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The Ivory Coast (Côte d'Ivoire)

HUGUES KONE

As in other countries, the roots of the Ivory Coast's modern telecommunications system stretch back to the end of the nineteenth century. In the decades since, the country's system has developed considerably, both quantitatively and qualitatively, and has experienced—particularly in the early 1990s—notable technological, structural, and regulatory transformations. This chapter describes the development of the Ivory Coast's telecommunications infrastructure and outlines its current structure, the problems it faces, and its various development efforts.

Located in Africa's humid tropical zone between 5 and 10 degrees north latitude, the Ivory Coast (officially, Côte d'Ivoire) encompasses an area of 322,463 square kilometers. In 1994, its population was about 13.5 million (up from 3,230,000 in 1960) and was dispersed among 8,500 cities and villages and 75,000 camps. These communities are grouped into 10 administrative regions, 50 departments, and 184 subprefectures. Historically, the Ivory Coast's annual population growth rate has been high—for example, 3.74 percent between 1975 and 1988—and the country's population has experienced rapid urbanization, from 15.4 percent in 1958 to 39 percent in 1988. Abidjan, the Ivory Coast's major city, for example, had 2.5 million inhabitants in the early 1990s. At the same time, the country's population distribution reveals a lack of regional equilibrium, with three out of four people living in the coastal or forest region in the south, which constitutes slightly less than half the area of the country.

8.1 Overview

8.1.1 Economic Development, 1950–1994

Between 1950 and 1980, the Ivory Coast's economy enjoyed a long period of prosperity, with a GDP (gross domestic product) increase rate of 7 to 8 percent annually in real terms. This allowed the country to develop a remarkable infrastructure (roads, ports, schools, electricity, hydraulics, and the like) relative to the rest of the African continent. However, because of the historical lack of a certain class of national businesspeople, the state became the first investor, employer, and

main holder of enterprise capital through state-owned companies (or commercial or market sector). Moreover, most companies were unfortunately plagued by bad management and deficits, resulting in financial difficulty for the state.

In the 1980s, the Ivory Coast experienced a recession that was provoked by a drop in agricultural raw material prices on the world market as well as excessive public debt. As a result, between 1986 and 1990, the country's GDP suffered a yearly drop of 1.8 percent on average. The Ivory Coast subsequently initiated a series of Structural Adjustment Programs. Through the early 1990s, however, these programs had not resulted in any noticeable success. A devaluation of the local currency (the CFA franc) was decided on January 1994.

Confronted with its first economic crisis since its independence in 1960, the Ivory Coast was forced to do its accounts, revise its priorities, redirect its field of intervention, restructure its services, and reconsider role distributions among the different players in the national economy. The country had to find its way back to growth and confront its economic deterioration and the growing poverty of its population. It was in this context that the privatization of several sectors and state companies was decided upon.

8.1.2 Electronic Communications

With respect to its electronics communications infrastructure, the Ivory Coast is one of the best-equipped countries in West Africa. The country had a national radio station as early as 1951, a national television station by 1963, and a regional radio station in the heart of the country by 1964. By 1986, 70 percent of the Ivory Coast's households had at least one radio and 32 percent had a television set.

In the early 1990s, the Ivory Coast's television and radio sectors were in the process of being deregulated. In fact, after long being run as a state agency, they were transformed into a national office in 1991 and then, in 1992, into a public company under the name RTI (Radio Télévision Ivoirienne, or Ivory Coast Radio and Television). The state owns 98 percent of RTI's capital, with the balance set aside for its personnel. Furthermore, in December 1991, a law allowing the creation of private radio and television stations was adopted, and five private radio stations and one television channel were authorized at the beginning of 1993: four radio stations and the television channel are operating now along with three Catholic radio stations and a few local radio stations without a clear status. In 1992, the government decided to install four rural radio stations in the remote areas of the country by 1995. It signed an agreement with COMSAT, an American company, to cover the country with national television and radio signals.

Computers entered the Ivory Coast in 1962, initially for use by the Ministry of Economics and Finance but soon by other sectors. In 1983, the coordination of computer development was given to the National Council of Computer Systems (CNI), headed by a state minister. Unfortunately, the economic crisis of the 1980s put a stop to large public computerization projects, such as the introduction of computers in the Ivory Coast's primary and secondary education systems.

8.2 The Past: Telecommunications in the Ivory Coast

The history of modern telecommunications in the Ivory Coast began in 1887 with the introduction of the telegraph and ended in 1990 with the decision to privatize the telecommunications administration. There were two major phases: the colonial period, which ended in 1960, and the period after independence.

8.2.1 *The Colonial Period*

Until the end of the nineteenth century, the Ivory Coast was a territory occupied by a mosaic of ethnic groups organized into a few kingdoms and several autonomous local law enforcement units. France then demonstrated its will to colonize the territory by establishing its presence on the coast and beginning the exploitation of wood, coffee, and cacao—the products upon which the Ivory Coast would build its economic reputation. Today, the Ivory Coast is the leading world producer of cacao and the fourth leading producer of coffee.

The first school in the country was erected in 1887, and in 1893 the colony of the Ivory Coast was officially constituted, with Grand-Bassam as its capital. The country was ruled by a French governor and was part of French West Africa (Afrique Occidentale Française, or AOF), which had Dakar as its capital city and a governor general as its head. The country's conquest, however, did not take place until 1915 following the surrender of the resisting Samory Toure (1898) and the repression of several local revolts. The participation of the Ivory Coast's native population in internal politics began in 1946 with the creation of the country's first political party, the PDCI-RDA, and the election of an African deputy to the National French Assembly. This was followed in 1956 by the application of a law giving higher internal autonomy to the various French colonies in Africa, the proclamation of the Republic of the Ivory Coast in 1958, and the constitution of the first government in April 1959.

