

TELECOMMUNICATIONS

COLOMBIE



UNIVERSITÉ DE SHERBROOKE

FACULTÉ D'ADMINISTRATION

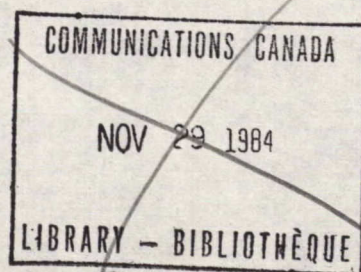
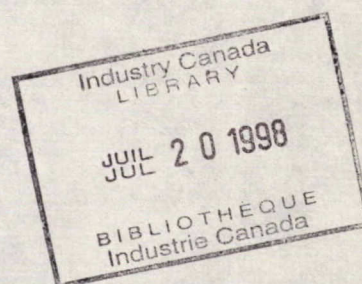
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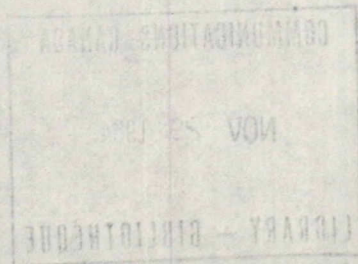
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MARKETING  
TELECOMMUNICATIONS EQUIPMENT

IN

COLOMBIA

March 1984

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## FOREWORD

This study has been commissioned by the Department of Communications of the Government of Canada. It was carried out by a research team from the University of Sherbrooke, Québec, under the direction of Professors Guy Ara and Jean-Paul Sallenave, assisted by INTERESEARCH, a consulting group specializing in strategic planning and international marketing in the I.S.S. (Information Systems & Services) industry.

Although it may appear to be a market study of telecommunications equipment in Colombia, this research does more than describe the Colombian telecommunications equipment market, it provides useful insights into ways to penetrate the Colombian market for a prospective Canadian telecommunication equipment manufacturer.

Indeed, standard market studies of telecommunications equipment in developing countries are at best suspect. Typically, in those countries, development plans abound and are rarely met. Thus, believing what the plans forecast may lead the unsuspecting observer to overestimate the demand and the opportunities offered to exporters. Moreover, marketing in these countries is a subtle art where communication skills and a thorough understanding of the local culture are more important than a precise assessment of demand. These considerations, of course, should not serve as an excuse for sloppy market research. They just point out the limitations of a market study as a tool for successful market penetration. What is needed is not only knowledge of the market but also a through understanding of it. This research attempts to bridge the gap between 'knowledge' and 'understanding' by providing not only facts but opinions and advice from a researcher who has lived and worked in Colombia and thus is aware of the do's and don'ts of marketing in this country. Of course, the opinions and beliefs expressed in this report especially in chapter 4, are strictly those of the researchers and do not reflect any policy of the Department of Communications. We hope that this study will be a helpful guide to potential and actual Canadian telecommunications equipment exporters.

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Numbers within brackets [ ] in the text refer to two sources:

[1] Colombia: CMS U.S., Department of Commerce  
CMS / TCE / 301 / 83 April 1983

[2] Sanabria, P. The telecommunications sector in Colombia, Telecom, 1983.



CHAPTER 1 : SUMMARY

Colombia is the fourth largest country in South America. Three mountain ranges running north-south, and forests, plains and jungles covering two-thirds of the nation present natural obstacles to the development of a telecommunications network.

Transportation and communications are a national priority and absorb over 20% of public investments in Colombia. TELECOM, an autonomous government-owned company, operates all national telex, telephone and telegraph, long-distance and international services. Colombia is currently implementing a two-pronged plan in the area of telecommunications:

- . Rural telephony: an ambitious US \$ 56 millions project to connect remote regions of Colombia to the telephone network.
- . Satellite communications: Colombia has plans for a telecommunications satellite (SATCOL). However the satellite programme has been delayed and as of today has an uncertain future.

Investments in the Colombian telecommunications sector total about US \$ 600 million annually. Half this amount is managed by TELECOM, the other half is spent on locally produced equipment, administration, maintenance and training.

In terms of telecommunications equipment procurement Colombia is a relatively open market. Siemens, Ericsson and ITT have long been the favoured suppliers, mainly for historical reasons. However, Colombia is also buying from

Hitachi, Fujitsu, Philips, GTE etc. when the equipment, the price and the terms of payment are right.

Traditionally Canadian telecommunications equipment manufacturers have been underrepresented in Colombia. Sales have been spotty for lack of follow-up.

The entrenchment of the "local" manufacturers (subsidiaries of Siemens, ITT and Ericsson) and the tightening of the market suggest that Canadian manufacturers should make a concerted effort to take advantage of selected market opportunities.



CHAPTER 2 : APPARENT MARKET OPPORTUNITIES FOR  
CANADIAN MANUFACTURERS

Adopting the traditional segmentation of the world telecommunications equipment market (\*) between:

- . *open countries*: those where all manufacturers compete on equal terms.
- . *semi-open countries*: those where some manufacturers enjoy a privilege, but others can bid with a fighting chance.
- . *closed countries*: captive markets for domestic manufacturers.

it could be said that the Colombian market for private telecommunications equipment is still wide open, whereas the public market is closing fast.

Opportunities exist for individual Canadian equipment manufacturers in the private telecommunications market. Companies such as Mitel and SR Telecom have started to pursue them *actively*. On the other hand, we believe that the public telecommunications market will be in the hands of three 'local suppliers' in the coming years for major equipment categories: telex exchanges and support equipment → SIEMENS, telephone exchanges → ERICSSON, ITT. These three companies will enjoy a substantial advantage stemming from their "local supplier" status under the terms of the Official Purchase Act. However the field remains open in

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\* See Ara, G., Albert A., Crener M., Sallenave J-P. The World Telecommunications Market, University of Ottawa, 1984.

all product categories not specifically sought after by the three 'local suppliers'. For instance, even though Ericsson could go after other telecommunications contracts than those concerning telephone exchanges, so far it has concentrated on just that. The supply of transmission equipment is open to competition even if NEC, Telettra, Italtel and CEAT have won most of the contracts in recent years. The 'local telco' market (36 independently managed municipalities) seems to be more open to competition than the TELECOM market. Fujitsu, for instance, has been able to sell its FACOM system to the cities of Medellin and Cartagena. Many other equipment markets are left totally open: radio and TV equipment (INRAVISION is in the process of buying recording facilities and mobile units), air traffic control equipment (the Department of Civil Aeronautics is currently spending US \$ 20 millions on new control towers, communications, and weather instrumentation: radio beacons, approach lights, VASI systems, VOR/DME, radar systems, etc.).

All things considered we believe that the segment of the public market which is not 'controlled' by the three 'local suppliers' offers opportunities for Canadian manufacturers with specialized product lines. However we believe that most short-term opportunities are to be found in the private sector. Canadian manufacturers should study the Colombian private sector with a view to create opportunities which stem from the particular conditions of the Colombian economy. Two examples will illustrate this point:

*Urban development:* large cities in Colombia tend to develop around two poles:

Bogota : downtown ↔ Norte

Cali : downtown ↔ Yumbo

Medellin: downtown ↔ Poblado

The downtown area is generally commercial, while the other pole houses offices and private residences or, in the case of Cali, an industrial park.

This bipolar development creates both communications and social problems. A telecommunication equipment manufacturer which would look at the specific telecommunication problems raised by the Colombian bipolar urban development and come up with a technical solution which would alleviate the social problems would gain immediate entry into the market. Manufacturers often base their sales presentation on superior technology or economic performance, and overlook the fact that their offer should solve or alleviate a social problem. In Colombia the decision to buy is not made on the same criteria that would be determinant in Canada. The social problems are different and create different market opportunities and different expectations on the part of the buyers. A case in point is the whole issue of insecurity (urban violence, thefts, guerrilla warfare). In cities more and more people move from private houses to apartment buildings. Private houses are harder to protect against theft and armed attacks. This situation has created a boom in the construction industry and a need for integrated communication systems that could be sold to apartment builders. Such systems should integrate the following functions:

- PABX
- Security
- Visual security
- Fire alarm
- Intercom

Such systems exist in Canada and can easily be put together by many Canadian manufacturers, but first they must analyze the specific need arising from market conditions that are specific to Colombia.



*Farming:* Large Colombian land-owners usually live in the cities and exploit their farms (*fincas*) from a distance. They own several farms distant from one another and visit them rarely and sometimes not at all - in the regions occupied by guerrilla groups (e.g. cattle ranches in *Antioquia* and farms in the *Magdalena Medio*). Most farms do not have the telephone and the land-owners need to keep direct contact with the farm-managers. This unfortunate situation creates a demand for secure private radio systems.

The two preceding examples illustrate that the private communications sector in Colombia present many opportunities for Canadian equipment manufacturers willing to invest time and creativity to look at specific market conditions prevailing in the country.

Finally, should Canadian telecommunications equipment manufacturers forget about the public communications market in Colombia, in the face of ITT, Ericsson, Siemens and the Official Purchase Act?

So far Canadian manufacturers have been under-represented in Colombia. If Canada wants a share of the market, alongside Sweden, Germany and the U.S.A., we feel that it requires a coordinated effort between Canadian manufacturers. If none is willing to go it alone and make the necessary investments in a local infrastructure, several of them could create a joint-venture or a permanent consortium to establish their presence in Colombia. Such an establishment is a condition *sine qua non* of future success. It would have to gain the status of 'local supplier' to allow Canadian manufacturers, members of the consortium or joint-venture, to compete on equal terms against ITT, Ericsson or Siemens. It would also make it easier for Canadian manufacturers to identify opportunities in the private sector and to exploit them.

### CHAPTER 3 : COLOMBIA

Colombia is situated in the northwest corner of South America, adjoining the isthmus of Panama, and is the only South American country with coastlines on both the Pacific Ocean and the Caribbean area of the Atlantic. Its 1,141,748 km<sup>2</sup> (440,505 sq. miles) and 28.6 million inhabitants (1982) make it the fourth largest country in South America both in population and geographical size.

The three Andes mountain ranges running north-south separate the country into two distinct areas. The area east of the Andes, almost two-thirds of the nation, is merely an expanse of forests, plains, and jungles in which less than 2% of the population live. The other area forms the heart of the nation, with its main cities - Bogotá, the capital, Medellin and Cali - two large industrial cities with over a million inhabitants each -, Barranquilla and Cartagena - Colombia's main ports on the Caribbean sea - .

Colombia is characterized by its climatic and ethnic variety. Spanish is the official language but many dialects are spoken in remote areas. Different cultures and life-styles co-exist in a country where southerners (indians of the Amazon region) have little in common with northerners (blacks, mestizos and mulattos of the Caribbean), except their shared mistrust of the Bogotanos and other large-city dwellers of the interior. In spite of its diversity, and of its geography which makes communication and transportation difficult, Colombia has experienced a relatively stable political life. Its government is democratically elected. The President is usually chosen from one of the two main parties - liberal or conservative.

Colombia can be best described as a country with a mixed economy based on the free enterprise system but with a central 'indicative plan' (*plan de integración nacional*). The State owns a majority interest in major industrial sectors such as oil, steel, transportation, mining, and telecommunications.

Colombia experiences difficulties in traditional sectors such as steel and textiles. Historically, the Colombian economy has depended on few agricultural products (coffee, bananas, flowers). The conversion to a modern industrial economy has been hampered by a variety of factors which by and large are common to all Latin American countries:

- . High-inflation rate (average 25% p.a.)
- . Shortage of hard currencies
- . Deficit in the balance of trade (on average imports represent twice the exports in \$)
- . Insufficient basic industrial and technological infrastructure

As a result most Colombian industries are not competitive in the world market and the whole economy rests on the ups and downs of world commodity prices - mainly coffee, of which Colombia is the second world producer.

