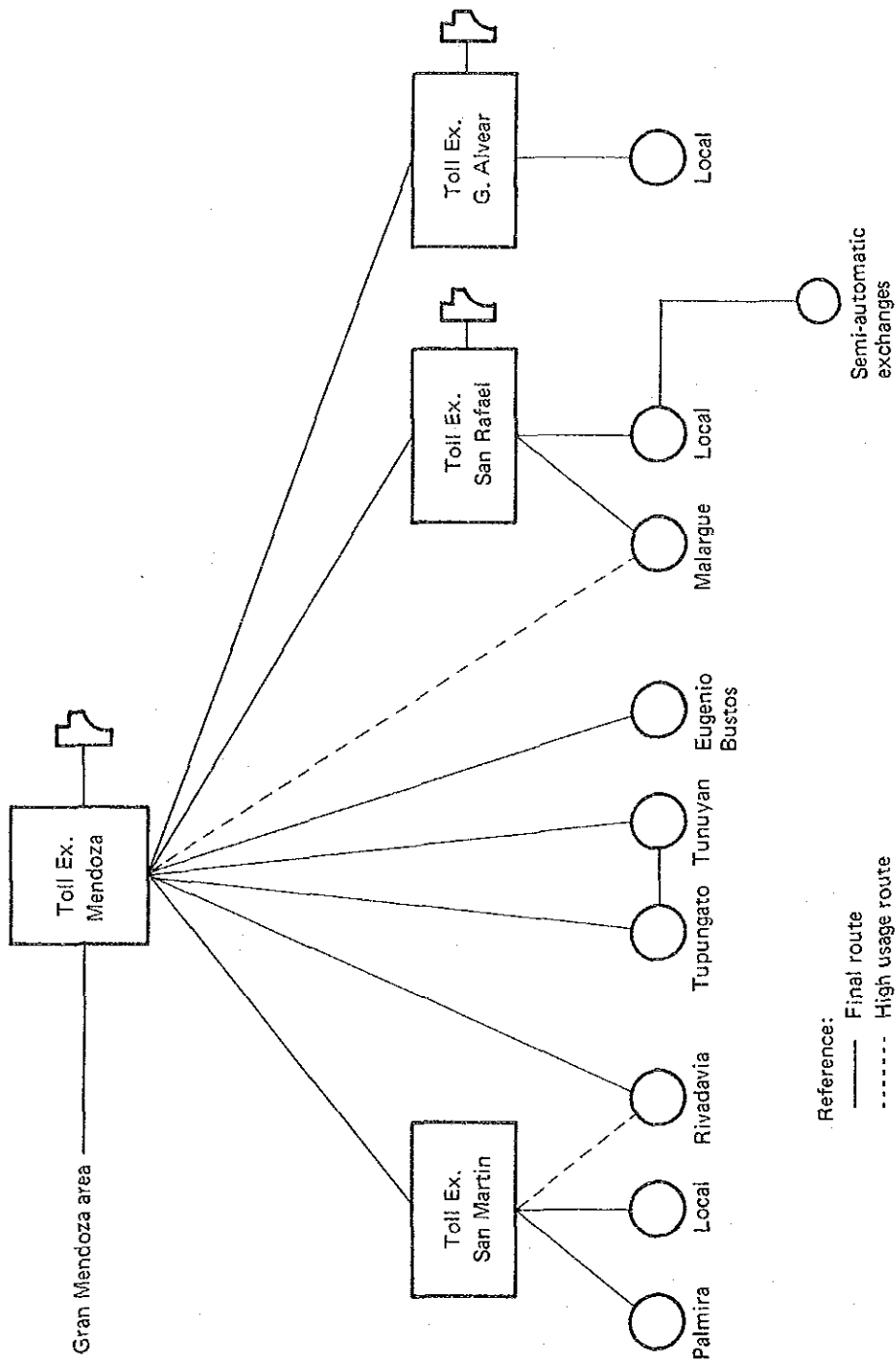


Fig. II - 2 - 3 Telephone network in Mendoza (Automatic exchanges)

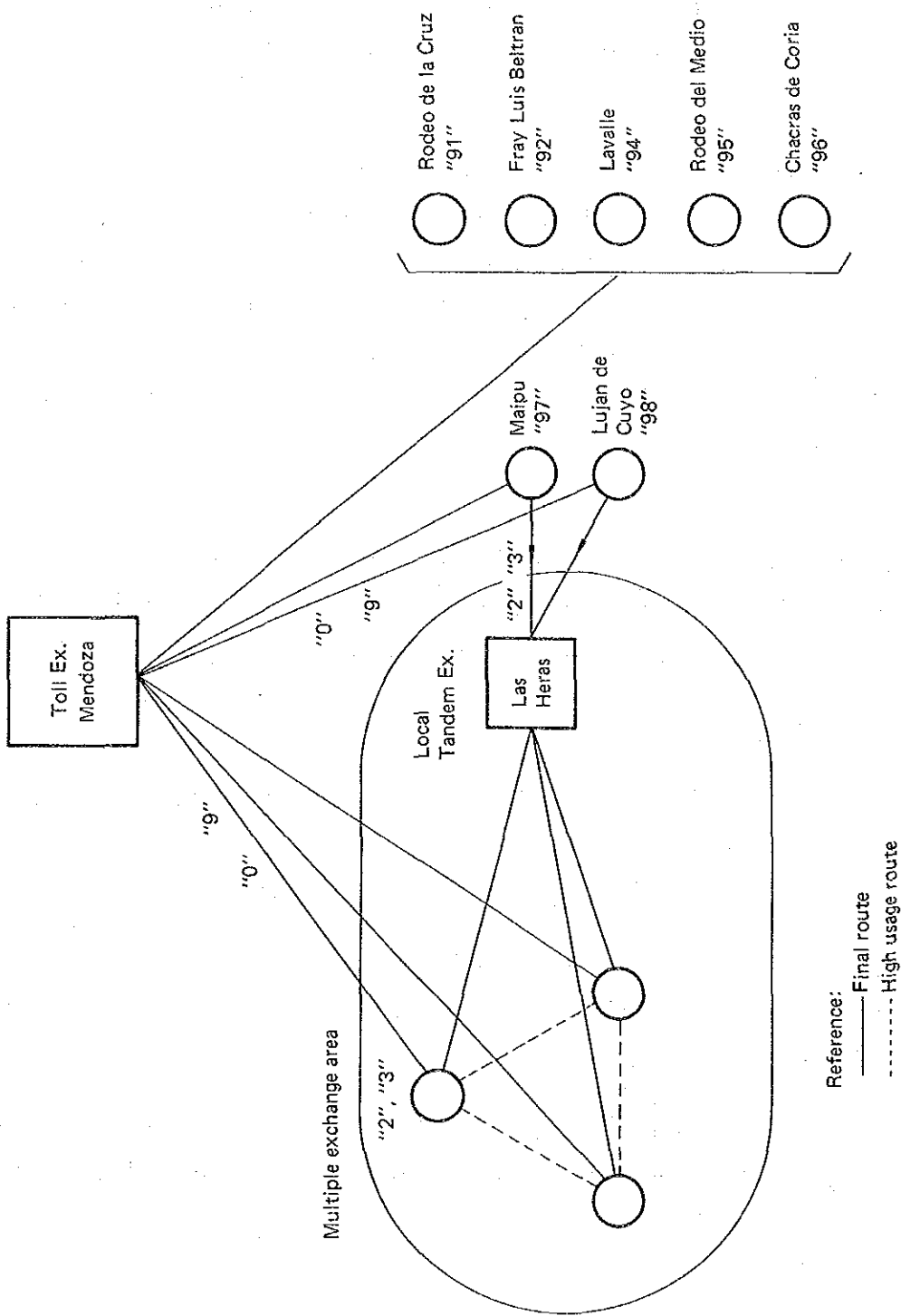


Fig. II - 2 - 4 Telephone network in Gran Mendoza

2.2 Broadcasting

2.2.1 Broadcasting in Argentina

Administration and operation of broadcasting have been conducted under the governmental structure and organizations shown in Fig. II-2-5 based on the broadcasting law.

The governmental organization, the Ministry of Public Service, the Secretary of Public Information (S.I.P), the Federal Committee of Broadcasting (COMFER) and the Ministry of Education are partially taking in charge of broadcasting through their own policies, and the permission of broadcasting and its superintendence is controlled by COMFER. S.I.P stations are expected to become private station and the supply of personnel payment from S.I.P. is partially suspended. Private broadcasters are the member of ARPA and/or ATA.

At present, there is a movement to modificate the broadcasting law since the fall of last year and the proposals for the improvement of the law have been submitted from COMFER, S.I.P and others related to broadcasting industries.

(1) Radio Broadcasting

At present, S.O.R. station is operated in each province, and S.I.P., university provincial and municipal stations are under operation in some provinces as shown in Table II-2-3. (S.O.R. : Servicio Oficial de Radiodifusion)

In the broadcasting law, business category of S.O.R. and the function and power of S.O.C. for the operation of broadcasters are specified, regulating the foundation of medium wave broadcasting.

Both S.O.R. and S.I.P. stations are operating in the provinces shown in Fig. II-2-6 and Fig. II-2-7 and the province hatched with dotted lines has university station.