8.2.1.1 *Telecommunications Development to 1960*

The development of the Ivory Coast's infrastructure really began with the construction of the country's first wharf, which was built in Grand-Bassam in 1901. This was followed by the initiation of railroad "Abidjan-Niger" construction in 1904; the opening of the first road between Grand-Bassam, Bingerville (the country's capital from 1900 to 1933), and Abidjan in 1912; and the creation of the country's first industrial units (sawmills and oil works). The Ivory Coast's development increased sharply in the 1950s with the opening of a deep seaport and Abidjan's international airport, the development of its roadways, the equipping of its urban centers, and the growth of export crops.

Telecommunications in the territory that became the Ivory Coast actually preceded the birth of the country: the first telegraphic link was completed in 1887 after the French government authorized the British firm Western African Telegraph Company to open a telegraph office in Grand-Bassam, thus linking the country to the underwater cable connecting Dakar (Senegal), Freetown (Sierra Leone), Monrovia (Liberia), Accra (Ghana), Cotonou (Benin), and Libreville

(Gabon). The first national telegraphic connection between Grand-Bassam, Jacqueville, and Grand-Lahou along the coast was opened in October 1894.

During the next ten years, the Ivory Coast's post and telegraph system spread inside the country and along the coast to the borders of Liberia and Ghana, following the pace and trails of conquest, as well as the country's exploitation by the colonial force. The north of the country was linked by telegraph to Dakar via Bamako (Mali), then connected to the rest of the country in 1902. In 1909 an agreement was reached to set up a telephone line between Grand-Bassam and Accra.

By December 1905, there were forty-seven post offices, thirty-three of which offered full services—postal and telegraphic—and six of which offered telephone service only. At that time, the Ivory Coast's telegraphic cable measured 3,260 kilometers. The first radiotelegraphic links with the neighboring territories were opened in 1930, with the Bamako connection used for traffic flow to France. Until 1945, all the Ivory Coast's internal telecommunications were made by telegraph. The Akouedo-Bingerville center for radioelectric transmissions was installed in 1943, and in 1957 the Abidjan-Marcory center for radioelectric reception was put in service. These two centers provided almost all of the Ivory Coast's international telecommunications.

In 1895, the Ivory Coast's first telephone service was installed between Grand-Bassam and Assinie (the location of the country's first post office), using an aerial cable 50 kilometers long. That same year, the two cities were connected to Alepe and Jacqueville. The country's first urban phone lines appeared in Grand-Bassam and Bingerville in 1903 and in Abidjan in 1910—which benefited from the country's first urban telephone exchange (of ten subscribers)—and then in Bouaké. It was not until the end of the Second World War and the adoption of new policies for colony valuation, notably the creation of FIDES (Investment Funds for Economic and Social Development) in 1946, that the provision of telephone equipment resumed and extended into the heart of the country.

In the postwar period, the following telephone connections were established: Abidjan to Grand-Bassam (1949), Abidjan to Dabou (1951), Abidjan to Agboville (1952), and Dabou to Tiassalé, Gagnoa to Divo, Dimbokro to Bongouanou, and Agboville to Abengourou between 1954 and 1959. The urban lines of Dimbokro and Agboville were built in 1954, and in 1955 the first automatic telephone exchange with a capacity of 2,000 lines was put in service in Abidjan. In 1958, an electromagnetic wave was installed between Abidjan and Aboisso.

During the 1950s, telephone connections were made with the Ivory Coast's neighboring countries: Senegal, Sudan (Mali at present), Haute-Volta (Burkina Faso at present), Dahomey (Benin at present), Togo, Ghana, Nigeria, Guinea, and Mauritania. A direct radioelectric link was opened between Abidjan and Paris in 1959. At the time of independence in 1960, the Ivory Coast's national telephone system was composed of 100 kilometers of electromagnetic waves, 1,325 kilometers of aerial wires, and 125 kilometers of underground cables. On the international scene, there were twelve African connections and one connection with Europe via Paris. The number of telephone subscribers grew from 591 in 1950 to 3,667 in 1960, which represented 0.11 telephones per 100 inhabitants. Of the total number of subscribers, 69.8 percent were residents of Abidjan.

8.2.1.2 Administration of Telecommunications

During the colonial period, the Ivory Coast's telecommunications system was administered by the French PTT (Post, Telephone, and Telegraph) but coordinated at the level of the AOF at Dakar. The PTT services of the Ivory Coast were allowed neither to build nor equip themselves, and their revenues were directly transferred to the public treasury to fund the general state budget, which, in turn, ensured the PTT's operational and investment expenses.

The Ivory Coast's first government appointed in 1959 included a secretary of state for the postal and telecommunications services. On April 1 of that same year, an office for those services was created, and international telecommunications was given to the French company France Câbles et Radio (FCR).

In short, the administration of telecommunications in the Ivory Coast clearly emerged in the context of the French conquest, organization, and control of the territory, which started in the coastal area and continued with the objective of linking the territory to the AOF—notably at Dakar—and to the “mother country” (i.e., France). The telecommunications infrastructure was closely tied to the economic exploitation of the country.