By signing the Cartagena Agreement Colombia became a founded member of the Andean Common Market (ALADE) with Bolivia, Chile, Ecuador and Peru, later joined by Venezuela. These countries have common policies regarding foreign investments, royalty transfers, (see chapter 5).



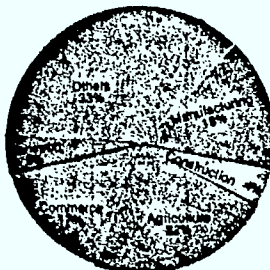
# Colombia-Basic Data & Economic Indicators

Area: 444,000 Square Miles  
(1,138,400 Square Kilometers)  
Population: 27 million (1979)  
Population Growth: 2.1% per year  
Gross Domestic Product:  
Rate of growth (per year)

1979	5.1%
1980	4.0%
1981	2.5%
1982	1.4%

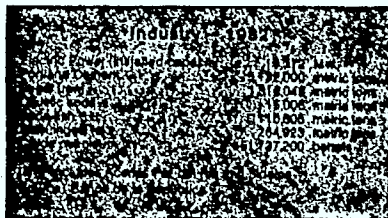
Per capita 1981 (est) US\$ 1,423 per year  
Source: Banco de la República

## Per Cent Contribution to Gross Domestic Product 1982



Exports — 1982 (F.O.B.)	
Coffee (green)	1,599
Fuel-oil	284
Textiles and garments	210
Bananas	154
Fresh-cut flowers	115
Chemicals and Pharmaceuticals	81
Portland cement	55
Raw sugar and molasses	54
Frozen beef	45
Cardboard containers	43
Books and magazines	43
Emeralds	41
Bituminous coal and coke	17
Others	542
<b>Total</b>	<b>3,283</b>

Source: INCOMEX except fuel-oil (Ministry of Energy)



## Population Distribution

978 cities  
1693 villages  
3604 hamlets  
1896 communities

## Population of the 15 Largest Cities (Thousands\*)

Bogotá (Capital)	4,584	Valledupar	301
Medellín	1,664	Pereira	270
Cali	1,450	Manizales	252
Barranquilla	924	Santa Marta	234
Cartagena	470	Montaña	228
Bucaramanga	441	Pasto	219
Cúcuta	420	Armenia	184
Ibagué	360		

\* Estimated  
Source: Banco de la República

Imports — 1982 (F.O.B.)	
Grain	1,900
Grain products	1,300
Grain products & intermediate products	1,233
Crude oil (mainly petrol & diesel)	1,145
Raw materials & intermediate products for industrial use	1,081
For agriculture	213
Capital goods (including construction materials)	221
Others	675
<b>Total</b>	<b>8,775</b>

## International Reserves

(End of Period)	US \$ Million
1978	2,482
1979	4,106
1980	5,416
1981	5,630
1982	4,891

Source: Banco de la República

Average rate of inflation (1978-1980): 25% - accelerating

Average hourly wage: US \$ 1

Budget (1981): 375 billion pesos (54% for the State)  
100 pesos=US \$ 1 (March 1984)

Debt: (1979): Total public debt: 115.2 billion pesos  
World Bank : US \$ 1949 million  
BID : US \$ 285.5 million

Total reserves (1982) : US \$ 3861 million  
(1983) : US \$ 2366 million

Distribution of investment funds between 1979 and 1982

	Amount [US \$ million]	% of total
Energy	6 800	45
Transportation and communications	3 200	21
Industry and mining	2 200	14
Agriculture	1 800	12
Miscellaneous	1 200	8
<b>TOTAL</b>	<b>15 200</b>	<b>100</b>

Sources: Departamento de Planeación Nacional.

IMF Bulletin

Colombia Today, vol. 18, no 8 (1983)

Newsletter, Colombia Information Service, New York.

Out of the US \$ 15 billion invested in development programmes between 1979 and 1982, US \$ 8 billion came from foreign sources. Foreign investments in 1983 totalled almost US \$ 1.3 billion, showing a marked increase in the manufacturing sector and in mining\*.



\* With the help of Exxon, Colombia is currently developing what will be the largest open coal mine in the world, at El Cerrejon in the Guajira (northern province).

COLOMBIA

## CHAPTER 4 : TELECOMMUNICATIONS IN COLOMBIA

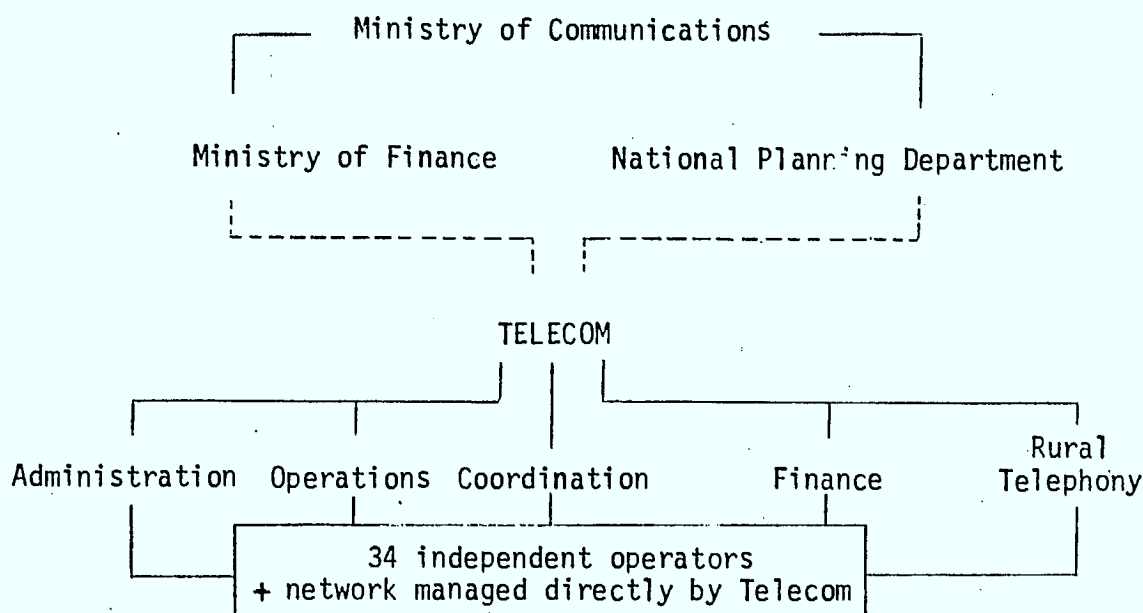
From the beginning of the telecommunication era, the geography of Colombia prevented the orderly development of a network. The population is concentrated in large cities, four of which have more than a million inhabitants, separated by mountain ranges. As a result, separate networks appeared in each area in the 1930's.

Concessions were given to foreign companies (Siemens, ITT, Ericsson) to operate international telephone and telegraph services. By 1946, the Colombian government understood the need to unify, or at least harmonize, the development of a truly national network. It founded TELECOM, an autonomous government-owned company, which is responsible for the operation of all national telex, telephone and telegraph, long-distance and international services. Local telephone services which had already appeared in 34 urban centers remained under the control of the municipal telephone companies. In smaller towns all telephone services were managed by TELECOM.

### 4.1 The structure of the Ministry of Communications

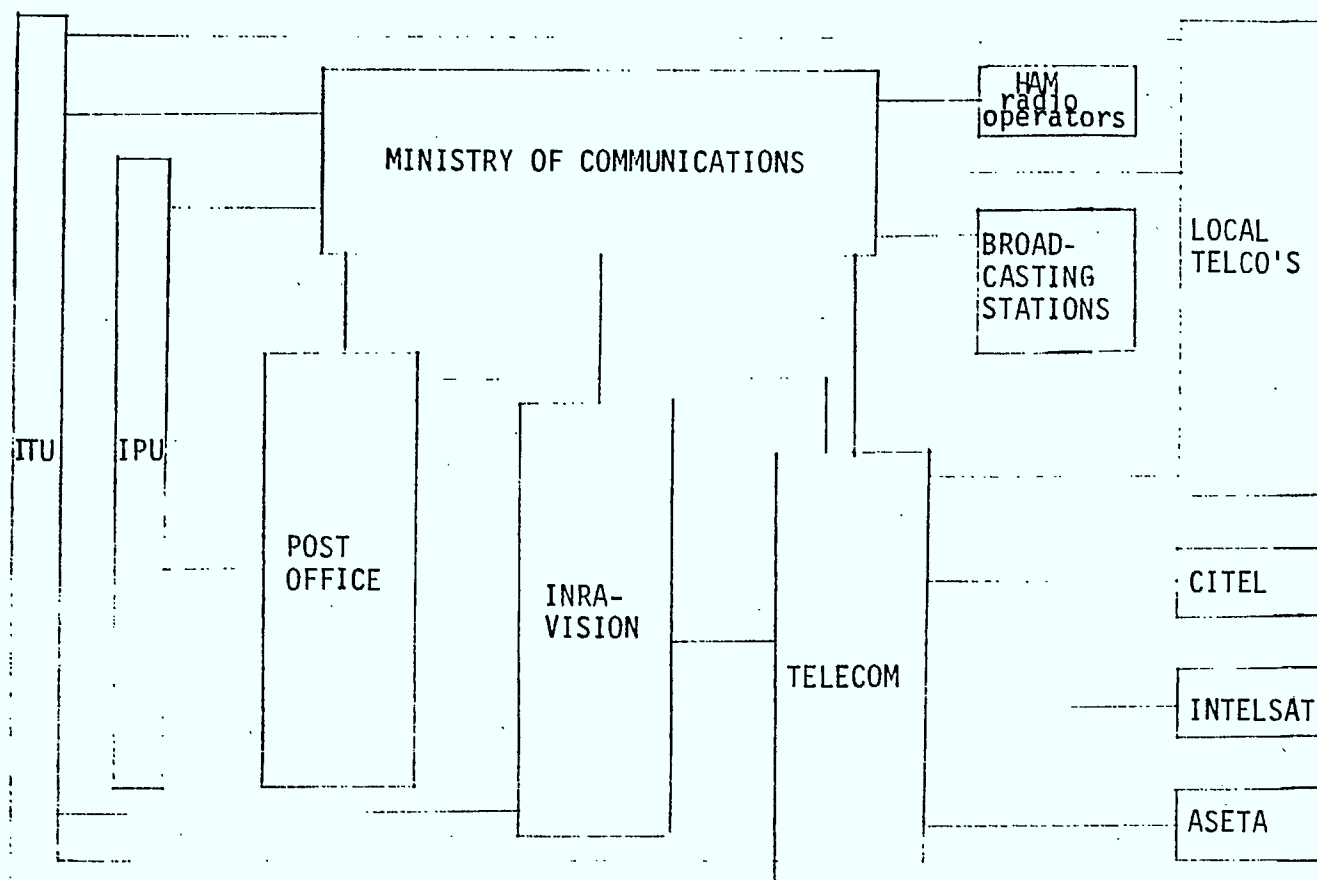
The Ministry of Communications, which exercises regulatory control over the telecommunications sector, formulates policy and provides technical advice to local operators. Sector priorities and investments are established by the Telecommunications Unit of the National Planning Department, and the Ministry of Finance examines investment and financing plans.





The Ministry of Communications makes recommendations on tariff proposals before they are submitted to the National Planning Department's Tariff Board for approval. The Ministry of Finance also has a say in the final approval of tariffs and expansion plans of all the telephone companies in the country. The Minister of Communications is appointed by the President of Colombia. She is assisted by a Vice-Minister, a Secretary General, and five directors (Legal, Radio, Telephone-Telegraph & Postal Services, Audiovisual and Publicity Media, and Administration).