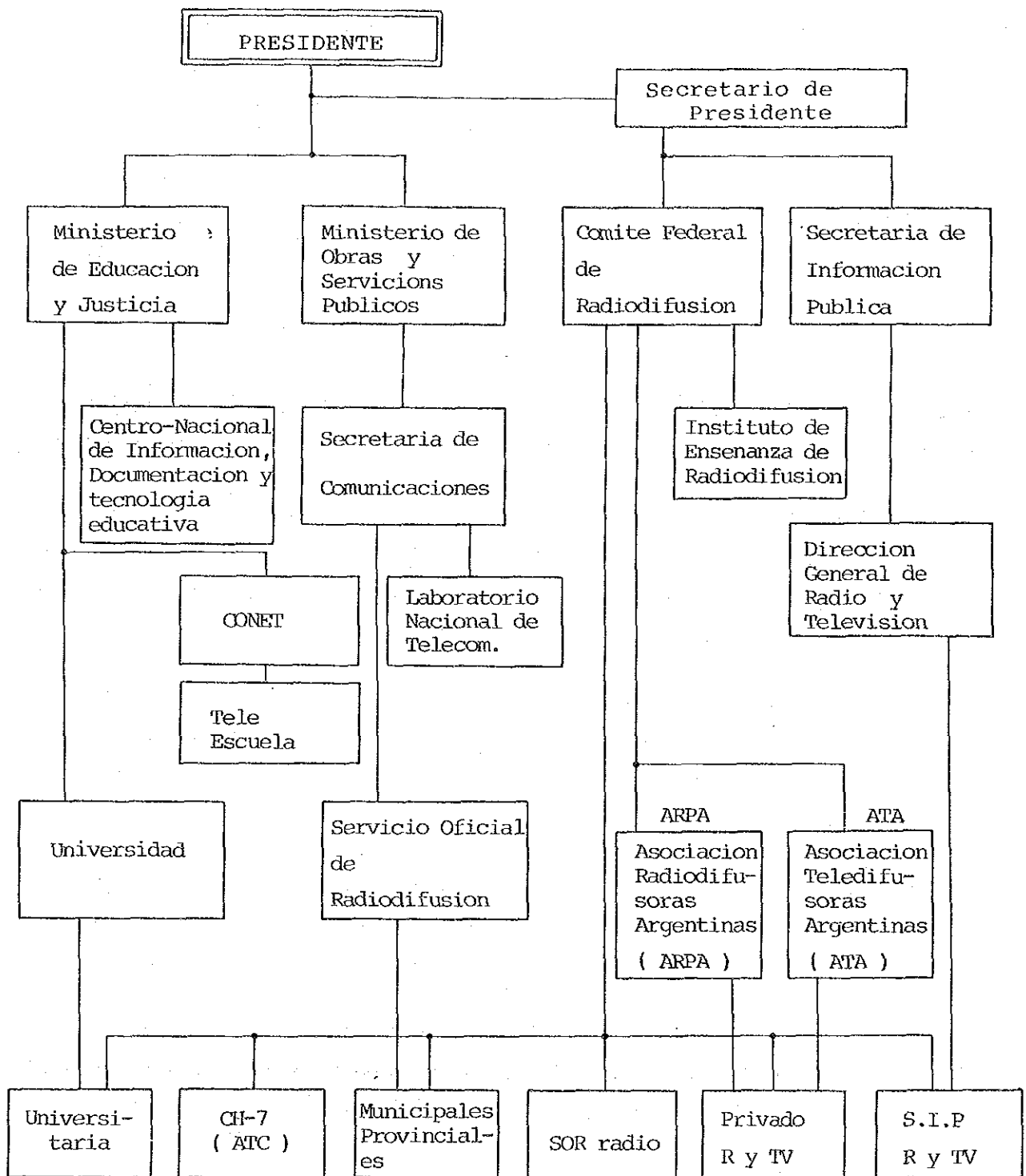


Fig. II - 2 - 5 Organization structure related to broadcasting

Table II - 2 - 3 Classification of MF radio station

Classification	Number of stations	Province of Mendoza	Remarks
S.O.R	58	1 station *1	*1 LRAS
S.I.P	15	3 stations *2	*2 LV8, LV4, LV19
University	3	-----	
Provincial	2	-----	
Municipal	2	1 station *3	*3 LV18
Private	98	4 stations *4	*4 LV6, LV10, LV23 LV24

Note: New Uspallate MF station is not included.

Total number of households is 9,070,968 and the possession of MF receivers is 8,889,548 households, and the diffusion rate is about 98% as of the end of 1985.

Classification of broadcaster by programming is shown in Table II-2-4. Main stations are operating 24 hours and the other 18 hours from 6:00 to 24:00 and the commercial time is limited less than 14 minutes per hour. Classification of stations by output power is also shown in Table II-2-5.

In 1935, international agreement was made on the shared use of MF band between South American countries. And it was revised in 1940, then following to the recommendation of IFRB, broadcasting frequencies are gradually changing since 1979.

At present, 77 channels are assigned to Argentina and partially they are commonly used among neighbouring countries. And totally 178 stations are using 77 channels, so two stations are using same frequency in average.

High power stations which counts 1/3 of the total stations, are mainly 25 kW station and from the fact that the same frequency is used among several stations, co-channel interferences are observed during the nighttime.

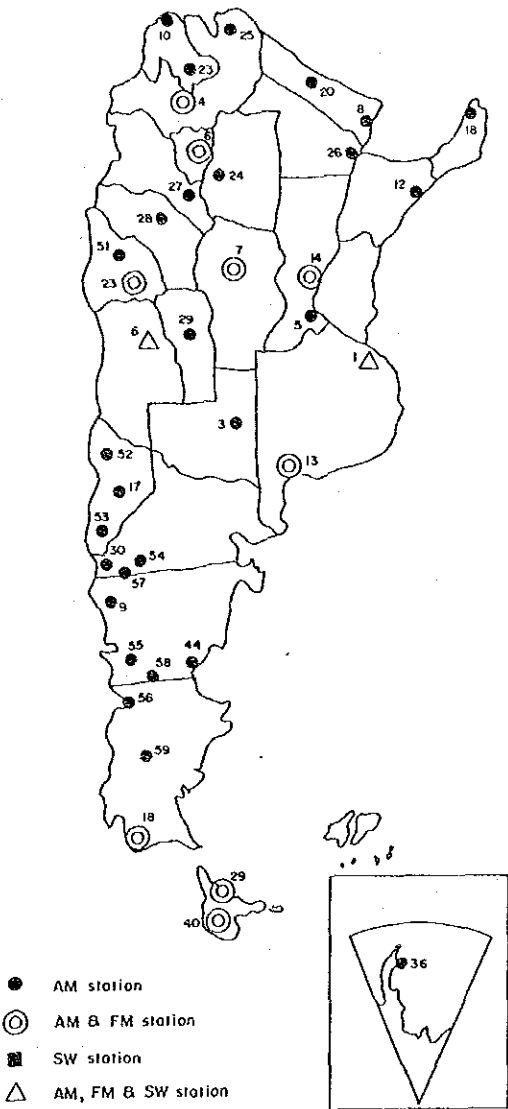


Fig. II - 2 - 6 Official service of broadcasting (S.O.R. station) quoted from "Radiodifusion en la Argentina"

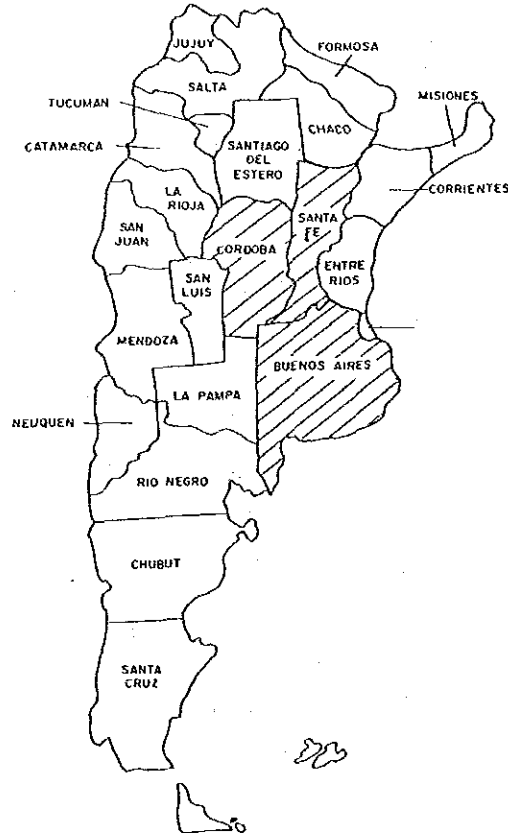


Fig. II - 2 - 7 Official service of broadcasting (S.I.P. station)

Table II -2-4 Classification of MF station by program

Governmental broadcasting (Commercial)	(20 + 15) stations	S.O.R + S.I.P
Governmental broadcasting (No commercial)	38 stations	S.O.R
University (Commercial)	3 stations	Universitarias
Private (Commercial)	95 stations	Privadas
Public (Commercial)	4 stations	Provinciales Municipales

Table II -2-5 Classification of station by power

Power	Number of station
100 kW	2
50 kW	2
25 kW	51
15 kW	1
10 kW	15
5 kW	15
3 kW	1
1 kW	32
0.25 kW	30
0.1 kW	1

Among many MF broadcasters, it should be pointed out that university broadcasting are operating in Buenos Aires (La Plata), Santa Fe and Cordoba. And these provinces are ranked from the first to third and the province of Mendoza the forth. Although the province of Mendoza is ranked high, no educational broadcasting is operating.

In Table II-2-6, list of MF frequencies assigned to the Argentine Republic is shown. For the use of regional broadcasting, 18 channels of 1 kW or less are assigned.

No synchronous broadcasting station is operating, however study is on the way to introduce dependent synchronous broadcasting.

No wideband program transmission line is available at present, accordingly almost all of programs except for news and other important programs are produced in each station.

Table II - 2 - 6 Assigned MF frequency

Exclusive use		Regional use				Local use	
Cat. "A"	Cat. "B"					Cat. "A"	Cat. "B"
750	710	540	780	1110	1320	1430	1510
870	790	560	820	1120	1330	1440	1520
	830	580	840	1130	1340	1450	1530
	910	590	890	1160	1350	1460	1540
	950	620	900	1170	1360	1470	1550
	990	630	960	1200	1370	1480	1560
	1070	640	970	1210	1390	1490	1570
	1150	670	1010	1240	1400	1500	1580
	1190	680	1020	1250	1410		1590
	1230	690	1030	1260	1420		1600
	1310	720	1080	1270			
		730	1090	1300			
2	11	46				8	10
Total: 77							

(2) FM Broadcasting

Diffusion of FM broadcasting is insufficient compared with MF and TV and are operated in the major provinces. Total number of stations is only 29, and 15 stations are operating in the province of Capital. Other stations are operating in the main cities as shown in Table II-2-7 and the diffusion rate of FM receivers is fairly low, amounting to about 68.5%.

Same as in the case of MF broadcasting, no wideband transmission line is available and hence it is obliged to use 3 kHz narrow-band telephone lines for program transmission which Entel operates at present. By the reason, except for the news program coming from Buenos Aires, program is originated from their own studio, mainly consisting of record program and talk program.

As to the frequency allocation plan at present made by the S.O.C., it is necessary to consider the relationships of other utilization, such as aviation and television broadcasting and so on.

Table II - 2 - 7 Distribution of FM station in each province

Province	Number of station
Buenos Aires	15
Santa Fe	3
Cordoba	3
Mendoza	3
San Juan	2
Jujuy/Santiago	each 1
Corrientes/Salta/Tucuman	each 1

(3) Television Broadcasting

Television broadcasting stations in operation are classified by program as shown in Table II-2-8.

Table II - 2 - 8 Classification of broadcasting station by program

Station	Number of main station	Number of translator
CH-7, affiliated	1	22
S.I.P	4	2
Provincial	9	25
University	2	7
Private, controlled	1	5
Private	24	122
Total	41	183

Broadcasting in major cities is operated 14 hours, from 11:00 to 01:00 in the midnight and in other districts, about 8 hours from 17:00 to 01:00. Commercial broadcasting time is limited within 12 minutes per hour (incl. station break). Comparison of stations which operate in the main provinces is shown in Table II-2-9.