In the 1950s, the need to further develop the country guided the installation of the Ivory Coast's internal telephone and telegraph network. The network was structured from Abidjan, the country's economic and political capital city, with the aim of satisfying the administration's needs as well as those of the colonial economy. In most cases, telecommunications cables (ways) were planted along the railways and roads, the basis of economic development. The areas producing cacao, coffee, and timber were first equipped. The north was not to be reached until after the independence. However, the telephone remained largely inaccessible to the local population.

In general terms, telecommunications in the Ivory Coast has historically been seen mainly as a public service, and its management has thus been given to an administrative body. Therefore, financial profitability was seen as a secondary issue.

8.2.2 Telecommunications after Independence

In August 1960, the Ivory Coast gained its independence and in the following month was admitted to the ITU (International Telecommunication Union). It continued to equip its telecommunications infrastructure emphasizing international connections in particular, which clearly conveyed its intention to insert itself in the international exchange systems. The result of this emphasis was the emergence of an economy that is still considered by some to be extroverted in nature. Consequently, national telecommunications is not considered a domestic priority in the Ivory Coast: the decision was made long ago to develop the country's roadways in order to move its raw materials toward the port of Abidjan.

8.2.2.1 Telecommunications Development Projects

Historically, there has been no explicit national policy for telecommunications or for other economic activity sectors in the Ivory Coast. Nevertheless there was a

consensus on the necessity of making the telephone available to a great number of people, of supplying enterprises with new communications techniques, and of linking the country to the rest of the world, particularly the industrial countries. Despite the general absence of a commitment to development in the past, efforts have been made in recent years to systematically upgrade the country's telecommunications network.

The development of the Ivory Coast's telecommunications network was scheduled to take place over several years and was later divided into five-year projects: 1971–75, 1976–80, 1981–85, and 1986–90 (not completed until 1992 due to a late start). These were in turn to be followed by a three-year plan (1992–95) and another five-year project (for 1996–2000). Moreover, there exists a general plan for telecommunications development that spans the period 1986–2005. Given such long-range schedules, the need for financial forecasting seems obvious. But in reality, important investments were made outside the projects for political reasons. For example, to commemorate the country's independence in 1960, significant investments in infrastructure were made in the designated host city with no regard for profitability. Such investments were also made during the equipping of Yamoussoukro, the country's official capital since 1983. Politically motivated investments like these have resulted in a poor distribution of the country's telecommunications equipment and an overbuilt infrastructure in some places.

The main providers of exterior funding for the Ivory Coast's telecommunications development projects have been the FED (European Funds for Development), the FAC (Fonds d'Aide et de Coopération, or French Aid and Cooperation Fund), the EIB (European Investment Bank), the ADB (African Development Bank), the CCCE (Caisse Centrale de Coopération Economique), and the United States. For all this external aid, however, the Ivory Coast has made a significant effort at self-financing: for example, roughly 62 percent of the 1.8 billion French francs spent on the 1986–90 period project was financed by internal funds provided by the country's National Office of Telecommunications (ONT).

8.2.2.2 Telephone Services

In 1970, there were ninety-seven urban telephone networks in the Ivory Coast (of which fourteen were automated) and 17,000 phone subscribers, 75 percent of which resided in Abidjan. At that time, the country was linked to almost all the African countries and more than sixty other countries worldwide. In 1975, the number of subscribers in the country increased to 28,000, in other words, 0.4 phones per 100 residents. The 1976–80 plan aimed at having 1 phone for every 100 residents, a goal that had still not been reached by the mid-1990s. This same plan envisaged the digitizing of the country's network, which eventually took place in 1979 with the installation of the first temporary electronic central telephone exchange (an E-10 by Alcatel).

In 1985, 54,675 subscribers were registered, making the country's penetration rate a little less than 0.6 phones per 100 residents. There were 68,380 subscribers in 1990, or 0.57 phones per 100 residents. The geographic distribution of the subscribers accurately reflected the distribution of the country's economic activities

and the urban concentration of the Ivory Coast's population, especially the importance of Abidjan. In 1977, for example, 74.7 percent of the country's phone subscribers resided in Abidjan whereas Bouaké, the second-largest city, only had 3.3 percent and the other cities accounted for less than 2 percent each. Abidjan's importance remained constant through the early 1990s: in late 1992, the proportion of the Ivory Coast's telephone subscribers who lived in Abidjan reached 75.2 percent while the city itself holds only 20 percent of the country's population.

Even inside Abidjan, phone coverage is unequally distributed and reflects the spatial repartition of the economic activities and social classes. In fact, high-density telephone areas include embassies, industries, services, and administrations, as well as populations with high income (Europeans, Americans, and Africans who are well off). This is why a county township such as Cocody has 14,517 subscribers for 120,000 residents, whereas Yopougon and Abobo have only 7,682 subscribers for more than 1 million residents.

Until the 1986–90 development project called for enhancing the phone coverage of the Ivory Coast's rural areas, those regions were almost entirely without phones. The goal was to open up certain semirural subprefectures and large villages that were particularly active on the agricultural and commercial levels by offering them twenty lines linked by numerical electromagnetic waves to the automatic telephone exchanges of a large city. The subscription was billed at one-third the price of service in an urban area. The enthusiasm for the project surpassed the forecast of the ONT and demonstrated that a real need had existed.