The Minister of Communications is ex officio Chairman of The Board of Telecom. The remaining nine members of the Board are political appointees. The President of TELECOM is assisted by five vice-presidents - for administration, technical operations, rural telephony, telephone coordination, and finance. Seven regional managers operate in Bogota, Medellin, Barranquilla, Cali, Bucaramanza, Manizales, and Ibague. Telecom employs a labour force of approximately 19000.



The current trend is to centralize decision-making in the structure we have just described with a view to rationalize the future developments of the telecommunication network. In this respect TELECOM has already started to take over smaller telephone companies. This process will probable continue until telephone companies only subsist in the 8 largest cities.

Two other agencies come under the authority of the Ministry of Telecommunications:

- . INRAVISION (Instituto Nacional de Radio y Television) operates a microwave network to distribute TV programming nationwide.

- PROTELECOMUNICACIONES (Promotora de Industria Nacional de Equipos de Telecomunicaciones), a promotion agency formed in 1976 to encourage the development of a domestic telecommunications equipment manufacturing industry.

#### 4.2 Current situation

Colombia is undergoing rapid changes in its telecommunications system. Telecommunications, under the Presidency of Belisario Betancour - a Conservative President who is expected to remain in office until 1986\* - have become a national priority. Two sectors in particular have been the object of political debate:

- satellite communications: Colombia faces the choice of participating in a co-operative Andean satellite venture (CONDOR Project), launching its own satellite (SATCOL Project), or renting more circuits from Intelsat (VISTA service).
- rural telephony: in the past ten years, guerrilla organizations (M.19, FARC) have increased their control over rural areas. Farmers and peasants were driven away from those rural areas and could not find work in the urban centers. This situation aggravated the insecurity in the cities and in the rural areas. The President offered an amnesty to guerrilla groups in 1982 and promised to improve the living condition of the peasants to try and stem their flow into the cities and into the ranks of subversive movements. Part of the improvement is the project known as *Territorios Nacionales* which projects the expansion of rural telephony in remote areas. This expanded telephone network will be of obvious social and strategic military importance. In 1984, it is viewed as one of the top priorities of the government.

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\* The President is elected for a five-year term and cannot be re-elected.



The following table sums up the current situation of the telecommunications sector in Colombia:

Table 1  
Telecommunications in Colombia (1983)

LOCAL AUTOMATIC TELEPHONE NETWORKS: 360  
AUTOMATIC C.O.'S: 450 (300 UNDER 500 LINES)  
LOCAL TELEPHONE LINES: 1.8 MILLION (98.4% AUTOMATIC)  
DENSITY: 6.5 LINE/100 POP = 9 TELEPHONES/100 POP  
TOLL CIRCUITS: 18,000  
TOLL TRAFFIC: 925 MILLION PAID MINUTES (500 MILLION CALLS)  
INTERNATIONAL TELEPHONE CIRCUITS: 820  
INTERNATIONAL TELEPHONE TRAFFIC: 24 MILLION PAID MINUTES  
COMMUNITIES SERVED BY THE NATIONAL TELEPHONE NETWORK: 2,230  
CITIES WITH ACCESS TO STD (DDD): 218  
CITIES WITH ACCESS TO ISD: 9

TELEX LINES: 5,500 (7,462 EQUIPPED)  
GENTEX LINES: 1,000 (1,100 EQUIPPED)  
CITIES WITH GENTEX SERVICE: 307  
TOWNS WITH CW TELEGRAPHY: 104  
TOWNS, VILLAGES & HAMLETS WHERE TELEGRAMS ARE TRANSMITTED BY  
PHONE: 1,825  
TOTAL TELEGRAPH OFFICES: 2,296

BROADCASTING STATIONS: 400; RADIATED POWER 4 MW. AND 86 FM  
STATIONS WITH 750 KW OF WHICH: EDUCATIONAL  
BROADCASTING STATIONS: 10; RADIATED POWER 0.7 MW. INRAVISION  
0.2 MW.  
TV RECEIVERS IN 60% OF DWELLINGS IN BIG AND MEDIUM SIZE CITIES  
RADIO RECEIVERS IN 90% OF DWELLINGS.

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Source: Telecom [2]

Strictly from a financial point of view, TELECOM represents about half the telecommunications sector with annual investments of close to US \$ 30 million, half of which corresponds to imported equipment, the other half being spent on locally produced equipment, administrative costs, maintenance and training.

### Telephone

Colombia has just completed its Fourth Telecommunications Project. Under this plan, TELECOM spent US \$ 420 million, between 1977 and 1982, to upgrade telephone service in the country.

The plan was partially financed by the World Bank (IBRD) (\$60 million), the IDB (\$29 million) and other foreign commercial sources (\$103 million). The funds have been expended on the acquisition of equipment mostly from Ericsson, Siemens and ITT, additional investments for project under way, and other components such as civil works, freights charges, insurance and miscellaneous costs.

Because of the geography of the country, the network relies mostly on microwave equipment. Even with digital toll exchanges, analog microwave plus transmultiplexor conversion is still cheaper than digital microwave, according to the Vice-President for Rural Telecommunications. ITT and Ericsson are currently trying to get Telecom interested in fiber optics.

For long distance and international communications, Colombia rents INTELSAT space segments and in some cases uses HF systems. Almost every kind of switching equipment has been installed in the country from SXS to digital. Colombia intends to undergo a major overhaul of its equipment during the next twenty years, retiring the analog exchanges (even SPC) in favor of an integrated digital network.

The annual growth of subscribers is currently 9% but should increase to more than 12% per year in the coming years. Such a rate of sustained growth may justify local production of switching equipment. So far, some limited assembly operations are performed in Colombia by Ericsson and ITT but the domestic production of telecommunications equipment is limited to parts and accessories (Table 2).

Table 2

Colombia: local production of selected  
telecommunications equipment  
(1976-80) (in US \$)

	1976	1977	1978	1979	1980
Radio telephonic equipment	5 036	9 518	14 357	66 306	78 087
Radio antennas	533	1 076	5 569	13 352	5 506
Television antennas	8 859	14 449	19 881	7 043	22 077
Amplifiers	20 455	1 839	65 801	6 890	7 432
Radio and TV condensers and transformers	43 625	44 030	49 722	309 347	57 074
Parts and accessories for telephone and telegraph	<u>204 795</u>	<u>269 960</u>	<u>79 510</u>	<u>88 204</u>	<u>740 062</u>
Total	283 303	340 872	234 840	491 142	910 238

Source: US Department of Commerce [1]

Table 3 shows the current switching equipment in use in the city of Bogota. The capital uses over 40% of all local telephone lines existing in Colombia. All of its equipment comes from Ericsson (AGF, ARF, ARE, AXE) and ITT (Pentaconta, Metaconta)\*.

\* 16K lines come from two Hitachi (C23HD, C23SE) mobile stations.

Table 3

Bogota Telephone Lines in Services (1983)

EXCHANGES	SYSTEMS	AGF	ARF	ARE	AXE	MC	PC	TOTAL
CENTRO		40	40		5			85
CRUCES		10	10			5		25
TEUSAQUILLO		20		20	5			45
CHAPINERO		20	40					60
CHICO			20	10				30
AUTOPISTA			20		4			24
NIZA			20					20
SAN FERNANDO		10	20		5			35
SANTA HELENITA			20			10	10	40
SUBA			10		4			14
TOBERIN			10		5			15
C. UNIVERSITARIA		10	19					29
PUENTE ARANDA			30					30
NORMANDIA			10			3		13
FONTIBON			20					20
KENNEDY			30		5			35
RICAURTE		10	20			5		35
OLAYA		10	20					30
MUZU		10	20					30
SAN CARLOS			20					20
BOSA			10					10
SAN VICENTE					10			10
PICOTA								
BOCHICA							20	20
SALITRE			5					5
SAN JOSE					5			5
SANTA BARBARA			20		3			23
BACHUE			10					10
SOACHA					4			4
MOVILES								16
TOTAL:		140	444	30	55	23	30	738

Source: ETB (Empresa de Telefonos de Bogota)



## Public Telegraph, Telex and Data Communications

Telecom provides public telex and telegraph services in all towns with populations of more than 3000. It operates an electromechanical Siemens ED\* (5000 lines) telex switch in Bogotá and 39 other electromechanical exchanges. Most of these exchanges are old Siemens TW-39 bought since 1954. All in all Colombia has 8800 telex lines, 7400 of which are for subscribers and the rest for Telecom's internal use.

The telex network is divided into five zones: Bogotá, Barranquilla, Bucaramanga, Cali and Pereira. Service is fully automatic. There is no public high-speed data communications service. Major banks are in the process of installing their own private networks.

The quality of telegraph and telex services, both domestic and international, has been kept at acceptable levels, according to our respondents at TELECOM. However, the volume of telegraphic messages has declined in recent years, and the future of telex services hinges upon the development of teletex and other data services. Lately the volume of telex services has grown at a very slow rate (2% p.a.).

### Technical Standards [2]

The telephone network is by far the most important. Its optimization led to define service areas of 2 to 50 thousand square kilometers, according to the decreasing density of population in the early 60's. Taking into consideration the limitations of electromechanical C.O.'s, the following basic plans were developed that are currently under revision:

Numbering: NSN uniform of 7 digits. Prefix 9 to tell the difference between local and toll traffic. One, two or three digit destination codes for 6, 5, or 4 local

numbering areas; the second and third digit of the destination code always 0, 1 or 9, to facilitate identification of local number. Two numbering areas have to be converted to 7 digit local schemes and the rest of the country can stay with 7 digit NSN for some years, but at the end the Plan calls for uniform 8 digit NSN. When the toll traffic reaches a certain percentage of the total, the prefix 9 will disappear.

Switching/Routing: Because the traffic interests were unknown, the toll network was built with two 4 wire hierarchical levels; the secondary centres were connected in a mesh and all the primary centres married to its secondary centre in a star shaped scheme. For security reasons, the Bogota Center would transmit traffic between secondary centres; for that reason, sometimes it is called tertiary or national centre. All toll centres and their toll circuits are 4 wire; in lower toll C.O.'s and most lower level C.O.'s can select alternative routes, and when the traffic interest was better known, high usage routes were opened which overflows to final low loss routes.

Signalling: Telecom had to adapt to the signalling scheme of every Telco in the late 50's. Now the trend is to standardize in CCITT R-2 in the combined local toll level and CCITT No. 5 in the international level.

#### Imports - Exports

The telecommunications equipment import market of Colombia in 1983 is estimated at US \$ 150 million. This figure includes all types of telecommunication equipment (industrial and consumer goods). Table 4 shows its evolution in recent years.