As for the diffusion of TV receivers, 7,622,288 households which is about 84% of total population are receiving TV broadcasting as of the end of 1985, and it is estimated that about 60% of them are color receivers.

Table II -2 -9 Comparison of television service in major provinces

Province	Number of broadcasting station	Number of households served	Microwave link
Buenos Aires	10	4,421,261	
Santa Fe	3	809,340	Up link 1+(1) Down link 1+(1)
Cordoba	4	646,495	Up link 2 Down link 2
Mendoza	3	300,104	Up link 1 Down link 1
Tucuman	2	221,183	Up link 1 Down link 1

TV broadcasting in the Argentine Republic has been operated under the system PAL-N same as of Uruguay and Paraguay. However as for the program production, PAL-B format equipment have been used and the transmission of television signal via microwave links and satellite have been conducted in PAL-B. Transcoding of PAL-B signal to PAL-N is made in the input circuit of each television transmitter by using special CODEC. Accordingly, as for the modulation of signal, there is a problem to use CODEC regardless of output power even the mini-power station except for translator station.

(4) Shortwave Broadcasting

Shortwave transmitter stations are operating in Buenos Aires and Mendoza under the control of ENTEL.

Due to the skip distance, receiving condition within the province of Mendoza is insufficient and the condition is almost same in Buenos Aires.

2.2.2 Broadcasting in the province of Mendoza

(1) Radio Broadcasting

Present state of MF radio broadcasting in operation within the province is shown in Table II-2-3 as explained previously. Among these, the service areas of the main stations are shown in Fig. II-2-8. Main areas of the province are almost covered with enough field strength. It could be said that as the construction of national station (S.O.R) has completed at Uspallata, population coverage in the province becomes more than 98%. Receiving condition in the city of Gral. Alvear at nighttime is shown in Appendix 9. As it is already explained, many stations are commonly using the same frequency in the country, therefore, it is difficult to avoid co-channel interference completely at nighttime.

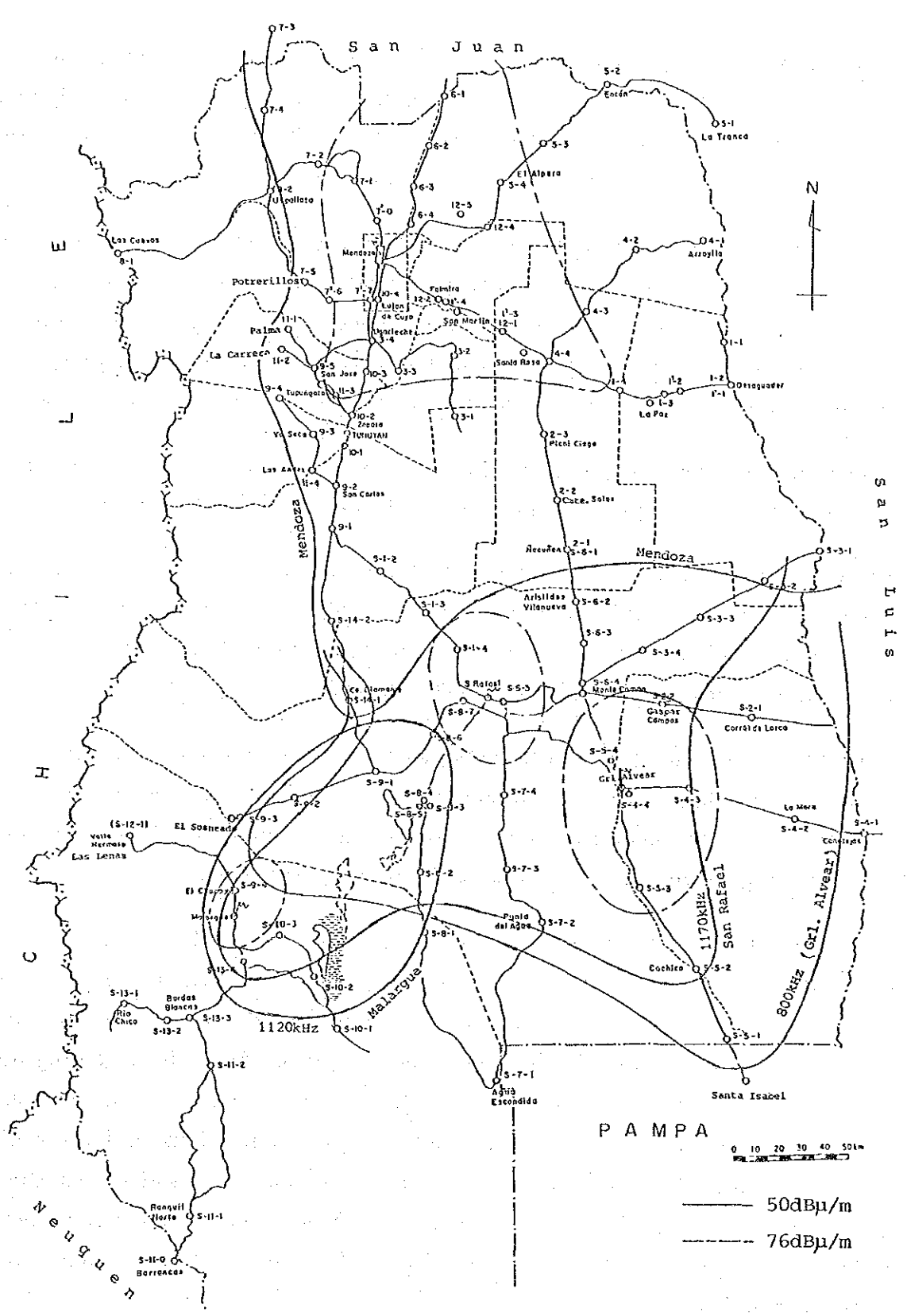


Fig. II - 2 - 8 Service area of main MF transmitter stations

In general, existing broadcasting facilities are extremely superannuated and yet operating stably but a few stations are sending somewhat distorted signals because supply of consumable parts such as transmitter and receiving tubes etc., are insufficient, and hence the bad tubes are not replaced.

However, a low power transmitter for reducing power at nighttime is reasonably used as a standby transmitter, and many stations are comparatively maintained in good condition. Almost all stations are using base grounded antennas and the apparent radiation efficiency of antennas are relatively low according to the results of measurement, and the values are about 50% to 80%.

The revolution of emergency engine generator is high and the whole device is built compactly, but no station is provided with automatic starting function.

As the transmitting stations are generally located at damp zones, the results of the measurement of field strength show comparatively good propagation characteristics and the conductivity of soil is estimated higher than the expected value. They are about $\sigma = (5 \sim 8) \cdot 10^{-3} \text{S/m}$.

The reception condition in mountainous zones of west and south districts are bad, and even in shortwave broadcasting, signals arriving from foreign countries are stronger than the domestic due to skip distance. Accordingly expansion of MF broadcasting service to these districts is urgently required.

In the aspect of programs, in general, majority of the transmitted programs are produced in each station. They are mainly consist of playback of records and simple news, comments etc., and not so many complicated programs as dramas, documentary etc. The reason is that the audio frequency bandwidth of program transmission line is narrow and sound quality is poor, and that the program transmission is operated by one-man control system. In addition, both radio and FM programs are originated in the same premises and sometimes same programs are broadcast. Thus the number of staff is reduced considerably and even 25 kW class station, it is operated with staff of about 30, to cut down the personnel expenditure.

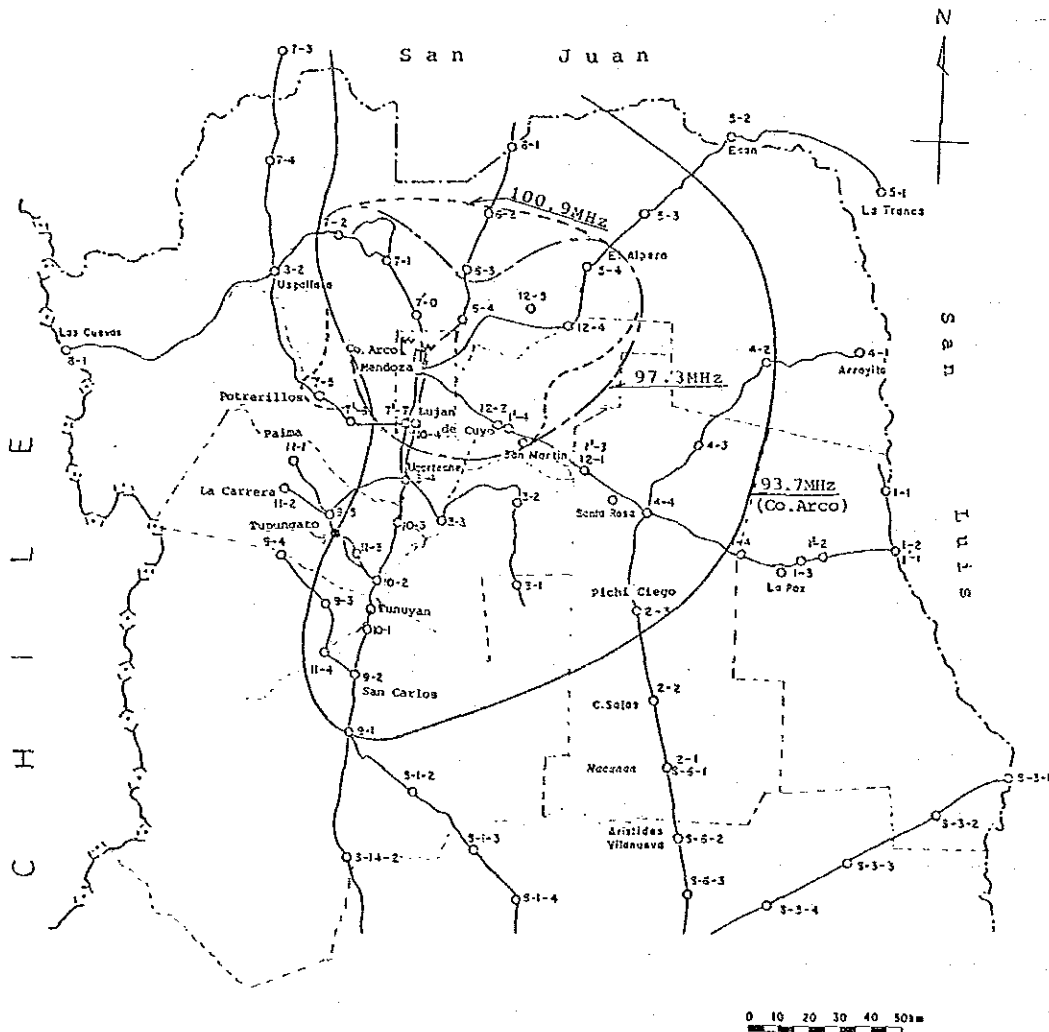
At present, the advertisement rate of radio broadcasting is higher than that of FM. However, in respect to revenue, it is about 1000 Australs/month/staff. The sales tax imposed on broadcasting are left unpaid in some stations.