The telephone is an important social issue in the Ivory Coast, a fact reflected in the number of telephone subscription requests processed and in the installed network's use. As a former minister of the Ivory Coast's Post and Telegraph stated: "The instant influx of traffic on the lines as soon as a connection is automated says a lot about people's wishes to be linked to the network."¹

In 1982, there were 27,000 unmet requests in Abidjan alone, which had a total number of subscribers of only 33,000. Such demand pressures led to illegal actions, fraud, bribes, and the use of influences and connections to gain access to a telephone.

In order to increase access to the telephone, coin-operated public cabins appeared in Abidjan in 1974. Unfortunately, they were soon destroyed by vandals and in 1978 were replaced by telecommunications offices that remained open until 8 P.M. and were managed by agents of the ONT. Some phone cabins for telex service were also made available to the public. As a result of the high level of demand for telephone service, some people even transformed their private lines into public phones, charging their clients higher tariffs. In 1988, the ONT installed 206 Swiss-made phone cabins operated by magnetic cards in Abidjan and other locations.

Over time, the traffic for international calls in the Ivory Coast has increased dramatically, growing from 161,253 minutes in 1961 to 975,392 in 1970 and finally to 4,848,663 minutes in 1975. The main destinations called were Western Europe, the United States, Lebanon, the Francophone Africa, and Morocco. The number of outgoing calls has always been greater than those coming into the

country which serves again to indicate the extroverted nature of the Ivory Coast's economy. In 1965, for example, the ratio of outgoing to incoming calls was 204,304 to 152,338; in 1970, it widened to 621,622 (outgoing) to 353,770 (incoming); and continued to widen further still in 1975, with 3,360,801 outgoing calls versus 1,487,862 incoming calls.

8.2.2.3 *Telex and Telegraph Services*

Traffic for the telegraph in the Ivory Coast increased from 7,782,836 words in 1960 to 22,406,491 in 1975. In 1965, the country had seventy-seven telegraph centers, of which twenty-seven were used by radiotelephony in Morse code and fifty by telegraphy over wire.

The evolution of the Ivory Coast's international telegraphic traffic results in tangible fluctuations from one year to the next. These fluctuations seem to coincide with the evolution of the telephone and telex: as they grow their extensions and capabilities through new installations, the traffic for the telegraph decreases and later starts to progressively increase. This was the case in 1966–67, in 1972 (the year in which the Ivory Coast's first international telecommunications station was serviced by satellite), and again in 1976 and 1977.

With respect to the telex, the country's network is linked with the telex center of Abidjan, which is equipped with an automatic switch of 1,000 directions and has been in operation since 1961. After 1977, the center offered eight African connections, six European (France, Germany, the United Kingdom, Belgium, Pays-Bas, and Switzerland), one connection with the United States, and twenty-one other connections (including Kuwait, Saudi Arabia, Brazil, Canada, Mexico, South Africa, Sweden, and the former Soviet Union). The number of telex subscribers in the Ivory Coast grew from 54 in 1961 to 320 in 1970 to 736 in 1975, and the traffic grew from 117,459 minutes in 1961 to 1,4767,020 in 1975.

8.2.2.4 *Other Services*

In the 70s, the spectacular growth of computerization in the country created an insistent demand for specialized telephone circuits for data transmission. In order to address this demand, which had been assessed through surveys with actual and potential users of telecomputerization services, the decision was made to develop a national network for telecomputerization called SYTRAN (Transactional Systems), which began operation in March 1978. It consisted of the subnetwork of Abidjan, the national subnetwork (linking the six regional capitals and the port city of San Pedro), and the international subnetwork. The SYTRANPAC telecomputerization network was placed into service in 1989, linked with the rest of the world by NTI (Node for International Transit) in Paris. Finally, the Ivory Coast's telecopying service became available to the public in 1987.

8.2.2.5 *International Transmission*

In 1971, the Ivory Coast became a member of Intelsat. The country installed its first land station at Akakro in November 1972 with sixty circuits for seven connections. Another land station followed in 1978, giving the country the capacity to receive and transmit two television programs simultaneously.

In 1978, the Ivory Coast participated in the realization of the underwater cable linking France, Morocco, Senegal, and the Ivory Coast with a capacity of 4,800 circuits of 4 kilohertz. It was then extended to Nigeria in 1981. The cable was connected to the Atlantis cable system link in South America, Africa, and Europe and then was associated with the regional project Panaftel, which sought to link the African countries with each other by radio waves. As a consequence of these projects, the Ivory Coast was linked to two-thirds of the ECOWAS (Economic Community of West African States) countries.

On the level of regional and inter-African cooperation, the Ivory Coast is a member of several organizations such as the PATU (Pan-African Telecommunications Union), the UAPT (African Union for Postal Services and Telecommunications), and the CAPTEAO (Administrative Conference for Postal and Telecommunications for West African States). The country also participates in telecommunications-related activities through the ECA (United Nations Economic Commission for Africa) and ECOWAS. As a result of its various international transmission projects and associations, by 1980 the Ivory Coast was linked to 113 other countries by automatic telephone.