Table 4

Import of selected communications equipment 1977-81

(in millions of U.S. dollars)

	1977	1978	1979	1980	1981
Telephone sets. . . . .	2.78	5.95	3.12	7.44	8.34
Nonautomatic switchboards and exchanges. . .	.88	1.34	1.71	1.10	1.27
Automatic switchboards and exchanges. . . .	27.15	32.03	104.67	55.60	58.10
Other electrical line telephonic equipment.	6.15	1.13	1.69	3.80	7.29
Telegraph apparatus, including teleprinters	3.38	2.10	4.23	1.55	2.10
Special apparatus for carrier-current line system. . . . .	2.89	.65	2.27	7.30	3.82
Parts for electrical line telephonic	1.92	2.04	1.75	3.70	3.25
Radiotelegraphic and radiotelephonic fixed or mobile apparatus . . . . .	1.30	1.99	1.14	1.78	2.86
Other radiotelegraphic and radiotelephonic equipment . . . . .	2.69	4.37	2.76	9.77	3.57
Radio-broadcasting transmission apparatus .	.15	.22	.31	2.33	2.45
Other radio-broadcasting transmission equipment . . . . .	.98	.94	1.10	-	-
Combined radio-broadcasting, reception for vehicles. . . . .	1.67	1.96	3.15	1.82	.75
Other radio-broadcasting, reception apparatus . . . . .	1.09	1.02	.72	1.71	1.47
Black and white television reception apparatus . . . . .	.05	.15	.04	2.22	.88
Color and other television reception apparatus . . . . .	2.04	2.00	2.89	-	-
Ferrite aerials for transmission reception apparatus . . . . .	.01	.07	.03	1.10	1.23
Channel selectors for transmission reception apparatus . . . . .	.64	.87	.28	-	-
Other parts for transmission reception apparatus . . . . .	.14	.40	1.00	-	-
Parts and accessories for transmission reception . . . . .	1.50	3.49	2.22	-	3.24
Coaxial cables. . . . .	.14	.38	.27	.48	.55
Insulated electric wire-cable and telephone cables. . . . .	.35	.08	.12	.13	1.90
Sound recorders . . . . .	.13	.07	.14	-	-
Record players and tape decks . . . . .	.06	.07	.09	.17	.09
Other combined sound recorders and reproducers . . . . .	.71	.75	2.10	1.30	1.17
Television image and sound recorders and reproducers . . . . .	.22	1.17	3.65	1.84	1.44
Videotapes. . . . .	.07	.20	.35	.25	.28
Other videotapes and recorder tapes . . . .	.01	.03	.06	-	-
TOTAL:	59.10	65.47	141.86	105.39	106.05

Source: INCOMEX [1]

The US, Sweden, Japan and Germany have traditionally been the main foreign suppliers (see Table 5), through the marketing efforts of ITT, Ericsson, NEC, Hitachi, Fujitsu, and Siemens.

Table 5  
Colombia: Import of telecommunications  
equipment by country of origin (1977-1981) in US \$.

	1977	1978	1979	1980	1981
United States	3.68	8.81	14.57	13.45	13.40
Sweden	19.81	19.97	56.85	2.91	25.83
Japan	12.47	7.33	8.81	21.65	17.58
Germany	8.39	4.85	6.21	9.53	11.64
France	2.00	6.23	29.75	9.85	11.15
Belgium	2.18	1.99	.64	3.04	7.09
Panama	3.60	4.64	8.94	3.29	3.30
Italy	.70	1.11	4.20	3.24	2.47
United Kingdom	2.02	.22	2.98	21.30	2.16
Spain	.54	4.05	1.00	6.46	1.95
Other	3.70	6.30	7.90	10.95	9.36
Total:	59.09	65.50	141.85	105.67	105.93

Source: INCOMEX [1]

In order to be recognized as "domestic manufacturers" and to enjoy an automatic preference over "foreign" manufacturers in public tenders, subsidiaries of Ericsson, Siemens, and ITT in particular have agreed to export some of their output from Colombia to other Latin American countries, mainly Ecuador and Venezuela. Insulated electric wire cable and telephone cables comprise more than 90% of all exports (see Table 6).

TABLE 6

Colombia: Export of selected telecommunications equipment  
(industrial and consumer goods) (1977-1981)

	1977	1978	1979	1980	1981
PBX exchange . . . . .	NA	NA	NA	61,600	93,500
Telephone sets . . . . .	68	-	11,000	1,200	3,600
Parts and accessories for electrical line telephonic equipment. . . . .	NA	29	46,000	23,000	164,409
Speakers . . . . .	80	7,680	8,123	NA	NA
Amplifiers . . . . .	850	NA	NA	NA	NA
Parts and accessories for speakers and amplifiers. .	4,206	8,614	16,783	25,759	58,268
Radio broadcasting trans- mission and transmission reception apparatus. . . .	50,000	NA	NA	550	NA
Cases, cabinets, and parts of artificial materials. .	90,427	11,736	25,918	6,360	449,691
Parts and accessories for transmission reception apparatus. . . . .	4,525	NA	8,901	25,758	58,268
Coaxial cables . . . . .	2,156	NA	2,490	2,845	987
Insulated electric wire cable and telephone cables	696,881	1,445,962	584,849	1,080,515	539,851
TV image and sound recorders and reproducers (magnetic) . . . . .	NA	6,125	NA	40,000	2,142
Videotapes . . . . .	NA	616	NA	NA	NA

Source: INCOMEX [1]

#### 4.3 Development plans

The government of President Belisario Betancur took office in 1982. Following the custom of not only Colombia but of many Latin American countries, the top personnel of all government and para-government agencies was changed. New management teams took control of the Ministry of Communications, Telecom and every municipality in Colombia. New plans were drafted: one covering the 1983-87 period, then more recently (March 1984), a Telecommunications



Development plan was submitted by TELECOM to the National Planning Department for approval.

The following projections are based on these plans and on interviews with Colombian telecommunications experts (see list page 54).

The telecommunications development plans of Colombia in the 80's come under three headings:

- Rural Telephony
- Telephone & Telex network expansion
- Satellite communications

#### 4.3.1 Rural telephony

In 1979, TELECOM embarked on an ambitious plan to connect remote regions of Colombia to the telephone network. The project was called *Territorios Nacionales*. A technical mission from West Germany conducted the feasibility study.

The objective is to provide automatic telephone service in 51 municipalities, and 224 villages of 200 inhabitants or more and 1000 lines to private rural subscribers. The *territorios Nacionales* plan projects the following installations:

- 15 000 new telephone lines
- a microwave trunkline
- 21 small-capacity earth stations
- UHF and VHF radio equipment for public and private subscribers in isolated regions
- miscellaneous power equipment (solar cells, hybrid systems, generators)

- outside plant equipment
- interconnection with the national telephone network (additional switches in existing exchanges, additional transmission equipment).

The region covered by the project represents about half the Colombian Territory, i.e. over a million  $\text{km}^2$ . Two subregions will be the object of particular attentions:

- 1) *The Llanos*, a 600 km wide plain south-east of Bogota covering an area of 350 000  $\text{km}^2$  inhabited by roughly 300 000 people.
- 2) The Eastern Andes, a narrow hillside almost 900 km long and up to 200 km wide (150 000  $\text{km}^2$ ) with a population of 800 000.

In these regions, the current density is 1 line per 100 people. The rural telephony project should add 15 000 telephone lines to the 10 700 that already exist, thus raising the density to 2.3 lines per 100 people.

The government gave the green light to the project in July 1983 when it approved TELECOM's plan requesting a budget of US \$ 56 million (US \$ 3,733 per line), of which US \$ 37.6 million must be borrowed abroad at the following minimum terms: 12% interest including all fees, 7 years term. The remaining US \$ 18.4 million must be obtained from "soft credit" sources, i.e. international development agencies. The project calls for the installation of six large satellite antennas of 7-12 meters and thirty three small satellite antennas of 3.5-4.5 meters in diameter. These would be installed in remote locations, mostly jungle territory and islands. Each station will receive transmission from a leased INTELSAT transponder. Each station will require transmission and receiving equipment and multiplexing systems used for telephone, telex, telegraphy and TV signals.

Depending on the locations to be serviced by each station, different radio links will be installed at nearby points via MW, VHF or UHF calling for 1, 5, 12, 24 and up to 60 channels. Some locations will use multiaccess radio systems.

Telephone stations will be needed at many locations typically of 50, 100, and 500 lines and capacities of up to 300 LD, 550 local and 1 000 for transit. All will use digital technology.

Due to the remote situation of the stations, solar generators will be used for the power supply. All in all, the US \$ 56 million should break down as follows:

	<u>by region</u>	<u>by type of equipment</u>
<i>Llanos</i>	US \$ 10 million (18%)	Rural distribution US \$ 14 million (25%)
Eastern Andes	US \$ 46 million (82%)	C.O. & trunks US \$ 42 million (75%)

The call for tenders will be issued in April-May of 1984. Via their embassies in Bogota, TELECOM has already sounded out various countries (Canada, France, the United States, the Federal Republic of Germany, Japan and Sweden) to determine their interest in presenting a bidder and to assist in putting up a competitive financial offer.

The bids should be reviewed at the end of 1985. Final contracts are expected to be signed in 1986 and delivery will be made in 1987.

#### 4.3.2 Telephone & Telex network expansion

Expansion plans are currently being revised and will appear in the Development Plan (1985-90) submitted in March of 1984 to the National Department of Planning, but not yet made public. This plan takes into account five areas of development.

- Telex, telegraphy and data communications
- Urban telephony
- Long distance telephone service
- Transmission systems
- International communications

##### 4.3.2.1 Telex, telegraphy and data communications

Telex services in Colombia are currently the object of a controversy. Two schools of thought are pitted against each other: believers in the telex service want to double the number of lines between 1984 and 1990, opponents point out that data networks and Telidon-type services will render the telex service obsolete. The latter points to Canada as a prime example of a country where the number of telex lines in service actually diminished in recent years. Those who currently hold the power in Telecom seem to favor the expansion of the telex network. Should they win, a call for tenders will be issued in June 1984. For a sum of approximately US \$ 15 million, Telecom will ask the bidders to gradually replace and expand the 39 small Siemens exchanges it now uses outside Bogota. Telecom wants:

- 4 telex exchanges with 20 multiplexers
- data transmission equipment (packet-switching, 400 gates)
- circuit-switching equipment (on a trial basis)
- teletext (on a trial basis)

Although Siemens, up to now, has supplied all telex equipment to Colombia, the race is officially "open" and a Canadian offer would be seriously considered. In the summer of 1984, the Minister of Communication will announce Colombia's plan for a national data transmission network at a cost of approximately US \$ 9 million, one third of which will be financed directly by TELECOM, the remainder being covered by supplier credit. It seems that the network will use packet switching and will make videotex, electronic mail and other modern services available to subscribers in four cities (Bogota, Medellin, Cali, Barranquilla) through 2 000 access points. The network should be in place in 1986. The equipment (PCM, microwave) will belong to local telephone companies and to TELECOM. Services will be administered following the same ground rules that apply to telephone services.

#### 4.3.2.2 Urban Telephony

Between 1972 and 1982, the annual increase in telephone lines installed in urban areas was 8.9%. It is expected to reach 14.7% between 1983 and 1987. Table 7 shows the planned increases for the city of Bogota.



Table 7Development plan, Bogota telephone system

## NEW TELEPHONE LINES (1983-1987)

in thousands of lines

Year	Contracted	Under study	Small business projects	Total
1983	243.3	51.6	1.8	296.7
1984	293.0	205.7	6.7	505.4
1985	179.2	78.5	8.0	265.7
1986	148.9	88.6	11.0	248.5
1987	46.0	155.5	-	201.5
TOTAL	910.4	579.9	27.5	1,517.8

Source: Departamento Nacional de Planeacion

The telephone network will be expended in the largest cities of Colombia during the period 1985-1990: Cali, Barranquilla, Girardot, Pereira, Santa Marta, Palmira. Tenders will be issued in 1985 for approximately 200 000 lines. They will call for digital (time division, PCM) switches with a capacity of 5K to 10K lines.

#### 4.3.2.3 Long distance telephone service

Within the next seven years, Colombia must replace its outdated equipment with digital technology. Its current 70 000 trunks will be expanded. 40 000 new trunks will be bought (15 000 replacement; 25 000 expansion).

Ericsson and NEC have been the traditional suppliers.

##### ERICSSON (AXE)

in Bogota

Cali

Medellin

Barranquilla

##### NEC (NEAX-61)

in Bucaramanga, Pereira

Manizales, Pasto

Popayan, Ocana

Sincelejo, Villavicencio

If we exclude Bogota and other large cities to look only at the telephone expansion plan of lines under Telecom's management, they will increase from 135 535 in 1983 to 450 000 in 1990.

#### 4.3.2.4 Transmission systems

In 1984, Colombia operates 10 000 microwave circuits, and has contracted an additional 12 000 with the following suppliers.

NEC (65%), Telettra (20%), Italtel (15%). Telecom plans to call for tenders in 1990 for an additional 10 000 circuits.