The stations of which improvement work are currently in progress are studio of Radio Nacional Mendoza station LRA6, and the new studio of LV10 Radio Cuyo which has burnt down by fire. In addition to these, construction of new Uspallata transmitter station has just completed and removal of LV18 Radio Municipal in San Rafael district, and LV19 Radio Malargue are also in progress.

Furthermore, change of transmitter of LV 4 Radio San Rafael is also being planned. Thus, renewal of transmitters is entering its golden age. However, on the other hand, there are some unstable transmitters which have to be replaced or modified before long.

(2) FM Broadcasting

There are three FM stations in operation at Mendoza city. The service area of Radio Nacional Mendoza and Radio Cuyo FM station are respectively small as shown in Fig. II-2-9. The service area of Radio Nihuil FM station of which the transmitter is located at the summit of Co. Arco is considerably large although it is operated with experimental facility. Majority of the programs of all stations are presented in stereo excluding news programs. However, the sound quality radiated from some station is somewhat inferior which may be caused by careless handling of records etc. The heights of FM transmitter antenna of Nacional and Cuyo station are low, and there seems to be no plan at present to move the antennas to the top of medium wave antenna tower (150 - 170 m), to expand the service areas for the time being.



Contour line shows 36 dBu/10m

Fig. II - 2 - 9 Service area of existing FM station

On the other hand, at Nuhuil station at Co. Arco, test transmission of circularly polarized wave was actually conducted, and various technical tests are being carried out. For the transmission of program to Co. Arco transmitter station, signals is modulated in FM in studio and sent through FM link, thus new techniques are being introduced positively. Popularization rate of FM receivers is not distinct because no official material is available. But the advertisement fee of FM is set at a lower rate than that of radio, and the popularization rate of FM receiver is estimated at about 40% in the province.

In addition, Radio Libertador station is licensed for FM broadcasting, but due to financial reason, it has no FM facility yet, and in San Rafael district no FM station is in operation.

Wideband FM program transmission line is unavailable at present, and the provision of digital transmission lines is required for making the transmitted signal quality transparency and the basic consideration how to formulate the network constitution is necessary.

However, technical movement toward high fidelity broadcasting is seen in introducing Compact Disk and the replacement of studio equipment and so on.

(3) Television Broadcasting

At present, television broadcasting is operated in band CH-7 and CH-9 in Mendoza and in San Rafael in band CH-6, and in Malargue (Co. Diamante) all of these translator stations are operated. From the viewpoint of population, there is a great imbalance in terms of electric wave service.

In addition, as shown in Fig. II-2-10, translator stations of CH-7 are located and servicing outside of the province of Mendoza, at San Luis, Mercedez and San Juan. However, in these places, as advertisement is prohibited, during advertising hour still pictures are automatically sent out.

The service area of each station which were actually measured are small as shown in Fig. II-2-11, and at present, the broadcasting areas of CH-7, CH-9 and CH-6 are limited to the northern district and southern district respectively. In respect to the service area of Co. Diamante relay station, legal conflicts are being taken.

The diffusion rate of television receivers at present in the province is said to be over 85%, but there were no official material available. However, if the reception condition of grade-2 is also to be included, the household coverage in the province will be over 95%.

There is still some dissatisfaction in programs, but a service system is being established. However, as commercial programs are only broadcast, it could not be said that it is a complete form of broadcasting.

On the other hand, from the viewpoint of program composition, the case of which programs of CH-7 in Buenos Aires are broadcast is few, and the majority of the programs are sent from CH-9, 11 and 13 in Buenos Aires. Accordingly, such university and cultural programs as that of the provinces of Cordoba and Tucuman are not broadcast so much. In addition, as no provincial broadcasting is operated, only commercial broadcasting is served in the province.

(Refer to Fig. II-2-10 and Fig. II-2-11)

If major provinces which have a great population are compared in terms of programs, the difference and peculiarity are conspicuous as shown in Table II-2-10. In other provinces, the programs which are currently being broadcast except Santa Cruz (programs of CH-7/ATC) are all commercial programs. Accordingly, in highly populated provinces, many cultural programs are being broadcast, and in other provinces with few population, commercial programs are mainly dominant.

Mendoza is different from other major provinces in respect to television broadcasting, and cultural and provincial programs which are the feature of highly populated provinces are not being broadcast. It could be said that consideration on broadcasting is somewhat lacking. In Fig. II-2-14, the portion hatched with horizontal lines, corresponds partially to the provinces in Table II-2-10.

Accordingly, in order to serve cultural programs etc., which are about in the same level as that of other major provinces, it is necessary to rebroadcast programs of CH-7(ATC), or broadcast provincial programs, or consider to start such university broadcasting as performed in the province of Cordoba and Tucuman.

In addition, as explained later, there is only one microwave link from Buenos Aires to Mendoza for television program transmission, therefore it is unavoidable to use by time-share upon elaboration of broadcasters concerned.