8.2.2.6 Institutional and Regulatory Organization

The Postal and Telecommunications Ministry. Since 1959, the Ivory Coast's telecommunications had been under the administrative supervision of a ministerial department, a secretary of state, and then a ministry, while its management has been left with a public office, always under the supervision and technical control of the ministry. The ministry (Ministère des Postes et Télécommunications) is in charge of the design and implementation of the policy and the regulations of the telecommunications and postal sector. Toward the end of the 1970s, the ministry included directorates such as general inspection, OPT (Postal and Telecommunications Office), INTELICI (International Telecommunications Company of the Ivory Coast), BIPT, external relations, teaching services of the PT (Post and Telecommunications), and telecomputerization and specialized networks. In addition, it had consulting organizations such as the Superior Council for PT, the National Committee for the Coordination of Telecommunications, and the Surveillance Committee of the OPT.

The Operational Structures. From 1959 to 1964, the Ivory Coast's post and telecommunications sector consisted of a public establishment with an industrial and commercial character that was equipped with a guiding set of principles and benefited from financial autonomy. On January 1, 1965, it became a public organization with an administrative character and was equipped with a budget separate from that of the state's general budget, following the example of similar projects like the RTI.

In 1975, the OPT came to life with two autonomous directorates: the General Postal Directorate (DGP) and the Directorate General of Telecommunications (DGT), as well as an administration council headed by the minister of PT. The PT code of 1976 gave the OPT the state monopoly for the exploitation of the public services for the post and telecommunications.

The Ivory Coast's international telecommunications remained in the hands of the French company France Cables et Radio (FCR) until 1969, when the Ivory Coast's international telecommunications company INTELICI was created after several years of negotiations with FCR. The company's capital was composed of 10 million French francs, of which 52 percent was held by the Ivory Coast government and the other 48 percent by FCR.

The government of the Ivory Coast increased its participation to 80 percent in 1976 when the capital was raised to 400 million French francs. In 1981, INTELICI became wholly owned by the government prior to being liquidated in 1984, with international telecommunications given to the ONT.

In view of INTELICI's commercial success stemming from its administrative autonomy, the Ivory Coast's government had two options: transform the DGT into a state-owned company or integrate INTELICI with the OPT. In 1984, the government decided to liquidate INTELICI and split OPT into two structures, the ONP (National Office of Postal Services) and ONT. The latter became a public establishment with an industrial and commercial character, applying a state monopoly to all national and international telecommunications services with the exclusion of image distribution and the transport of sound guaranteed by the RTI. The ONT benefited from greater managerial autonomy than the previous structure, which was purely administrative. Nevertheless, it remained subject to the managerial rules of public finance: it could not make deals without the consent of the national directorate of public deals of the Ministry of Economics and Finance. Furthermore, investment decisions were not always subject to return criteria: political considerations sometimes became a factor. In short, the ONT had neither the flexibility nor the administrative independence necessary to confront the demands of modern services and telecommunications performance.

It was at this point in the development of the Ivory Coast's telecommunications sector that a study performed by the West German PTT research consulting arm DETECON (Deutsche Telepost Consulting GmbH) in the early 1990s concluded that an evolution of the legal status of the ONT was necessary. Three years later, this legal structure was put into place.

8.3 The Present

After almost forty years of independence and continued economic development, what is the current state of telecommunications in the Ivory Coast and what transformations are expected to occur through the end of the century? These issues are addressed in the following sections.

8.3.1 Telecommunications Services and Equipment

In 1997, telecommunications customers in the Ivory Coast had access to a diversified range of equipment that included the telephone, telex, transmission equipment, telecomputerization and telematics equipment, and other services such as mobile radiotelephones, maritime radio service, and facsimile service.

8.3.1.1 Telephone Service

In 1996, 144 cities and villages are connected to the telephone network thanks to 188 telephone exchanges, satellites, and rural telephone systems, although 25.7 percent of them are served by manual exchanges. There are 149,572 lines available, of which 76 percent operate on the digital network (compared to 95 percent in France). Subscribers number 103,456, representing 0.77 telephones per 100 inhabitants (against 0.67 in 1992), with a roughly equivalent number of secondary telephones. Of these subscribers, 74.3 percent are living in Abidjan.

There are two international transit centers and one national transit center (CTN) located in Abidjan, seven regional transit centers (Abengourou, Abidjan, Bouaké, Daloa, Korhogo, Man, and San Pedro), and one regional and national transit center (Yamoussoukro), as well as two operator services.

The regional distribution of telephone services in the Ivory Coast, shown in Table 8.1, indicates that there is a strong concentration in Abidjan, where the major modern economic activities take place.

In addition to the subscriber lines, public telephone is available, although not widely. The types of telephone cabins available to the public in the early 1990s included taxi phones, hotel-type cabin phones, and authorized operators phones. Taxi phones work with either magnetic cards or coins and are installed in places that are self-monitored, such as hotels and post offices. Cabin phones can be found in hotels and comparable establishments. The legal tariffs for such phones are 1.25 French francs (FF) for a local call and a tax of 1.00 FF for international calls.

Authorized operator phones work through telephone lines provided to individuals or commercial firms. In 1992, there were forty-two authorized operator phones.

8.3.1.2 Telegraph and Telex Service

In the early 1990s, the Ivory Coast's equipment for telegraphic communication consisted of an automatic switch for telegraphic messages with fifty-two circuits. The country's telex system consisted of a central electronic exchange for national and international communications with a capacity of 3,558 circuits, of which 1,813 were in service in 1994. There were 1,109 recorded subscribers to the telex system, against 1,395 two years before. The decline is due to competition with facsimile.