#### 4.3.2.5 International telecommunications

Colombia's historical undercapacity in international telephone trunks was alleviated in 1983 with the installation of an international dialing exchange (4 000 trunks) by Thomson CSF (MT 20). Around 1987 TELECOM is expected to request bids on an additional exchange of 2 000 trunks.

#### 4.3.3 Satellite communications

In 1978 Colombia announced that it wanted a communications satellite. Other Andean countries were approached to participate in a co-operative project involving launching a satellite on a geosynchronous orbit which would satisfy all co-operating countries. This project, named CONDOR, soon succumbed to technical (orbit choice), political (controls) and financial problems. Sensing the difficulty of getting all partners to agree on the CONDOR project, Colombia developed its own project: SATCOL.

SATCOL was supposed to be launched in 1984 to provide domestic services in telex, telephony, television, telegraph, radio programme distribution and data transmission. The system was designed to provide 10 000 to 15 000 telephony circuits for urban areas, approximately 600 circuits for rural telephony, two TV channels, and one military communications transponder. Estimated cost for the total project was US \$ 200 million, including the spacecrafts\*, earth stations and a satellite control network.

The launch decision has been postponed, *sine die*. Colombia will probably make increased use of INTELSAT (VISTA) during the next decade and invest part of the US \$ 200 million in more down-to-earth projects.

#### 4.4 Suppliers

As we mentioned previously in this report, Colombia has done business with many telecommunications equipment manufacturers: Siemens (mainly in telex equipment), Ericsson and ITT (switching equipment), NEC, Telettra,

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\* The project called for two spacecrafts in geosynchronous orbit at about 75.4W longitude. The second satellite would have been in 'reserve' for increased traffic requirement or in case of failure of the first satellite. Each spacecraft would have had 24 transponders.

Italtel (transmission) and many others in the 39 independently, managed municipalities (e.g. Fujitsu in Medellin and Cartagena, Hitachi's mobile exchanges in Bogota, etc.).

Local production of telecommunications equipment in Colombia remains at a low level and is limited mainly to cable products, some colour and black-and-white television receivers, radio communications equipment and telephone parts. Multinational manufacturers have started local assembly of colour television sets, and new firms are now producing electronic components, parts and accessories (Table 8).

Table 8  
Leading suppliers of telecommunications equipment

Name	Country(ies) of Manufacture	Type of Equipment
Carvajal S.A.	Colombia	Intercommunication systems
CEAT General	Colombia	Switching equipment, telephone cables
Colombiana de Comunicaciones CILCOM	Colombia	Telephone parts
Colombiana de Telefonos	Colombia	Telephone parts
Comercial de Telefonía	Colombia	Telephone parts
Electronica Comunicaciones Ltda.	Colombia	Radio communications equipment
FACOMEC	Colombia	Switching equipment, telephone cables
Fase Ltda.	Colombia	Private radio communications equipment
GTE de Colombia	Colombia	Switching equipment, telephone cables
Hitachi Ltda.	Colombia	Power plants for communications equipment
Industrias Colombo Britanicas Ltda	Colombia	Radio communications equipment
Industria Phillips de Colombia	Colombia	Radio communications equipment
Ingenieria Electronica Aplicada	Colombia	VHF radio equipment: mobile and portable telephones; modulation monitors
L.M. Ericsson	Sweden	Telephone sets, automatic switchboards
Sociedad Electronica y comunicaciones	Colombia	Radio communications equipment
Siemens	Germany	Telephone sets

Source: Colombia, Telecommunications Equipment [1]

Subsidiaries of Ericsson (FACOMECE), CEAT of Ital (CEAT General), GTE (GTE de Colombia), ITT and Siemens are involved in the wiring of imported switching equipment, frames and relays. They also produce telephone cables.

Local suppliers benefit from the dispositions of the Official Purchases Statute (Decrees #222 (February 1983) and 32-18 (November 1983) which favours local suppliers and define what a company must do to be considered a "local" supplier (minimum local content + Colombian equity + commitment to export part of the production). As of March 1984, two 'foreign' companies are considered 'local suppliers': Ericsson and ITT. Siemens is lobbying hard and should obtain the same status in May ... just in time to bid for the telex expansion plan. Another decree has been announced which will define the automatic preference accorded to 'local suppliers' in international tenders. According to opinions expressed during the interviews, it may go as high as a 45% price advantage.



CHAPTER 5 : SELLING TELECOMMUNICATIONS  
EQUIPMENT TO COLOMBIA

Marketing telecommunications equipment in Colombia requires more than the mere knowledge of the market and the expected demand. It requires an understanding of the buyers, the buying process, the financial conditions affecting the sales, and above all the business and cultural habits prevailing in Colombia.

5.1 The buyers

The market can be conveniently broken down into two sectors: public and private.

Government sector

The following government entities are prospective end-users of communications equipment:

The Presidency, the Congress, the Supreme Court, 13 ministries, the Comptroller General, the Office of the Attorney General (Procuraduria), the Armed Forces and Police, state and municipal governments, and a large number of autonomous and semi-autonomous agencies such as the 36 enterprises providing telecommunications services (34 telephone companies, INRAVISION, and ADPOSTAL), The Foreign Trade Institute (INCOMEX), the Export Promotion Fund (PROEXPO), the Colombian Petroleum Enterprises (ECOPETROL), the National Department of Statistics (DANE), the Administrative Department of Civil Aeronautics (DAAC), the Colombian Ports Enterprise (COLPUERTOS)), and the Housing Development Institute (ICT) <sup>[1]</sup>. Telecom is by far the largest end-user in the government sector since

it manages about one half of the total traffic. Among the 36 municipalities who manage their own telephone network only one provides long distance service directly\*.

Radio broadcasting in Colombia is dominated by private enterprise. An exception is Radiodifusora Nacional, a station owned and operated by the Government. There are 392 radio stations with an installed capacity of almost 3 million watts. 42 radio stations are now using frequency modulation.

Colombian TV broadcasting facilities, consisting of three channels, are owned and controlled by the Government through the National Radio and Television Institute (Instituto Nacional de Radio y Television - INRAVISION). Broadcasting time is assigned by the government through public tenders to private programmers, and the government has direct involvement in educational and cultural programs.

#### Private sector

The manufacturing and banking sectors are currently the major end-users. The construction sector and the agricultural sector could offer opportunities for limited product lines in the near future (see section 4).

Approximately 90 percent of the manufacturing industry is concentrated in nine main metropolitan areas: Bogota, Medellin, Cali, Barranquilla, Cartagena, Manizales, Pereira, Armenia, and Bucaramanga. According to information obtained from DANE (National Statistics Department), at the end of 1980 the manufacturing sector has 26 000 establishments with a total labor force of 3 million. Gross manufactured product amounted to approximately US \$ 2.3 billion in 1980.

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\* Empresas Departamentales de Antioquia (EDA) in Medellin.

The financial sector has expanded rapidly in Colombia. In the last decade more than 1 000 bank branches were established, as banking services were introduced to 200 towns. Commercial banks have 2 774 offices, and the Central Bank (Banco de la Republica) has 29 offices throughout the country.

In the sector there are 22 commercial, 5 development, 3 official and 3 mixed banks, 28 financial corporations, 24 livestock financing funds, 10 saving and loans corporations, 3 stock exchanges, 12 bonded warehouses, 10 capitalization corporations, 11 investment trustees corporations, 38 finance companies, 9 commercial consortia for motor vehicles, 26 fiduciary corporations, and 2 credit-card companies [1].

The Cerrejon Coal Project deserves special attention since Carbocol/Exxon plans to spend US \$ 55 million on the communications system and associated support facilities required by the project. Major categories of equipment to be purchased are: point-to-point facilities PABX and PBX equipment, radio systems, site communications control consoles, power equipment, communications service shops, telex/facsimile facilities, and specialized complementary systems such as nine airport navigational aids, truck and shovel traffic control and railroad operation controls.

The banking system is undergoing rapid changes to move from the paper shuffling stage to the age of electronic data transmission, fund transfers and management control. Large banks are currently interconnecting their branches around the country. Financial institutions will be major users of the projected national data transmission network.

## 5.2 The buying process - financing - trade restrictions

Colombia favours open international tenders for the supply of most of its equipment to government agencies and municipalities. The purchasing agency must first submit its project to the National Planning Department, then ask for approval for the external credit it needs. Usually the Finance Ministry approves a maximum of 85% of the contract to be funded by external borrowing.

Typically the buyer, let us say Telecom, will sign two contracts: one with the supplier ("technical package") and one with the bank with which the supplier arranged the credit ("financial package"). It is always up to the supplier to arrange the financial package with one commercial bank which acts alone or as the leader of a consortium which may include other banks and/or foreign government agencies (i.e. CIDA). Financing is a major factor in the purchase decision. Any deal involving royalty payments abroad is subject to the control of the Royalty Committee (*Comité de Regalías*). In addition imports and exports are controlled through the Colombian Institute of Foreign Trade (INCOMEX). Tariffs of 20-35 per cent are imposed on most imports, with a tariff of 50% levied on cable. In addition a sales tax of 6% is levied on almost all imports and a value-added tax will soon be introduced. Import license approvals are required for some radio broadcasting equipment, television sets, and coaxial cable. Products assigned to the free import list (not requiring a license but still subject to customs duties) are determined by INCOMEX on the basis of the extent of local production, national interest, and price comparison. The list generally covers capital and intermediate products. Special contracts can be arranged through INCOMEX for concessional and duty-free imports of goods and raw materials intended for reexport after processing. Global Import Licenses can be issued, valid for 1 year, to facilitate imports used to expand industrial

facilities. Full details on all import regulations can be obtained from INCOMEX, Calle 28, No 13A-15, Bogota [1].

### 5.3 Selling Canadian equipment to a Colombian purchaser

Selling Canadian equipment to a Colombian purchaser is only possible if the product for sale is not on the list of restricted imports. This list is growing larger everyday, due to the precarious financial situation of Colombia whose total monetary reserves are diminishing rapidly. The Government is taking every possible step to control imports and to favor local manufacturers over outside suppliers.

On the other hand, if the Canadian equipment to be sold to Colombia is not on the restricted list, financing the sale is relatively easy. CIDA recently opened a CAN \$ 30 million credit line to Colombian purchases from the private sector and a CAN \$ 10 million credit line to public buyers. Due to the Colombian import restrictions this line of credit is still virtually untouched.

Before tackling the issue of financing however, the Canadian product must be *sold*. First of all, potential buyers must be made aware of the existence of the Canadian product, system or technology. Technical seminars and trade missions constitute the best means of promoting Canadian products. For manufacturers offering private telecommunications equipment, the Bogota International Fair held annually in July provides a useful forum, as well as numerous exhibitions (usually held in Bogota) which center around the I.S.S. (Information Systems and Services) industry - e.g. in 1983 *Compueexpo* (March), *Informatics* (October).



Once the Canadian product has been shown, the seller must have a local representative. This choice will be critical. The representative should be professional and should show a record of professionalism.