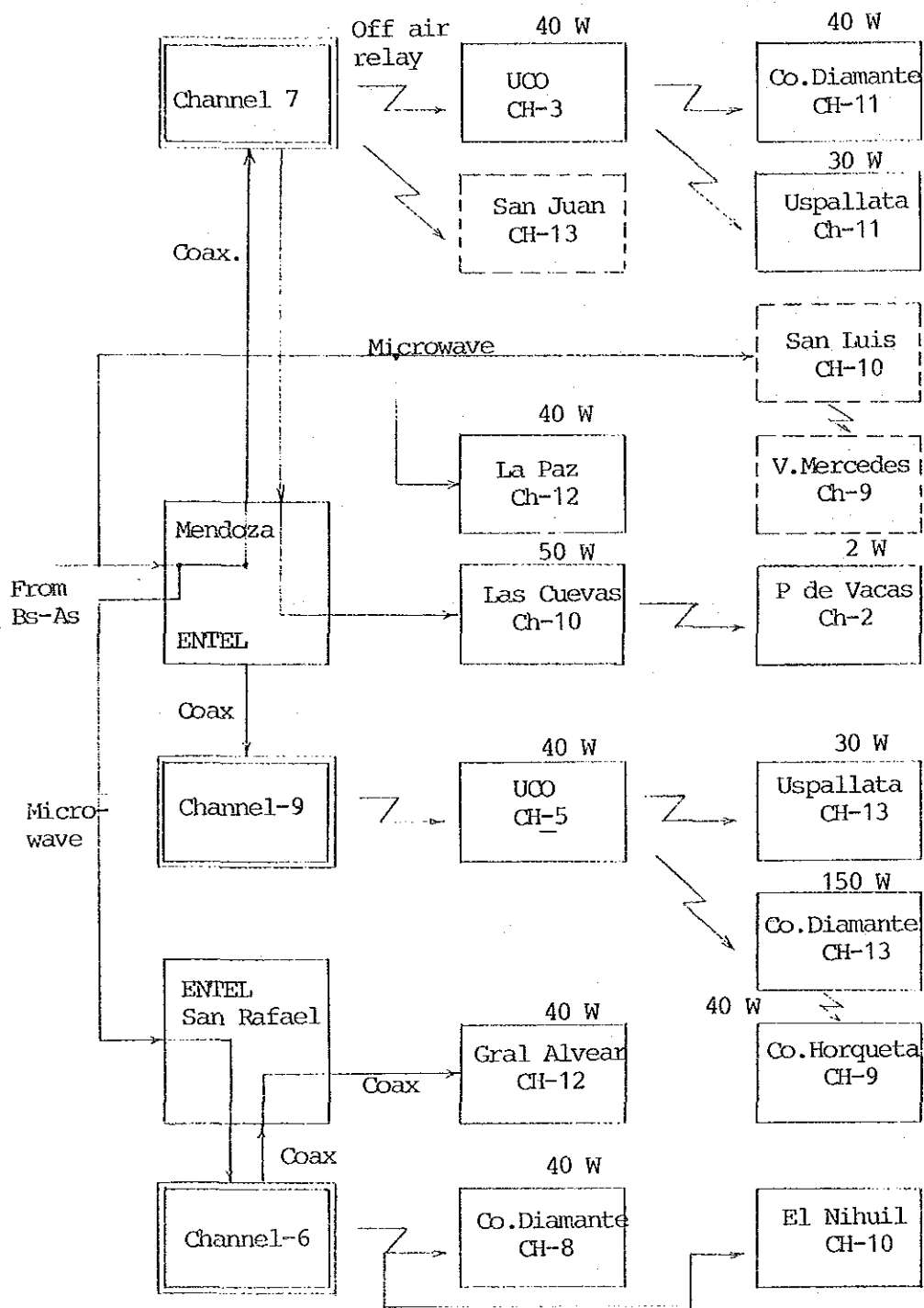


Fig. II -2 -10 Television network in the province of Mendoza

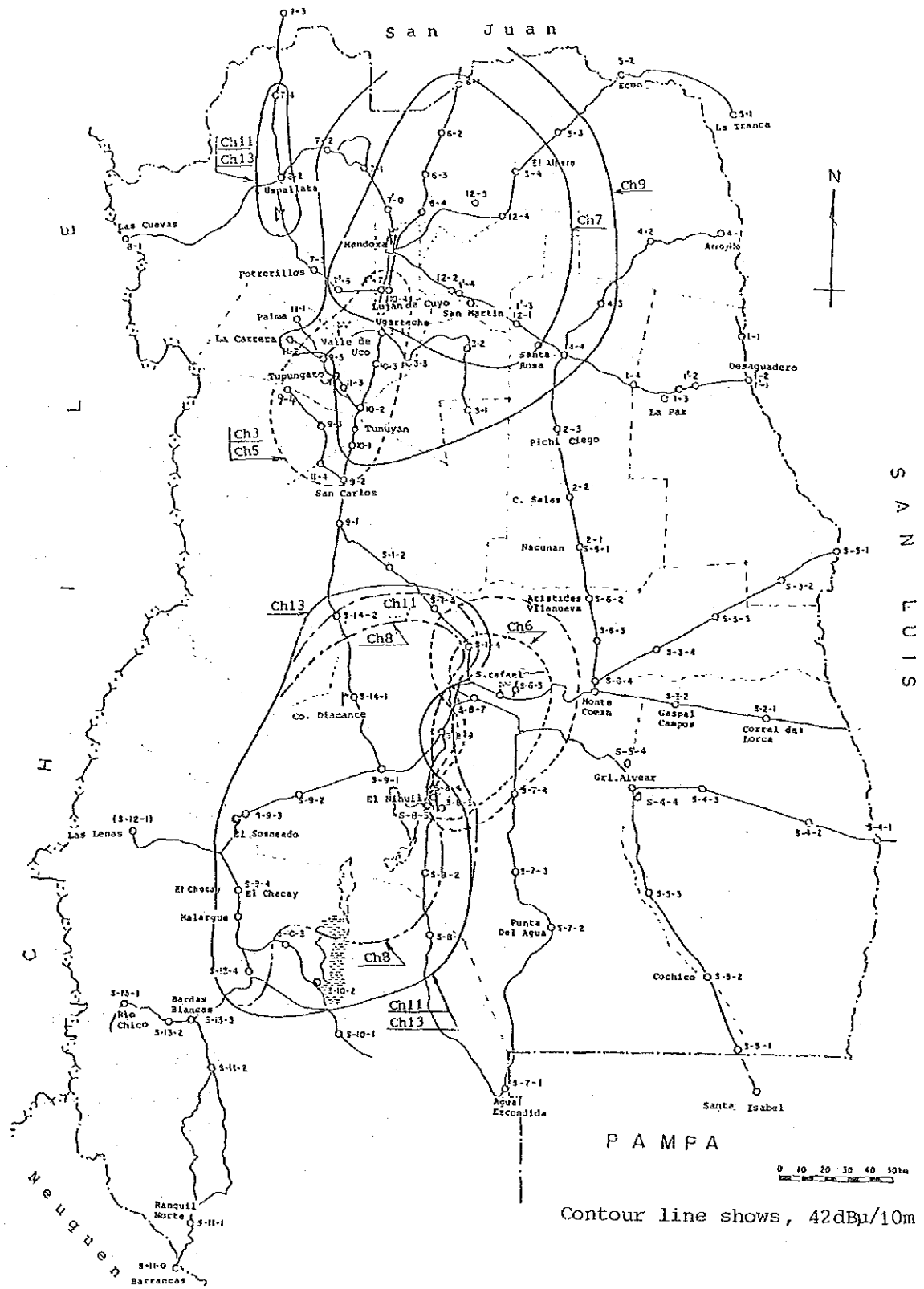
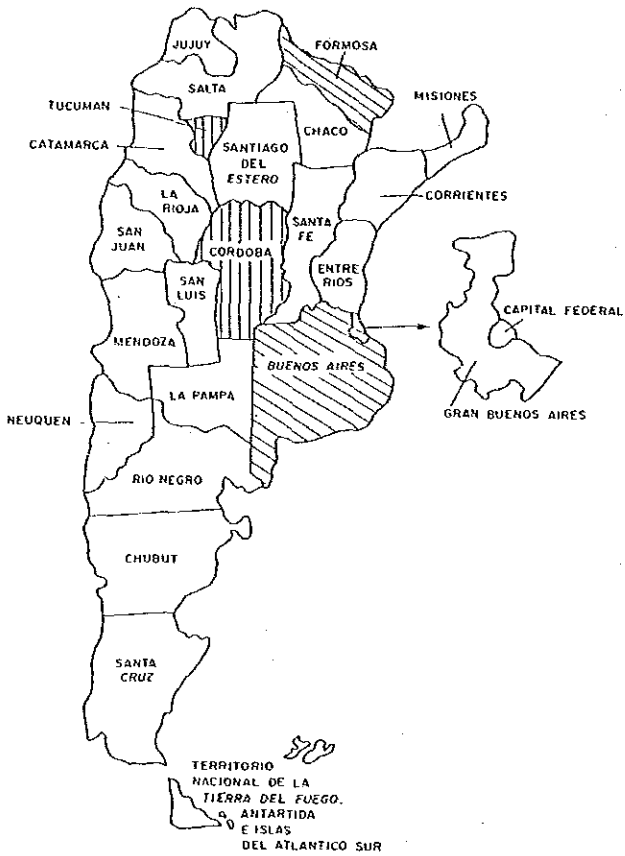
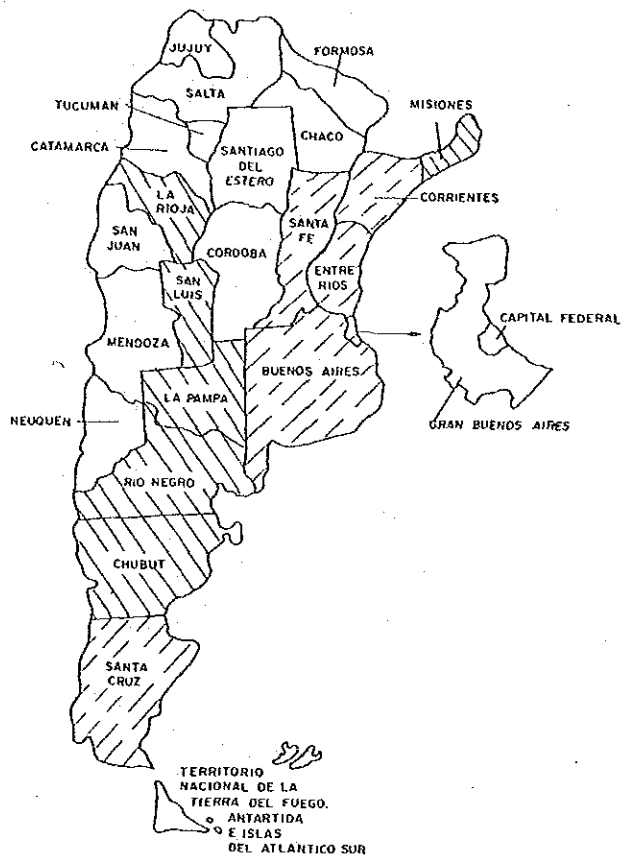


Fig. II - 2 - 11 Service area of existing main TV station



Vertical hatch : University
 Slant hatch : S. I. P. station

Fig. II - 2 - 12 Classification of provinces by broadcasting



Broken line : CH-7 program
 Slant hatch : Provincial

Fig. II - 2 - 13 Classification of provinces by broadcasting

Table II -2 -10 Classification of broadcasting in major provinces

Province	National/University broadcasting	Private broadcasting
Santa Fe (8.7%)	Relay of Ch-7 4 Stations	Commercial 9 Stations
Cardoba (8.6%)	University 6 Stations	6
Mendoza (4.3%)	_____	12
Tacuman (3.5%)	University 3 Stations	1
Entre Rios (3.2%)	Relay of Ch-7 8 Stations	_____
Carrientes (2.3%)	Relay of Ch-7	3
Chaco (2.5%)	_____	10

% shows the population percentage.

Referring to the picture quality of television transmission, a great deal of recording, editing and reproducing works is done by using U-matic VTR even at program originating station in Buenos Aires, and for some reason or others of microwave link, the signal received through the link are further recorded and reproduced repeatedly more than two times. Thus, the fourth generation of taped pictures are unavoidable to broadcast, which becomes the cause of significant deterioration in picture quality.

Comparison of broadcasting in major provinces is shown in Table II -2 -11.

In addition, in some service area of translator stations, mutual interference between two stations, and unstable pictures were observed. There are many points to be improved and it may be necessary to strengthen supervision of radiated signal and establishment of maintenance system to settle the problem by the staff stationed.

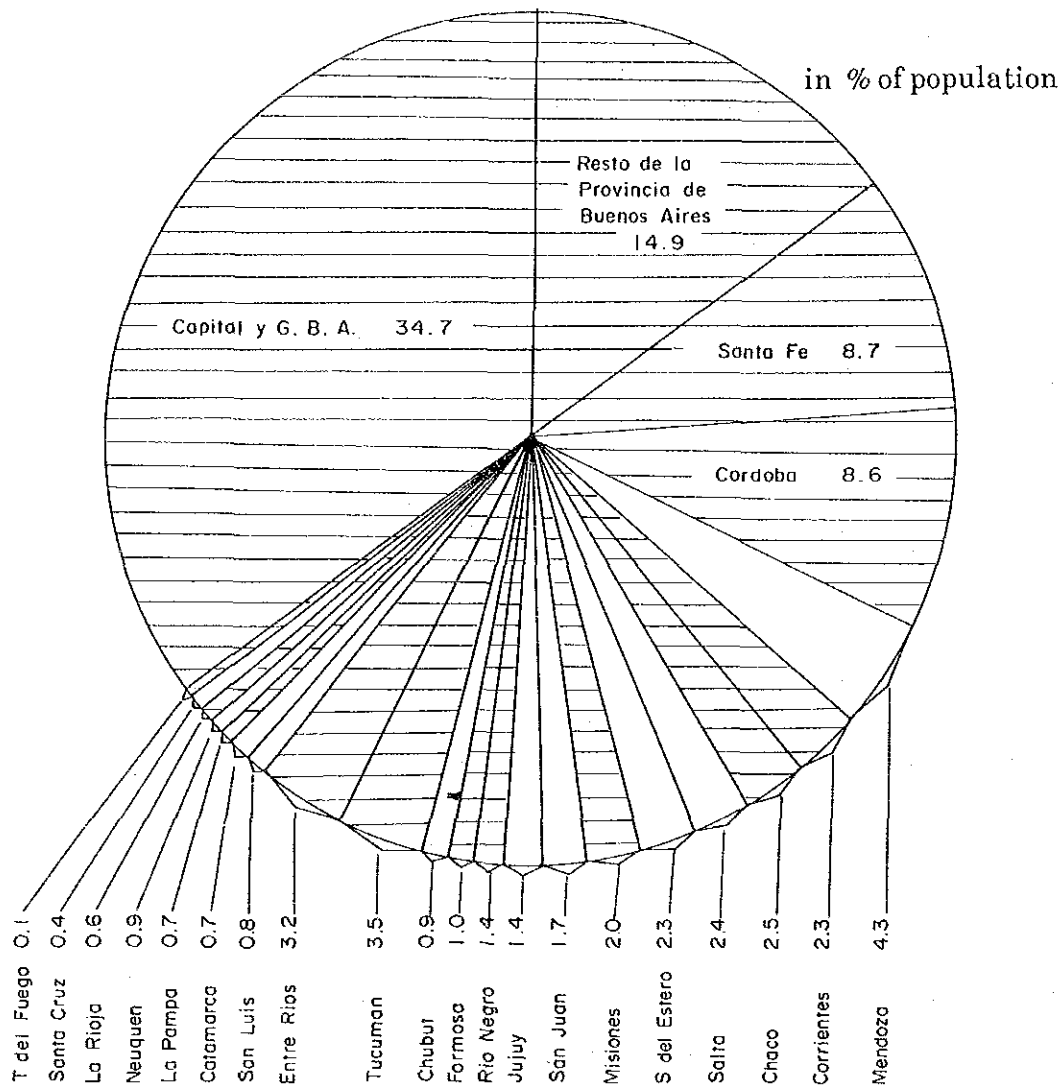


Fig. II - 2 - 14 Classification of provinces by TV broadcasting. White portion shows commercial broadcast only.