Table 8.1. Distribution of Telephone Subscribers by Region (in 1992)

Region	Subscribers	Percentage
Abidjan	63,253	77.0
Bouaké	4,401	5.4
Yamoussoukro	3,201	3.9
San Pedro	2,526	3.1
Daloa	1,816	2.2
Agboville	1,734	2.1
Abengourou	1,603	2.0
Man	1,542	1.9
Korhogo	1,379	1.7
Odienne	673	0.8
Total	82,128	100.0

8.3.1.3 *Transmission Equipment*

The Ivory Coast's national grid in 1994 was made up of 10,817 kilometers of arteries divided into 2,822 kilometers of aerial lines; 4,028 kilometers of connections by analogous electromagnetic waves (with a capacity of 4,499 circuits); 3,004 kilometers of connections by digitized electromagnetic waves (with a capacity of 10,268 circuits); 528 kilometers of connections by fiber-optic cables between Abidjan, Yamoussoukro, and Bouaké (with 8,130 circuits); 35 kilometers of coaxial pair cables (with 3,360 circuits); 400 kilometers of VHF connections (with a capacity of less than twenty-four channels); 263 transmission centers; and one satellite connection (DOMSAT) between Abidjan and Yamoussoukro (with 72 circuits).

The Ivory Coast's international transmissions are handled by an earth station (located at Akakro, not far from Abidjan), submarine cable connections, and a maritime radio service. The earth station is equipped with two antennas and 360 circuits, of which 326 were in service in 1994. The station links the Ivory Coast to the Intelsat network through two satellites (Atlantic and Indian Ocean), and it can receive or transmit simultaneously two television programs coming from or going to the two satellites. The Ivory Coast's international submarine cable connection includes the West African–Europe cable offering 960 telephone circuits (358 of them in use in the early 1990s) and the Atlantis cable linking South America (Brazil), Africa (Senegal), and Europe (Portugal) and offering 2,000 circuits. The international transmission system includes a maritime radio service that operates through the emitter station in Akouedo and the receiving station of Marcory.

8.3.1.4 *Telematics*

Telematics services in the Ivory Coast are offered through two networks: the SYTRAN network and the SYTRANPAC network. The SYTRAN network can transmit and receive data from terminals at speeds of 300, 1,200, 2,400, and 9,600 bits per second. It allows the establishment of point-to-point or multipoint connections at the national level as well as some specialized data transmission links between the Ivory Coast and the rest of the world. In total, it offered 582 connections in 1994. There were 774 subscribers to the SYTRAN network in 1994 (only 60 in 1992)—mainly airlines, banks, maritime companies, distribution companies, and large public-sector enterprises (water, electricity, and the like), as well as some temporary subscribers.

The Ivory Coast's linked SYTRANPAC network consists of ten nodes, four of which are in Abidjan; the rest are in the interior of the country (Abengourou, Bouaké, Daloa, Man, San Pedro, and Yamoussoukro). The Abidjan-Plateau node is linked to NTI (International Transit Node) in Paris, and it allows the other nodes in the network to access the foreign networks working with the packet commutation system. All networks or equipment conform to the X.25 protocol of the CCITT. All videotex terminals conform to the CEPT 2 Minitel standard. The SYTRANPAC network offers 453 access gates and 1,500 subscriber lines. French Minitel technology is used by some organizations such as the National University (for documentation purposes), banks, ports, and pharmacies. There are around fifteen data banks in the country. The sector is growing because there is a strong

demand despite the high tariffs (twenty times higher than in France for the same consumption) and lack of commercial promotion.

On the whole, however, users deemed the quality of data services to be unsatisfactory and to delay development. According to Citelcom managers, SYTRAN and SYTRANPAC were more profitable than telephony, all things being equal. A new tariff was planned, with prices reduced considerably.

8.3.1.5 Other Telecommunications Services

Other telecommunications services in the Ivory Coast included the mobile radiotelephone, radio and television broadcasting services for the Ministry of Communications, maritime radio service, private radio with 6,785 authorized stations and facsimile services.

8.3.1.6 The Ivory Coast's Electronics Industry

Although the Ivory Coast's local electronics industry in the early 1990s was an uneven one, it showed the potential for substantial development. In fact, the Ivory Coast's master plan for industrialization (established in 1988) identified the electronics industry as one of the country's twelve priority sectors. Moreover, by the early 1990s, the Ivory Coast as a whole was beginning to have a real industrial culture, and some very well-equipped training centers for its electronics industry were in place.

In the short term, however, the government had no plans to develop a local telecommunications industry. It argued that the technology evolves extremely quickly, research and development is very expensive and requires highly qualified personnel, and no economies of scale appeared likely to emerge in the near future.

Although the UAPT had at one point conducted a study to determine the feasibility of a cable manufacturing factory to serve the local market, the project was rendered obsolete before its completion due to the development of optical fibers and radioelectrical technology. In the 1990s, there were nevertheless a few small firms in the local sector: Tonfack Telefon (TTI), which manufactures small products such as telephone exchanges for companies, telephone consumption control systems, and some coin telephones ("an Ivory Coast technology with a Japanese finish"); SARITEL, which mounts telephone sets without artificial intelligence technology; and SICABLE, which manufactures cables.

In the area of heavy and sophisticated equipment, the PT uses the services of large companies such as Alcatel (especially for telephone exchanges), Siemens (optical fibers and radio waves, for example), COMSAT (for the domestic satellite link), or Câbles de Lyon. Major supplies are from France, Germany, the United States, and Italy. There was also a large number of local installers authorized by CI-TELCOM.