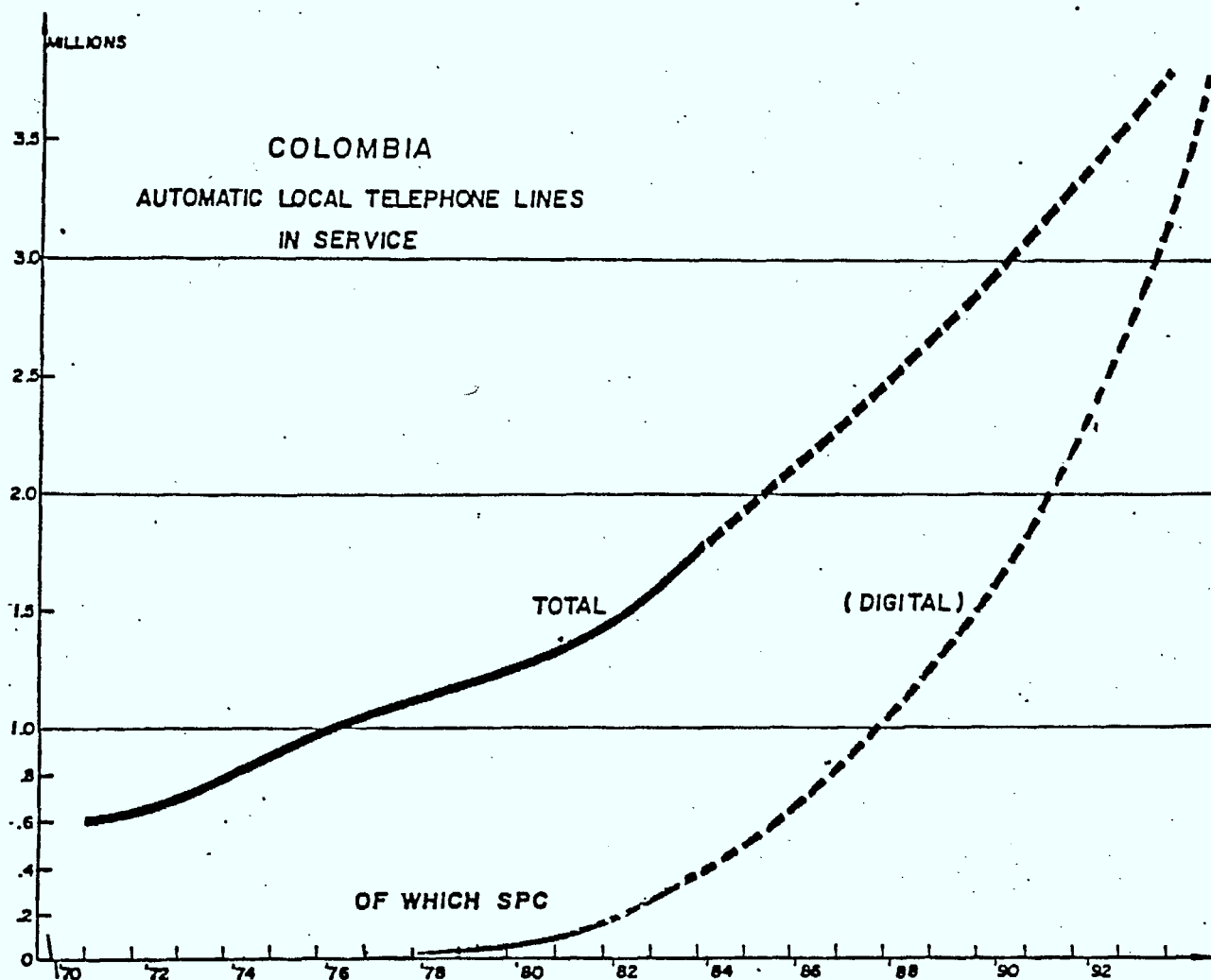
Lastly the Canadian supplier needs a Colombian legal counsel to draw up all contracts for agency, importer, licensing and distribution agreements.

The commercial section of the Canadian Embassy in Colombia monitors the evolution of the telecommunication sector. Its assistance can prove invaluable to the prospective Canadian telecommunication equipment exporter.

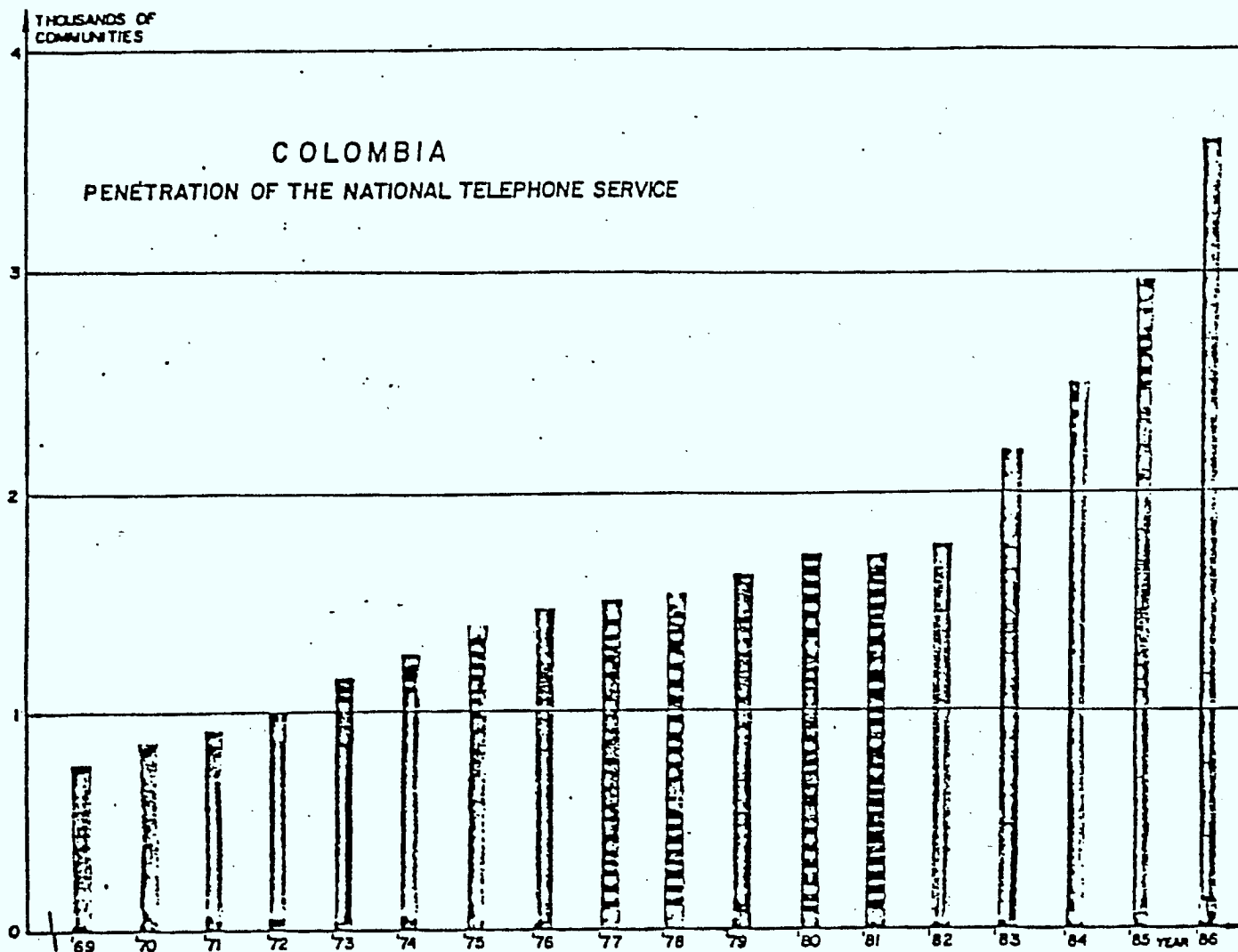
## LIST OF EXHIBITS

- Exhibit 1 : Automatic local telephone lines in service.
- Exhibit 2 : Penetration of the national telephone service.
- Exhibit 3 : Annual toll traffic.
- Exhibit 4 : Telex subscribers.
- Exhibit 5 : International telephone traffic.
- Exhibit 6 : Telecom: financial results.
- Exhibit 7 : List of major prospective customers.
- Exhibit 8 : Useful addresses.

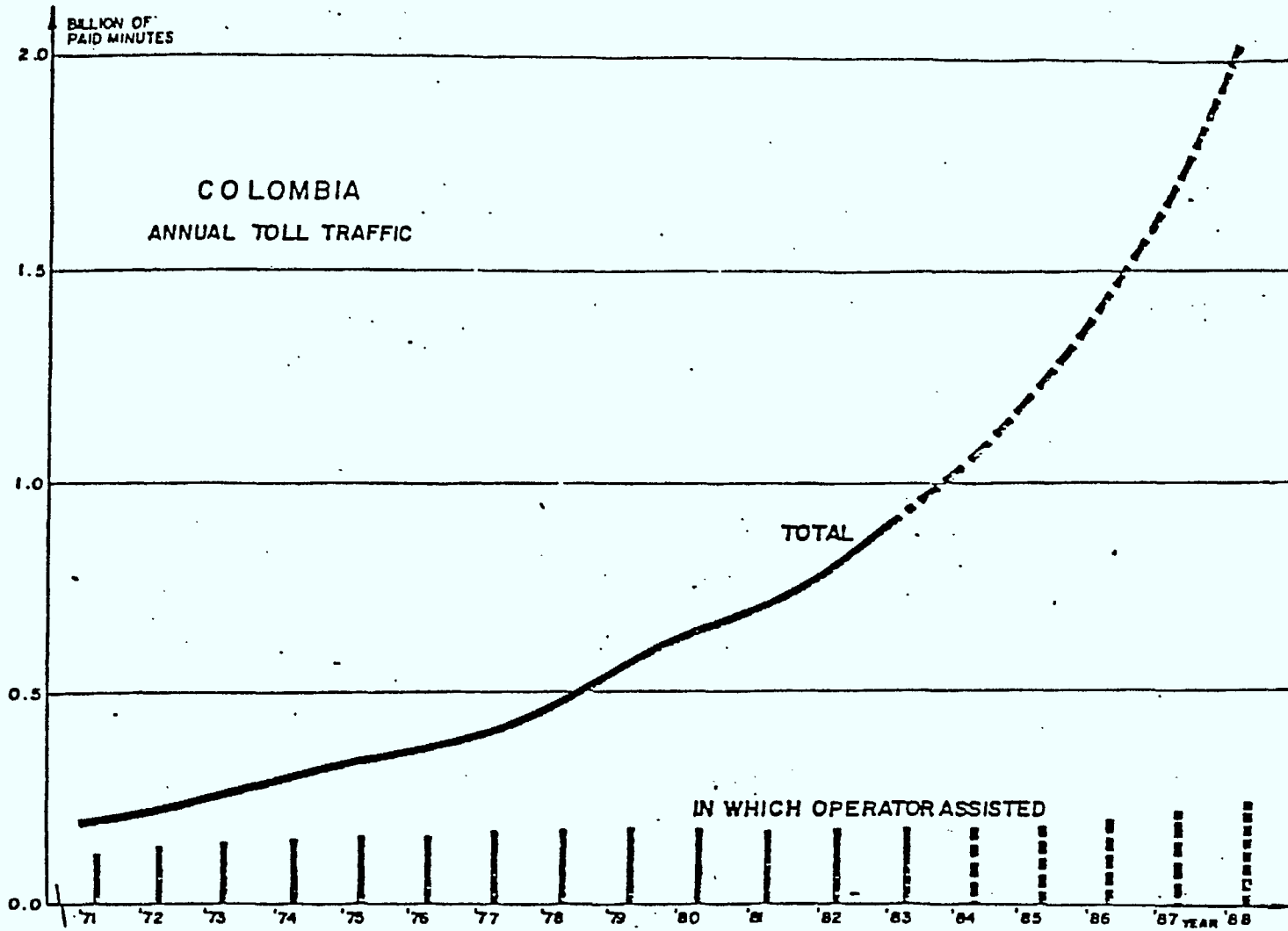
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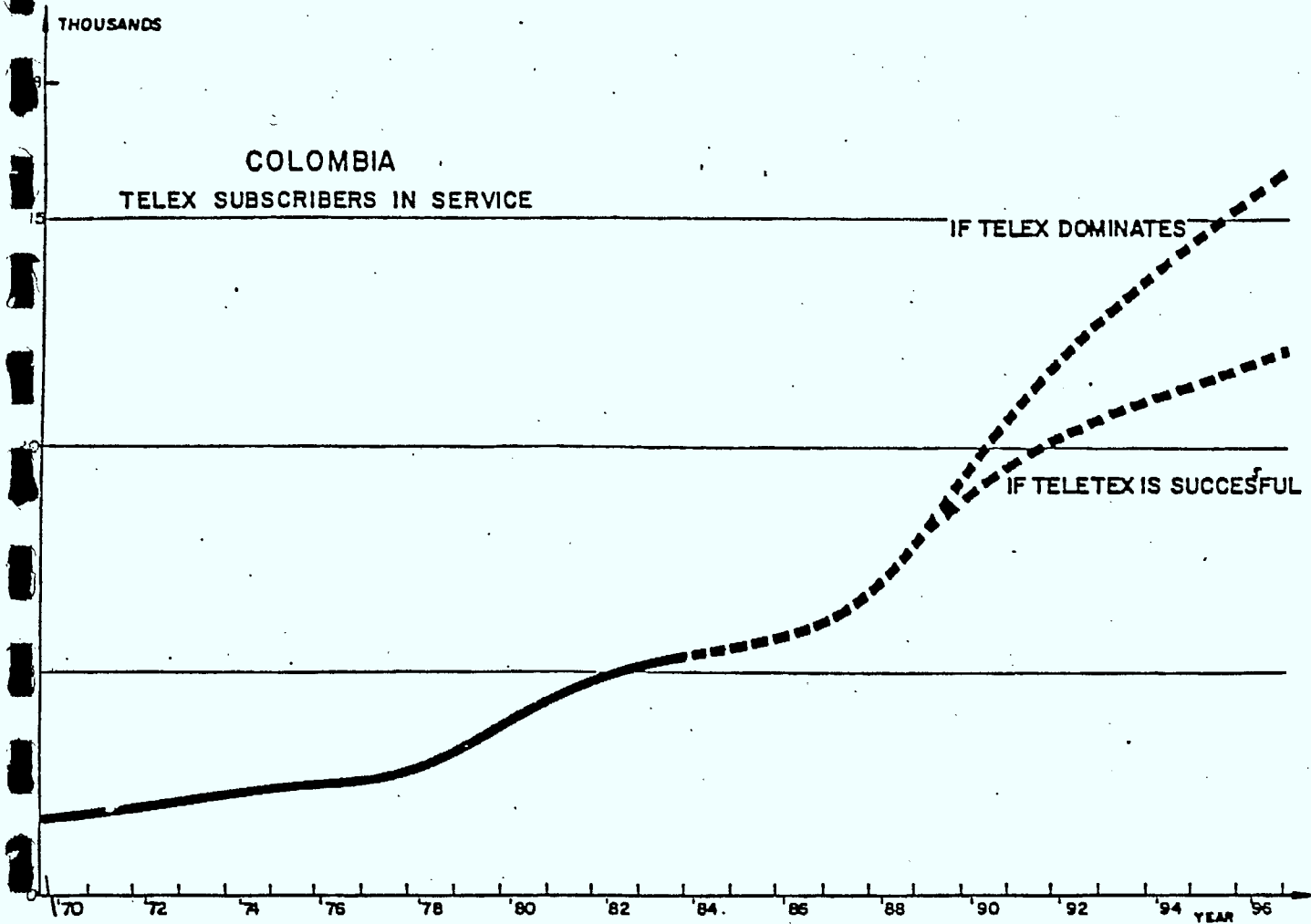
# EXHIBIT 2