Furthermore, as a movement to supplement the lack in the number of television channels, CATV facilities are established at Mendoza, San Rafael and Gral. Alvear, but as the subscription rate is high, and the duration since the opening of service is short, about 1,000 households or less have only subscribed in each city.

Recently, a compact satellite receiver was introduced within the premise of CH-6 to send program of ATC/CH-7 (Buenos Aires) through CATV.

Table II - 2 - 11 Comparison of broadcasting in major Provinces

Classification	Type of organization	Buenos Aires	Cordoba	Mendoza	Remarks
Television 1) National 2) Public 3) Private 4) University	Ministerio de Educacion Y Justicia Secretaria de Informacion Publica	CH-7	-----	-----	
		CI-11, CI-13	-----	-----	S.I.P
		CH-9	CI-8, CI-13 CH-10	CI-7, CI-9	
FM 1) National 2) Public 3) Private 4) University	Servicio Oficial de Radio- difusion Secretaria de Informacion Publica	LRA37 LRA38 LR3	LV3	LRA6	S.O.R S.I.P
		LR1, LR2 LR11	----- LV2 LV1	----- LV10, LV6	
MF Radio 1) National 2) Public 3) Private 4) University	Servicio oficial de Servicio oficial de Radiodifusion Secretaria de Informacion Publica	LRA1, 100 kW	LRA7, 100 kW	LRA6, 25 kW	S.O.R
		-----	LV3	-----	S.I.P
		L 1, LR2 LR11	----- LV2 LV1	----- LV6., LV10	

Universitarias (U) ----- total 3, in Buenos Aires, Santa Fe and Cordoba for MF & FM
 Universitarias (U) ----- " 2, in Tucuman and Cordoba for TV

(4) Program transmission line

As shown in Fig. II-2-15, the number of microwave links for television transmission throughout the country is insufficient. For instance, one down link is used in common with 2 or 3 stations, which is the cause of limiting the broadcasting hours and number of programs. As the average span of microwave repeater stations is long, it is influenced by fading which depends on seasons and weather. Concerning the microwave link between Buenos Aires and Mendoza, as there is only one television line between Mendoza and Cordoba, the line is necessary to use by time-sharing between CH-7 and CH-9. Thus, it increases the program recording work.

As the television program is sent by PAL-B format, deterioration of transmitted signal is relatively small. A part of microwave transmission lines in the province is also used as a standby line for international satellite relay to Chile, and in Las Cuevas district, this line is used for sending video signal to TV transmitter station.

As the valley of the region lies between high mountains of about 6000 m in height, the method of installing only reflectors on summit and a microwave transmitter/receiver on ground is adopted.

Route of microwave transmission line between Mendoza and San Rafael is shown in Fig. II-2-16. As one relay station is not located within the line-of-sight, temporary measures are being taken for transmission, but at present television microwave line is extended as far as to Gral. Alvear.

It is to be noted that the microwave line to Co. Diamante is planned to extend to Co. Payun, and intended to extend toward Neuquen, but the construction schedule is not definite.

However, as mentioned already, there broadcast program of CH-6 only in San Rafael district, and it is desired that CH-7 and CH-9 will enter San Rafael at the earliest. To accomplish this, mutual agreement of television stations concerned and approval of COMFER/SOC will be required, and it is necessary to construct new microwave link or off-air relay system.

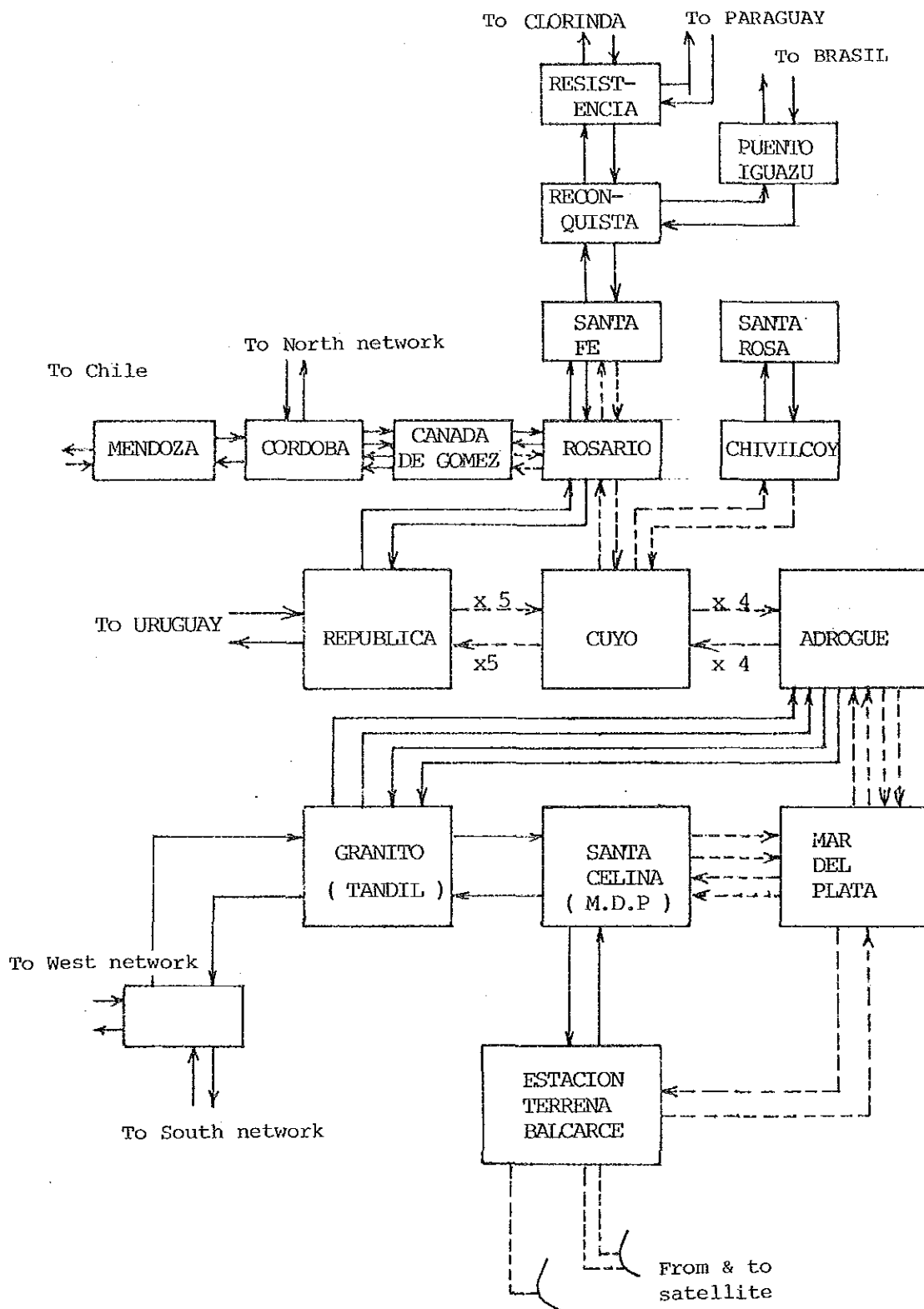


Fig. II - 2 - 15 Microwave network for TV transmission in Argentina

In addition, if CH-6 in San Rafael is to enter Mendoza district, an up-link will be required. However this problem can be solved by constructing a new studio in the city of Mendoza and consideration of managerial policy will be required. In addition, if satellite reception is to be performed at San Rafael, in order to broadcast national program of CH-7(ATC) in Buenos Aires, installation of studio facilities for inserting local program into national program is required.

No transmission link is provided between earth station in San Martin and Mendoza ENTEL.

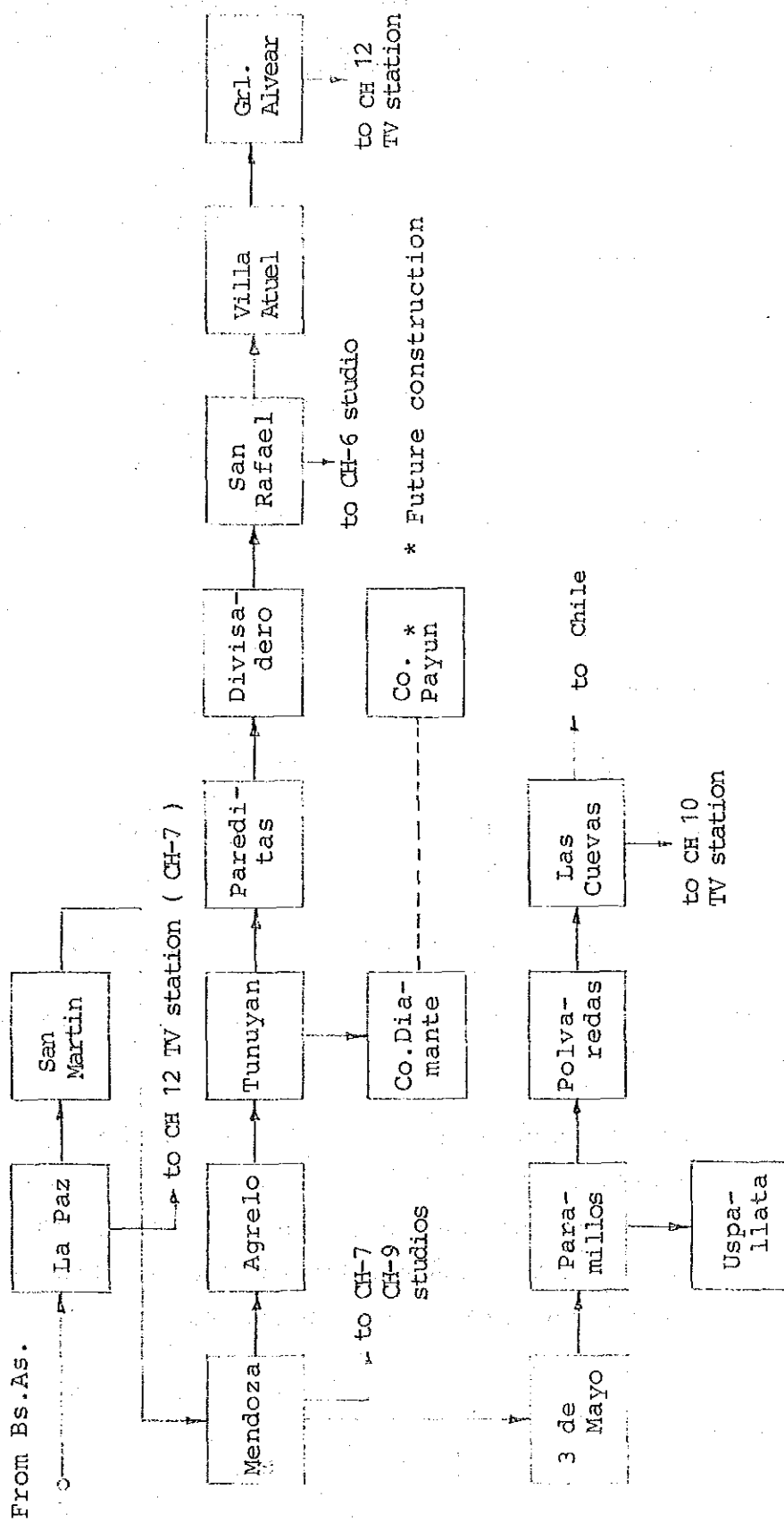


Fig. II - 2 - 16 Microwave transmission lines in the province of Mendoza

CHAPTER 3 SIGNIFICANCE OF THE DEVELOPMENT PLAN FOR THE TELECOMMUNICATIONS AND BROADCASTING NETWORKS IN THE PROVINCE OF MENDOZA

3.1 Telecommunications

As already stated, the telecommunications services in the province of Mendoza are affected by a great many problems.