In computer technology, US-AITC-CI assembles microcomputers in the Ivory Coast, and a subsidiary of IBM France was the leading company in the very active software and equipment distribution sector. In the audiovisual sector, National Electric Côte d'Ivoire (NELCI), a subsidiary of the Japanese group Matsushita, assembles television and radio sets with the "National" brand name for the local and regional market.

8.3.2 Institutional and Regulatory Organization

Although the previous organization of the Ivory Coast's telecommunications sector was put into place during 1991, during the mid-1990s the sector was in a transitional phase characterized by a great degree of confusion over future goals and projects. As a result, a new organizational structure for the sector was introduced in 1995, together with a new telecommunications code.

8.3.2.1 The Postal and Telecommunications Ministry

The mission of the ministry in charge of the Ivory Coast's Post and Telecommunications (PT) in the 1990s is the elaboration and establishment of the country's postal and telecommunications policies, including defining the sector's general objectives, organization, and regulation; representing the sector internationally; and putting into place and controlling the entities in charge of the PT and training personnel. To accomplish these objectives, the ministry was organized into the following sections:

- A general inspectorate in charge of inspecting and controlling the services of the ministry.
- A consultative committee for PT responsible for assisting the minister in the definition of and the political choices entailed in the post and telecommunications sectors. This committee grouped together the people responsible for the PT, including private and public partners, as well as certain consumer organizations as they are created.
- A general directorate for regulation in charge of defining the legal framework applicable to the sector as a whole. This body has several missions: ensuring that the Ivory Coast's general policy guidelines and international engagements are respected; drawing up a list of authorized public-sector users; dealing with all legal matters of the PT; looking after the national interests in the radio communications sector and the distribution, attribution, and use of the country's radio frequencies.
- A directorate for planning and development in charge of conducting all the general studies necessary to define the general policy of the PT.

The ONT and CI-TELCOM. After 1991, two entities participated in the development and management of telecommunications in the Ivory Coast. The first was a public body named ONT (National Office of Telecommunications), serving as the owner of the Ivory Coast's telecommunications assets. ONT is in reality an empty shell, employing less than ten people in the early 1990s. Its mission was to control the assets granted to the Ivory Coast Telecommunications Company (CI-TELCOM), and it operated under the economic and financial supervision of the Economics and Finance Ministry.

The second entity was the CI-TELCOM, created on May 14, 1991. It was a mixed company with the legal status of a private company; owned by the state (98 percent) and its personnel (2 percent). By the terms of its concession, CI-TELCOM's mission is to operate the Ivory Coast's telecommunications sector, which in the early 1990s was a monopoly. The country's general telecommunications policy, including the pricing policy and all regulatory aspects, were to be defined by the government. However, the transfer contract was delayed for a long time,

and as a result, CI-TELCOM was essentially using the state's assets illegally. This situation rendered the company fragile from a financial point of view because the banks were hesitant to lend to a company without assets and legal guarantees.

The creation of CI-TELCOM was the product of the various studies performed in the 1980s on the best way to enable the country's communications sector to respond efficiently and rapidly to the needs of its customers. The establishment of CI-TELCOM was thus part of the global trend toward deregulation that began in the United States at the beginning of the 1980s. This trend in turn was a reaction to the diversification of services offered to a growing and more demanding set of customers; to the competition between manufacturers, suppliers, and equipment installers; and to the need for a more efficient and profitable management.

After 1994, CI-TELCOM focused its efforts on three major goals: changing the mentality of its personnel to increase the quality of the services; improving productivity and working conditions; and investing in the companies that produce telecommunications technology.²

A board of directors leads CI-TELCOM and nominates the chief executive officer (director general) who manages the company. The company employs a staff of over 4,000 agents (including engineers, administrators, inspectors, controllers, workers, and other positions) of which 12 percent are managers and 23 percent master agents. The number of employees per 1,000 lines decreased from 58 in 1989 to 45 in 1992 and 36 in 1994.

The training of personnel has always been one of the central preoccupations of those responsible for telecommunications in the Ivory Coast. In fact, as early as 1909 a school for the post and telegraph was opened in Bingerville for the training of subordinate jobs, while the training for superior jobs was performed in France or in Algeria. In 1959, the National School for Post and Telecommunications (ENPT) was created for the training of the sector's subordinate and ordinary personnel. In 1975, it was divided into two structures: the National Higher School for Post and Telecommunications (ENSPT) for the training of the superior administrative and technical managers, and the Center for Professional Training for Post and Telecommunications (CFPPT) for the training of the operational and control personnel. Since September 1992, the ENPT has been a private institution belonging to CI-TELCOM and the Ivory Coast Company for Post and Savings (SIPE) under the name Higher African Institute for Post and Telecommunications (ISAPT).

8.3.2.2 Regulation

Generally speaking, the Ivory Coast applies the international regulatory texts adopted by the ITU and Intelsat for the use of satellites. Excluding the documents that create the various regulatory entities and determine frequency assignment, the standard texts in force in the early 1990s were as follows:

- Law No. 76-501 of August 1976, called Code of the PT, which reserves the monopoly on the Ivory Coast's telecommunications to the state (with the state, however, having the right to concede it if it wishes).
- The decrees and decisions relative to the pricing of telecommunications, which date most recently from March 1989.
- The decision of December 1977 requiring that projects for new urban quar-

ters and buildings plan for the installation of telephone and mail distribution networks in addition to the networks for water pipes and electricity. This decision, however, has been little respected.