# EXHIBIT 3

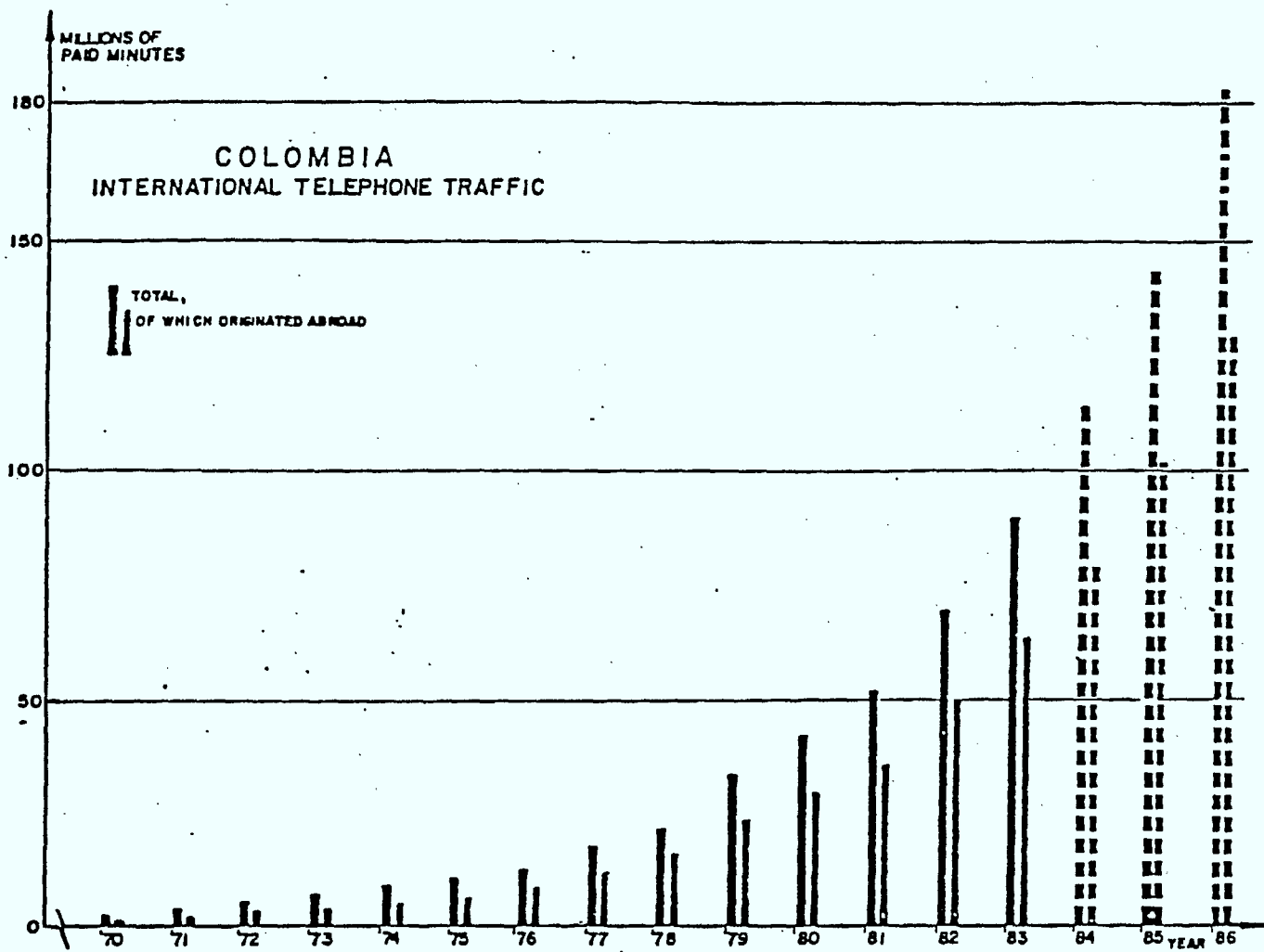


# EXHIBIT 4

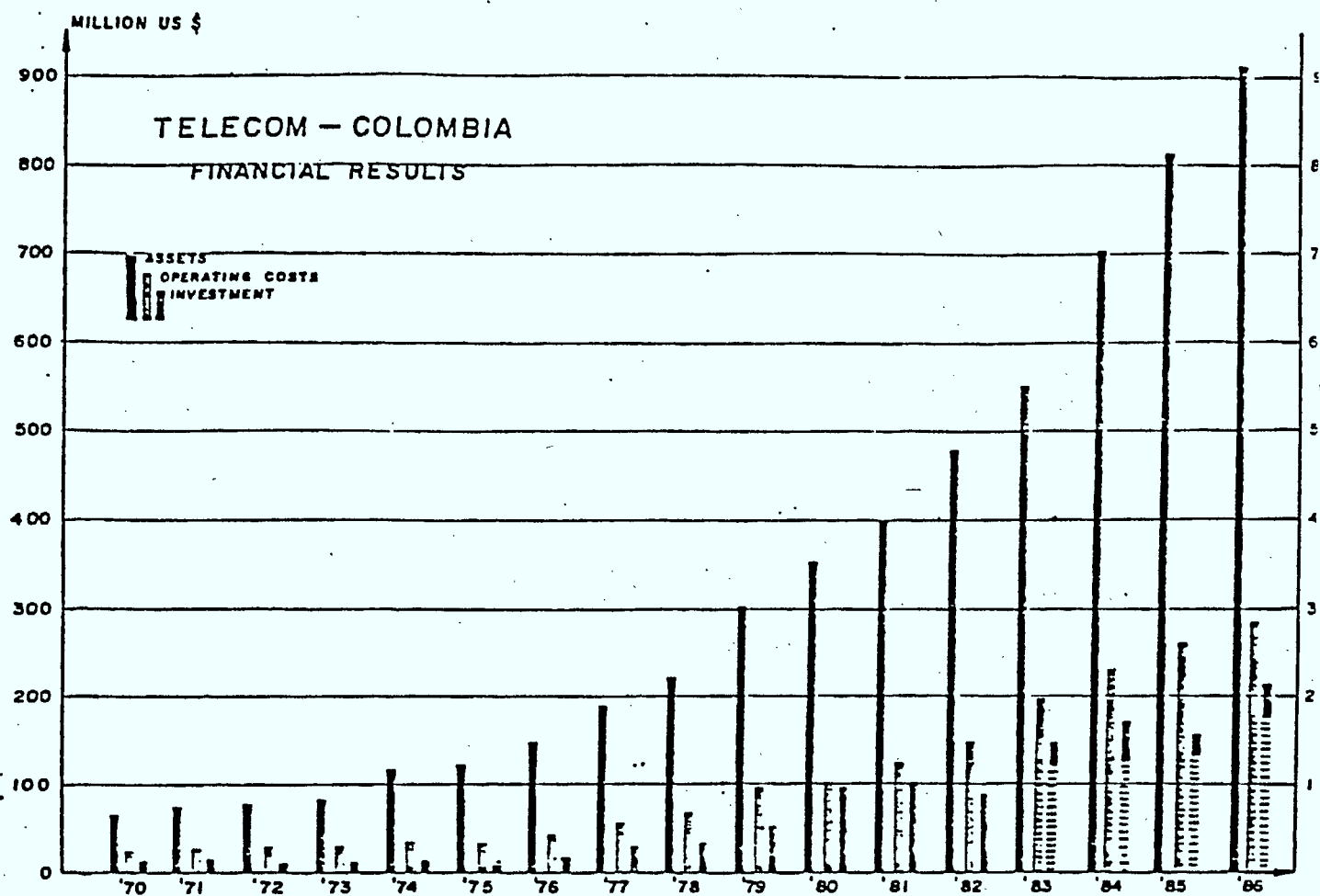




# EXHIBIT 5



# EXHIBIT 6



## EXHIBIT 7

### LIST OF MAJOR PROSPECTIVE CUSTOMERS

Empresa Nacional de Telecomunicaciones "TELECOM"  
Calle 23 no. 13-49  
Telephone 269 4077  
Bogotá, Colombia

Empresa de Teléfonos de Bogotá, "ETB"  
Carrera 7, no. 20-37  
Telephone 281 5000  
Bogotá, Colombia

Empresas Públicas de Medellín  
Calle 53 No. 52-16  
Telephone 31 3233  
Medellín, Colombia