That is;

- (1) There is a telephone waiting list with a number equivalent to a half of existing main lines.
- (2) Service areas of central offices are restricted and do not sufficiently cover the areas where the service is demanded.
- (3) There are many manual exchanges and most of them do not offer the service in the nighttime.
- (4) The interprovincial calls remain low in connection grade.
- (5) Most of telecommunications facilities are obsolete. That causes difficulty in expanding the subscriber lines and introducing new services economically.
- (6) Terminal stations for telegraph service have not been arranged enough.

Therefore, there is a strong demand for improving telecommunications services in the province.

To solve these problems and respond to the need for diversified telecommunications services in the future it is necessary to improve the telecommunications network in accordance with long-term views. This makes the proposal of a long-term development plan for the telecommunications network in the province of Mendoza all the more important.

The development plan formulated here will be used by the Telecommunications Director's Office of the Ministry of Public Works and Services, the agency that supervises telecommunications services in the province of Mendoza, to draw up policies to guide telecommunications operating entities in improving and modernizing telecommunications services in the province.

The development plan will play an extremely important role in the regional and economic development of the province of Mendoza. The province is relatively well developed with a wine industry, mining industries such as oil refineries and construction equipment manufacturing. An improved communications system is absolutely vital for these industries to give them a competitive edge both on the domestic and international market. It is also necessary to provide the rural population with communications media for emergency medical treatment, maintenance of public peace, countermeasures against natural calamities and smoothing out the information gap.

The Government of the Argentine Republic hopes that the development plan for the telecommunications network in the province of Mendoza will serve as a pilot plan for other provinces with similar problems.

For the development of the telecommunications network, however, a plan well coordinated at national level is required. In Argentina, a long-term national telecommunications development plan is not yet established. It is urgently demanded to prepare the said national plan which should be the basis for the long-term telecommunications development plan of the provinces in the country.

3.2 Broadcasting

The social role of broadcasting can be classified into the following.

- (1) Information service News, politics, economy, society
- (2) Entertainment Movies, sports ...
- (3) Education and culture School broadcast, culture, education
- (4) Social information General information, guidance and so on.

In general, the national broadcast covers various of the above items. It presents the necessary information and knowledge for the social life of citizen concerning all aspects of individual life. The effectiveness of broadcasting to the social life of citizen is enormous and according to an ordinary investigation on living time, it is reported that an average citizen is utilizing radio, television or FM broadcast for about three hours a day.

In case of school education in the Argentine Republic, the total education hours of a graduate from grade school (seven years) to high school (six years) is about $6 \text{ hours} \times 230 \text{ days} \times 13 \text{ years} \doteq 18000 \text{ hours}$ on the average.

On the other hand, assuming that the average life of people is 65 years, then the time of listening or viewing broadcasting is about $3 \text{ hours} \times 365 \text{ days} \times 55 \text{ years} = 60000 \text{ hours}$, thus the influence is more than three times of school education in terms of time.

Accordingly, it can be understood that the influence of broadcasting on citizen life is much larger than that of school education in terms of time.

The broadcasting service in the province of Mendoza is now covering the above fields, but it cannot be said that it is making full use of functions which broadcasting media have been provided with.

For instance, as present television broadcasting in the province of Mendoza is only commercial broadcasting, it is somewhat insufficient in terms of program constitution such as on education, culture, economy, industry and political matters.

Considering the above, national, education/university and public broadcasting which are introduced in the plan, ensures a service of the above fields in detail and builds up a system which presents ideal service to each field of broadcasting for the citizen.

As the national broadcast is to present programs which are necessary for a citizen and other general information, the plan to provide a service aiming at almost whole regions of the province is to be executed urgently.

Education/university broadcasting can be utilized also for school education, and furthermore, it may be used for upgrading teachers' ability, and comprehensive citizen education in special fields.

A concrete definition of public broadcast is not confirmed yet. However, in general, it can be divided into an affiliated organization of the public organization, and an entirely different organization, for instance such as BBC and NHK which do not belong to any one of the organizations, it is so-called public broadcasting.

The former corresponds to PBS in the United States. PBS consists of a nationwide organization, but involves operational problems in point of financial foundation; it presents educational programs with assistance of Federal Government in addition to various organizations. The introduction of this kind of broadcasting has a remarkable meaning in some sense, and the role of national broadcast, education/university broadcasting and public broadcasting must be clarified.

As the national programs, of course, are a public service, programs of public broadcasting may become a provincial and municipal service.

In Japan, such kind of broadcasting is established in some prefectures on request of community inhabitants and prefecture. It is aiming at the expansion of community service; there will be demands for establishing it in the future as a broadcasting service for the province of Mendoza which is blessed with abundant of natural resources. Information service should be considered in relation to national broadcast, but on the contrary some problems might arise in future for broadcasters of the way that the broadcasters should be, for the present activity limited within the province. Regarding the origin of local programs for national broadcast, the Ministry of Communications is considering a plan of several originations in the country, but this problem and the range of public broadcast is also to be taken into consideration. For instance, as information of such adjacent province as San Juan, San Luis and Neuquen, of course, are to be cast and cooperation with other provinces is also required.

At present, broadcasting area of commercial broadcast is divided into the northern and southern parts of the province of Mendoza. Therefore, only one television channel is cast in San Rafael. However, at the present state, it is considered difficult from economical reasons for a separate company to serve the broadcasting of San Rafael district. Therefore, in this plan, CH-7, CH-9 in Mendoza and CH-6 in San Rafael are proposed to advance in each district mutually. CH-7 and CH-9 may agree to expand their coverage area for serving San Rafael district, and CH-6 may be able to expand coverage area and increase revenue by advancing to Mendoza. This kind of competition, of course, will result in improvement and expansion of service to remote places which may become executed in the future, probably sometime after the year of 2000.

Expansion of national broadcast complies with the national policy. Improvement of service to community inhabitants is especially a duty of the country. It is, therefore, necessary to completely realize the plan.

For the reason, establishment of medium wave station in San Rafael (25 kW), and Malargue station (10 kW) may be really useful for improving poor reception, and FM station at Horqueta can be used as a supplemental media for solving the problem of poor reception of medium wave in south western region.

In addition, FM main stations in Mendoza and San Rafael are able to cover wide service, and as this plan includes establishment of FM broadcasting network in almost all residential regions including in the remote places, broadcasting service can be improved remarkably and contribute to the improvement of culture and welfare of inhabitants in the region.

Teletext and sound multiplexed broadcasting will be introduced according to the demand from inhabitant and the policy of the Government.

This plan aims at the upgrading of broadcasting in the province to the present level of European advanced countries where peoples are enjoying cultural and traditional lives, and in Mendoza, introduction of education/university and public broadcasting together with the expansion of broadcasting networks and the commencement of new media service, would greatly contribute to the welfare and living condition of people even those living in the countryside.

PART III TELECOMMUNICATIONS NETWORK DEVELOPMENT PLAN

CHAPTER 1 SOCIAL AND ECONOMIC ASPECTS

As shown and explained in Part II, Chapter 1, the province of Mendoza has a best formation of population well fitted for the expansion of economy but due to various difficulties to be faced by the Argentine society, GDP per capita of the province has not been expanding orderly as expected for the last 10 years. Major economic activities of the province have rather been stagnant in many sectors.

Still, the province of Mendoza has tremendous volume of natural resources like vast lands yet abandoned and waiting for cultivation and cattle breeding in addition to the fields under use, best climates full of sunshine, unimaginable volume of mineral resources, adequate and sizable industries and attractive places for tourism with beautiful sceneries and for skiing pleasures.

Now, as explained in the previous chapter, Argentine economy is on the brink of "Take off" from the stability concentrated policy sacrificing a certain portion and sectors for the sake of national interests, to growth incentive policy in the years to come but still unveiled for some time not to plunge in the whirlpool of inflation.

A turning point of economy, very difficult to overcome and which requires very careful executions of government policies with unanimous cooperation of all sides of Argentine society, is the one Argentina faces now.

No major change of policy would happen during the reign of President Alfonsín Government as hyper inflation has been suppressed to a certain level with the efforts of both the Government of the Argentine Republic and those of provinces and thus conclusively the present economic plan "Lineamiento de una Estrategia de Crecimiento Economico" will attain its purposes though some amendments and slight changes of lines are probable on its way.

The province of Mendoza can be benefited and be endowed with a certain growth of economy after the development plan in the way as the base of future projection.

As a vital infrastructure of society, telecommunications is indispensable for the growth of economy of the province. There are many contributions to the cause typically speaking like ITU's report "Telecommunication for Development" and World Bank Publications "Telecommunications and Economic Development" and many studies in Japan.

Telephone density in the province of Mendoza for 100 persons is 6.0 for main line and 8.2 for the number of telephone sets in 1985. Figs. III-1-1 and III-1-2 show separately the correlation between GDP per capita and telephone sets and main lines per 100 persons. Both of these figures testify that GDP per capita and growth of main lines and telephone sets have close correlation between them like horse and carriage. Especially in the case where telephone sets per 100 persons is lower than 10, the impact of telephone installation is supposed to be the strongest.

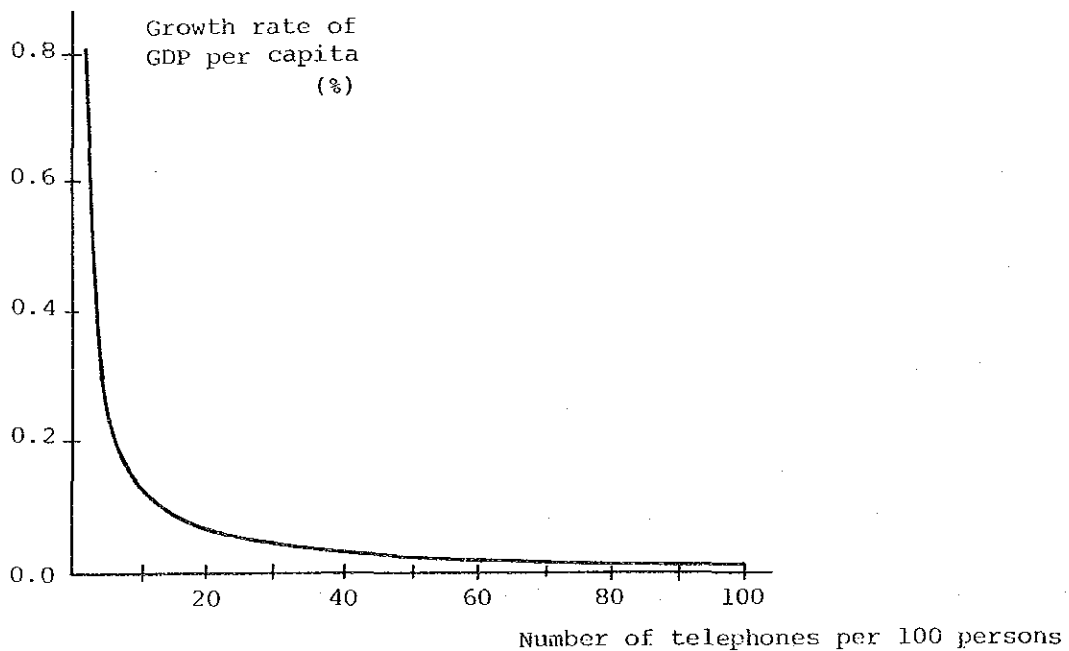


Fig. III-1-1 Correlation between growth rate of GDP per capita and number of telephones

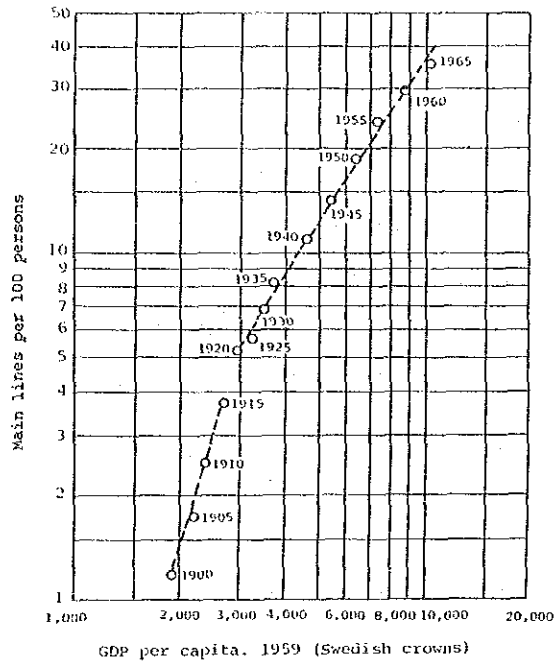


Fig. III - 1 - 2 Density of main lines as a function of GDP per capita in Sweden, 1900 to 1965

CHAPTER 2 POLICIES OF THE DEVELOPMENT PLAN

2.1 General

The development plan is related to the telecommunications network development in the province of Mendoza up to 2005 including the introduction of new telecommunications services to urban areas and the expansion of telephone service to rural areas. Since the development plan is to be used for drafting the provincial government's policy, the development plan concentrates on determining the goals and guidelines for development.

The development plan is prepared according to the policies stated in the following sections.

2.2 Harmony with Socioeconomic Development Plan

A long-term telecommunications network development plan should be determined with the object of contributing to efficient socioeconomic activities and to improving living standards, in harmony with the future socioeconomic development plan.

In other words, the plan should be made so as to keep pace with the developing socioeconomic activities and living standards, and to play a leading role as the infrastructure for socioeconomic development of the country.

The Government of the Argentine Republic is promoting the economic development plan named "Lineamiento de una Estrategia de Crecimiento Economico 1985~1989". Successful execution of this economic development plan and continuance of similar economic growth after 1990 are prerequisite to determining the development plan for the telecommunications network in the province of Mendoza. The development plan should be determined to run abreast with progress of socioeconomic activities and living standards in the province.

2.3 Amplification of Services

(1) Telephone service

Telephone service is the most basic among the telecommunications services. However, as described in Section 2.1, Chapter 2, Part II, diffusion of telephone service within the province of Mendoza still remains at a low level with many waiting lists.

With the development of the social economy and the growth of population, it is forecasted that the telephone demand will continue to increase. The development plan aims at raising gradually the fulfilment ratio (approximately 67% at present) until complete fulfilment of demand is reached by the end of the development plan period, on condition that the investment amount is practicable.

Fulfilling the demand calls for increased capacity of telephone exchanges and expanded service areas.

In consideration of harmonizing with the socioeconomic development plan as stated in Section 2.2 and the financial burden on the part of telecommunications operating entity, the Gran Mendoza area will selectively receive priority for the increase of telephone service on account of the area's high profitability.

With the advance of social activities and the diffusion of telephone service, modes of telephone use will diversify and a variety of new telephone services will be demanded. Since the telephone network within the province will be digitalized during the development plan period, many new telephone services will be enabled with the combination of digital switching equipment and push-button dial telephones.

Interprovincial traffic conditions are extremely bad at present, and the development plan recommends to increase the number of trunk circuits and to construct required facilities to improve this situation. To achieve this, however, it is imperative to have the cooperation of the telecommunications operating entity of other provinces.

With the diffusion of subscriber telephones, expansion of public telephone service will be demanded. The development plan aims at promoting the expansion of public telephone service actively.

(2) Rural telephone service

Central offices are established in areas with relatively high density of population. For areas where low density of telephone demand is expected until well into the future, an economic comparison is to be made between the installation of remote telephone exchange units and rural telephone systems (subscriber line multiplex system, multiple access subscriber radio system, HF radio system, etc.), and the most economic system will be selected for expansion of telephone service to each rural area.

In this development plan, telephones to be accommodated in the exchanges (including remote units) through rural telephone systems are called rural telephone service.

In meeting the telephone demand in the rural areas, the high construction cost of rural telephone system per main line means that the economic burden of the telecommunications operating entity and the profitability of facilities must be considered.

According to the study results on the rural telephone introduction program carried out by the Ministry of Posts & Telecommunications of Japan, it is recommended that the investment amount for rural telephone service should not exceed 10% of total investment in the telecommunications division for countries with middle--upper income per capita where Argentina is ranked in.

The development plan aims at introducing and expanding the rural telephone service within the above--mentioned limit of investment.

The development plan also aims at expanding the public telephone service in rural areas to solve the problem of areas without the telephone.

(3) New services

A radio-paging service is presently provided by two private companies in the Gran Mendoza area, with approximately 1,000 subscribers, and their number has remained unchanged for these two to three years. Since there is no factor to spur rapid increase of demand in the future, the development plan does not consider increasing the radio-paging service.

The land mobile telephone service introduction in the Gran Mendoza area is planned at the end of the development plan period on the understanding that it may become one of the major new services in the future although only limited demand is expected in the said period. Prior to actual introduction of this service, however, the introduction plan must be reviewed again in the light of the results of introduction to other cities like Buenos Aires.

Demand for facsimile communications service will be satisfied using the improved telephone network.

With regard to non-telephone new services including data communications, it is impossible to make a long-term demand forecast judging from what has happened in the advanced countries. It seems possible, however, to introduce most of the new services that may be demanded in the future through digitalizing telephone networks, preparing packet switching networks, and improving leased circuits networks. In this connection, under the present plan, development of those telecommunications networks will be enthusiastically promoted with the eventual aim of building up an Integrated Services Digital Network (ISDN).

(4) Others

Although ENCOTEL is implementing an improvement plan for the telegraph service, certain terminal offices in rural areas do not have transmission lines with their host office. As telephone networks in rural areas are to be improved under the development plan, introduction of a facsimile communications system will be planned for those terminal offices.

Telex subscribers now count approximately 600 and the number is rising. However, in view of the small number of subscribers and the precedent in other countries that the demand for telex reaches a ceiling as data communications services develop, only a very small investment will be required for the telex service during the period of the development plan.

2.4 Expansion of Facilities

(1) Digitalization of telecommunications networks

Because of the enormous costs involved in expanding facilities, an efficient plan must be established after fully considering the trends of demand for services and the latest technologies.

To address future demand for telecommunications services in the information oriented society and trends in development of digital technologies, it is most desirable that any expansion of facilities in the future be with the digital system which is superior to the analogue system in terms of economy, improved transmission quality and response to the introduction of non-telephone new services.

Upon planning the development of telecommunications network in the province of Mendoza, the target is set for completing the digitalization of exchanges and transmission systems by the end of the development plan period in preparation for the future transition to ISDN. Actually, except the case of temporary reuse of the existing equipment to other offices, newly purchased equipment shall be all in the digital system. And to ease the introduction of new services, digitalization of telecommunications networks in major cities will be planned as early as possible.

Wherever feasible, digitalization of the exchanges will be carried out simultaneously with the digitalization of related transmission lines in order to economize on the construction cost and to maintain good speech quality.

Furthermore, digital networks will be formed as much as possible by overlaying the analogue networks to avoid the deterioration of transmission quality and to make response to new services easier.

(2) Transmission lines for broadcasting

The trunk lines should be planned to maximize sharing of facilities with the transmission lines for broadcasting. Existing analogue microwave transmission lines which are to be replaced with digital ones, will be used for television transmission lines where applicable.

(3) Renewal of facilities

The existing analogue exchanges and analogue transmission lines are to be removed during the period of the development plan as the digitalization of telecommunications networks progresses. The analogue microwave transmission lines to be reused for television transmission lines will become obsolete during the development plan period and are to be changed to the digital microwave system. Most of subscriber cables will also become obsolete. Renewal of them should be planned in order to prevent the failure from increasing.

(4) Others

In the future information oriented society, failure in telecommunications lines will greatly affect socioeconomic activities, so it should be planned to take measures to improve the reliability of telecommunications networks such as multi-routed transmission lines. In the province of Mendoza, however, increasing subscriber number is the most urgent requirement for the time being. Therefore, dual routing of transmission lines under the development plan is limited to the Gran Mendoza multiple exchange area.

2.5 Problems concerning the Telecommunications Operating Entity

Presently plural number of operating entities provides the telecommunications services in the province of Mendoza. Notwithstanding the above, the contents of the development plan should be determined irrespective of the number of operating entities.