Empresas Municipales de Cali  
Centro Administrativo Municipal CAM  
Paseo Bolivar Edif. Banco Popular/Carrera 4 No. 9-60  
Telephone: 892011  
Cali, Colombia

Empresas Públicas de Bucaramanga  
Carrera 16 No. 35-18  
Telephone 27 191  
Bucaramanga, Colombia

Empresas Públicas de Manizales  
Calle 20 No. 18-20  
Telephone 33 100  
Manizales, Caldas

Empresas Públicas de Pereira  
Calle 16 No. 9-35  
Telephone 32 811  
Pereira, Colombia

Empresa de Telecomunicaciones de Cartagena  
Calle 35 Carrera 8 Esquina  
Telephone 50 055  
Cartagena, Colombia

Empresas Públicas Municipales de Palmira  
Calle 31 No. 24-86  
Telephone 28 042  
Palmira, Colombia

Empresas Departamentales de Antioquia "EDA"

Calle 41 No. 82-23

Telephone 31 0555

Medellin, Colombia

Empresa de Telecomunicaciones del Huila

Carrera 5 No. 9-46

Telephone 22 195

Naiva, Colombia

Empresas Públicas de Armenia

Carrera 19 Calle 19 Esquina

Telephone 46 930

Armenia, Colombia

Empresas Municipales de Buga

Calle 5 No. 12-13

Telephone 2651

Buga, Colombia

Empresas Públicas Municipales de Ibagué

Calle 14 No. 3A-22

Telephone 33 175/36 030

Ibagué, Colombia

Empresas Municipales de Cartago

Calle 12 No. 4-60

Telephone 2631

Cartago, Colombia

Empresas Públicas de Santa Marta

Calle 13 No. 5-16

Telephone 3120

Santa Marta, Colombia

Empresa de Teléfonos de Girardot

Calle 18 No. 10-56

Telephone 2444

Girardot, Colombia

Empresa Telefónica de Popayán

Calle 3A Carrera 4 Esquina

Telephone 3010

Popayán, Colombia

Empresa de Telecomunicaciones de Narino

Calle 18 No. 23-36, Piso 3

Telephone 5394

Pasto, Colombia

Empresas Municipales de Tuluá  
Carrera 26 No. 24-08  
Telephone 3271 / 3275  
Tuluá, Colombia

Empresas Públicas de Calarcá  
Calarcá, Colombia

Empresas Públicas Municipales de Sevilla  
Calle 51 No. 49-03  
Telephone 6600/6701  
Sevilla, Colombia

Empresas Públicas Municipales de Santa Rosa de Cabal  
Carrera 14 Calle 12 Esq. Palacio Municipal Piso 2  
Telephone 1500  
Santa Rosa de Cabal, Colombia

Empresa Municipal de Teléfonos de Armero  
Calle 10 Carrera 5 Esquina  
Telephone 5748  
Armero, Colombia

Empresa Municipal de Teléfonos de Ipiales  
Carrera 6 No. 8-29  
Telephone 2658/2657  
Ipiales, Colombia

Empresas Municipales de Riosucio  
Calle 9 No. 5-21  
Telephone 2233  
Riosucio, Antioquia

Empresas Públicas Municipales de Honda  
Edificio Telecom  
Telephone 3800  
Honda, Colombia

Planta Telefonica Municipal de Zipaquirá  
Carrera 7 No. 5-65  
Telephone 231  
Zipaquirá, Colombia

Planta Telefónica Municipal de Espinal  
Carrera 4 No. 9-30  
Telephone 3363  
Espinal, Colombia

Planta Telefónica Intendencial de Florencia  
Carrera 13 No. 13-09  
Telephone 549  
Florencia, Colombia

Planta Telefónica Municipal de Garzon  
Carrera 8 Calle 8  
Telephone 2039  
Garzon, Colombia

Planta Telefónica Municipal de Aguadas  
Carrera 6 No. 7-18  
Telephone 575  
Aguadas, Colombia

Planta Telefónica Municipal de Maicao  
Edificio de Telecom  
Telephone 8135  
Maicao, Colombia

Planta Telefónica Municipal de Tumaco  
Calle Mosquera con Avenida del Ferrocarril  
Telephone 418  
Tumaco, Colombia

Caja de Crédito Agrario  
Carrera 8 No. 15-43  
Telephone 284-4600  
Bogotá, Colombia

Cinevisión Televisión Ltda.  
Calle 57 No. 6-35, Piso 13  
Telephone 211 1111  
Bogotá, Colombia

Corporación de la Industria Aeronáutica Nacional Colombiana "CIAC" S.A.  
Aeropuerto El Dorado E-1  
Telephone 268 4642 - 244 8622  
Bogotá, Colombia

Datos Y Mensajes Ltda.  
Calle 31 No. 17-48  
Telephone 285 6023  
Bogotá, Colombia

Dirección General de Aduanas  
Director General of Customs  
Carrera 8 No. 6-40, Of. 604  
Telephone 282 8660 - 283 0463  
Bogotá, Colombia

Fondo Nacional Hospitalario  
Calle 55 No. 10-32  
Telephone 235 6388 - 235 6477 - 235 8500  
Bogotá, Colombia



Gravi Televisión  
Calle 19 No. 4-48, Int. 8  
Telephone 233-0205  
Bogotá, Colombia

Instituto Nacional de Radio Y Televisión "INRAVISION"  
Centro Administrativo Nacional  
Telephone 269 0277 - 268 4430  
Bogotá, Colombia

Instituto Nacional del Transporte "INTRA"  
Ave. El Dorado, Edificio Minobras Pisos 5 y 6, CAN  
Telephone 244 9100 - 244-8424  
Bogotá, Colombia

Liga Colombiana de Radioaficionados  
Calle 35 No. 20-29  
Telephone 285 1191  
Bogotá, Colombia

Ministerio de Comunicaciones  
Edificio Murillo Toro, Cra. 7 y 8, Calles 12A y 13  
Telephone 282 5625 - 241 5509  
Bogotá, Colombia

Moticiero 24 Horas  
Calle 24 No. 5-75, Int. 201  
Telephone 283 8337 - 241 5439  
Bogotá, Colombia

Radio Cadena Nacional S.A. "RCN"  
Calle 37 No. 13A-19  
Telephone 269 9911 - 232 3231  
Bogotá, Colombia

Radio Televisión Interamericana "RTI" S.A.  
Calle 19 No. 4-56, Piso 2  
Telephone 241 8409  
Bogotá, Colombia

Servicio de Salud de Bogotá  
Carrera 14 No. 53-80/Dr. Luis José Villamizar Herrera, Director  
Telephone 285 5029  
Bogotá, Colombia

Sharp de Colombia S.A.  
Carrera 14 No. 44-17  
Telephone 232 8033 - 232 3927 - 232 6164  
Bogotá, Colombia

Thomas de la Rue de Colombia S.A.  
Av. de las Américas No. 44-57  
Telephone 268 0169 - 269 2875  
Bogotá, Colombia

## EXHIBIT 8

### USEFUL ADDRESSES

Canadian Embassy  
Commercial Section  
Calle 76 No 11-52  
Bogotá  
tf: 235 5066  
tx: 44-568

#### Telecommunications Administration

Ministerio de Comunicaciones  
Edificio Murillo Toro  
Carrera 7a. Calle 13  
Bogotá D.E. 1  
Attn: Sr. Secretario General del Ministerio de Comunicaciones  
tf: 41 55 32  
tg: mincomunicaciones bogota  
tx: 44284 minco co

#### PTT

Empresa Nacional de Telecomunicaciones (TELECOM)  
Calle 23, No. 13-49  
Piso 8  
Bogotá D.E.  
Attn: Presidente  
tf: 42 06 60

#### Televisión Broadcasting

Instituto Nacional de Radio y Televisión (INRAVISION)  
Centro Administrativo Nacional (CAN)  
Avenida Eldorado  
Bogotá, D.E.  
Attn: Direction  
tf: 44 67 82  
tg: televisora nacional bogota  
tx: 44311 inra co

Leased lines and data communications

Empresa Nacional de Telecomunicaciones (TELECOM)  
Division Commercial  
Calle 23, No. 13-49  
Piso 7  
Bogotá D.E.  
tf: 234 4340  
tx: 44293

Radio broadcasting

Ministerio de Comunicaciones  
Edificio Murillo Toro  
Carrera 7a. Calle 13  
Bogotá D.E. 1  
Attn: Direccion General de Radiocomunicaciones  
tf: 41 55 32  
tg: mincomunicaciones Bogota  
tx: 44284 minco co

Technical Standards

Instituto Colombiano de Normas Tecnicas (ICONTEC)  
Carrera 37 No. 52-95  
P.O. Box 14237  
Bogotá  
tf: 255 7055  
tx: icontec

## I N T E R V I E W S

Most of the following interviews were arranged by the Commercial Division of the Canadian Embassy in Bogota. We wish to acknowledge the assistance of the Embassy staff and to thank in particular Mr. O. von Finckenstein and Mr. R. Bosenberg.

Mr. Pablo Sanabria  
Vice-President - Rural Telephone Programme  
TELECOM

Ing. Hector Castro Torres  
Chief - Projects Development  
TELECOM

Mr. Victor Julio Parra Contreras  
Vice-President - Operations  
TELECOM

Mr. José Antonio Saavedra  
Programs Division  
TELECOM

Dr. Adolfo Vargas-Jiménez  
Telephone Division  
Department of Communications

Mr. Roy Townsend  
Manager - Operations  
Empresa de Telefonos de Bogotá (ETB)

Mr. Carlos E. Prieto Parra  
Director - Maintenance Division  
ETB

Ing. Jaime Mauricio Arboleda  
Director - Equipment Division  
ETB

Other interviews were conducted in Canada with people at BCI, Northern Telecom and the Department of Communications, who are knowledgeable about the Colombia Telecommunications market. We wish to express our thanks to all of them for their contribution to this study.

## BIBLIOGRAPHICAL NOTES

### General bibliography on the Colombian economy

The best up-to-date booklet on the Colombian economy is published by the French External Trade Center: COLOMBIE, collection "Un marché" no 20, 4th edition, 1982.

It can be ordered from: Centre Français du Commerce Extérieur  
10 Avenue d'Iéna  
75783 Paris Cedex 16  
Telex: CFCE P 611934 F

This monograph is concise (83 pages) and accurately describes the economy, the development plan, the external trade and the import regulations of Colombia. It also contains useful addresses and practical information for the would be exporter.

#### Other general documents:

- . Colombia: A natural profile, Ernst & Ernst, 1972.
- . Colombia: Business Study, Touche Ross International, 1974.
- . La Colombie, Editions Découverte du nouveau monde, Paris, 1977.
- . Aspects généraux de l'économie colombienne, Proexpo/Incomex, Bogotá, 1977.
- . Colombia: Export market, External Affairs, South American Division, Ottawa, 1982.
- . Survol de l'Amérique du Sud, External Affairs, South American Division, Ottawa, 1982.
- . Doing business in Colombia, Price Waterhouse, N.Y., 1980.

Bibliography on the Colombian telecommunications equipment market:

The most complete, readily-available market studies on the Colombian telecommunications equipment market have been published by the U.S. Department of Commerce:

- . Communications equipment in Colombia ITA-82-04-503
- . Colombia: Telecommunications Equipment, (Country Market Survey)  
(International Trade Administration, US. Department of Commerce, Washington, 1981)

Other elements of information can be found in the World Telecommunications study of Arthur D. Little inc. (1980) - see in particular pages 187-200.

However the forecasts contained in these studies are highly unreliable. In particular, all forecasts regarding satellite telecommunications equipment should be revised.

The most up-to-date information only exists in Spanish and is contained in the Telecommunications Development Plan (1985-1990) submitted by *Telecom* to the *Departamento Nacional de Planeación* in March of 1984.





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