- The decisions that fix the conditions of authorization and intervention for the telecommunications equipment suppliers and the private installers. In January 1995, a new text for this area was adopted by the government.

On the whole, these texts do not sufficiently punish such offenses as the misappropriation of a private line for commercial use (i.e., using it as a public phone cabin) and fraud.

8.3.3 Administration of Telecommunications

8.3.3.1 Technical Administration

The sector's maintenance problems, outside those common to all tropical countries, involve problems related to the dilapidation of the equipment; the equipment's diversity, which requires large stocks of replacement parts; and problems to create an efficient maintenance system.

From the point of view of human resources, CI-TELCOM has stated that it has the technical potential to run the Ivory Coast's telecommunications satisfactorily on its own, with the intervention of foreign technical experts considered seldom necessary.

8.3.3.2 Financial Administration

CI-TELCOM does not receive subsidies from the state, and must in addition pay import duties and value-added tax. The company also had to deal with clients' unpaid bills and the ONT's debt. The sector was nevertheless profitable, with a rate of return estimated at 20 percent per year. This profitability has been one of the reasons why some supported the sector's privatization and others opposed it.

In 1991, CI-TELCOM's sales increased to 1.03 billion FF, with the telephone alone accounting for 95 percent of sales, and international service accounting for 65 to 70 percent of telephone sales. Major sources of expenses included labor costs (30 percent) and maintenance (10 percent). The transformation of CI-TELCOM into a private company was followed by an increase in wages, with no employees laid off. As a private company, its personnel is no longer part of the Ivory Coast's civil service, which made the personnel's union fear eventual layoffs. In 1994, CI-TELCOM's sales were 630 millions FF. This was a drop from 1991, due to the FCFA devaluation in January 1994 (1 FCFA = 100 FF, against 50 FF before the devaluation).

8.3.3.3 Commercial Administration

Customer Administration. The Ivory Coast's telephone customers are divided into three categories: large subscribers, official subscribers, and ordinary private subscribers.

Large subscribers are large consumers from the private and public sectors with

a minimum of ten lines and an average consumption of more than 20,000 FF every two months. There were 200 such subscribers with 11,000 lines in 1992, accounting for slightly more than one out of every seven lines. In order of importance, these subscribers included the African Development Bank (ADB), the Ivory Coast Electricity Company (CIE), the Port of Abidjan, Abidjan Transportation Company (SOTRA), and Air Afrique. The embassies, town halls, and national public institutions also belong to this category.

These large subscribers enjoy certain benefits: their bills are delivered and their payments are picked up; their lines are not cut off as quickly as the lines of ordinary subscribers; and the very largest customers (more than 200 lines) are given supplementary services.

Official subscribers belong to the public administration and number 8,000—roughly 10 percent of the Ivory Coast's total customer lines. Official subscribers account for numerous unpaid bills (360 million FF in the early 1990s), but CI-TELCOM rarely takes the risk of disconnecting them. Instead, it tries to make sure they do not consume more than their budgeted amount for the year and helps the state to control and slow down the agencies' telephone consumption.

Ordinary private subscribers represent the remainder of the country's telephone customers. It is with this group that CI-TELCOM has the largest number of disputes over bills (about 1,200 per year, of which more than 60 percent is for international communications). The company planned to improve its invoicing system in the 1990s in response to this problem.

Private radio brings in 60 million FF per year to CI-TELCOM, and the service is given in concession by a committee made up of representatives from CI-TELCOM, the presidency of the republic, and the Ministry of Defense. It is granted to certain individuals, companies, or administrations such as the CIE, the Ivory Coast Company for the Distribution of Water (SODECI), Sodesucre, Palmindustrie, the Civil Aviation, the police, the Interior Ministry, the armed forces, the presidency of the republic, RTI, and others. The current regulation provides that the authorization to use private radio can be taken away from the beneficiary as soon as the telephone network allows it.

Private telecommunications networks authorized and supervised by the Ivory Coast's telecommunications administration also existed in the early 1990s. These included the networks of certain large commercial banks—such as the Société Générale de Banques en Côte d'Ivoire (SGBCI), whose agencies are linked together by a special telephone network financed by the bank itself—and of the Ivory Coast Railway Company (SICF), whose stations are linked by its own telephone and telegraph network.

Pricing of Services. In the early 1994, a telephone line in the Ivory Coast cost 420 FF in an urban center and 220 FF in a rural zone (against 1,760 FF prior to 1990). The cost structure broke down as follows: 400 FF for the connection and 20 FF for a fiscal tax. The rental charge is 52.20 FF every two months.

Subscription to the Ivory Coast's telex service in 1994 cost 1,920 FF if the subscriber owned his or her own terminal, 5,484 FF if he or she did not, and 3,484 FF if the terminal belonged to the state. A subscription for the maritime radiotelephone

cost 1,420 FF of which 1,000 represented advance payment for consumption. A mobile radiotelephone subscription cost 3,000 FF, with the price set high to encourage the use of the first maritime radiotelephone. Finally, the establishing of a SYTRAN link cost 1,800 FF.

Since 1989, there has been a 50 percent price reduction on national calls made during off-peak hours.

Problems in the Commercial Administration. According to CI-TELCOM:

- The rate of traffic continuity—or rate of availability (number of cutoff calls per unit of time)—was 98.00 percent for domestic calls and 99.99 percent for international calls, compared with the 90.00 percent international standard.
- The efficiency rate (the number of calls reaching their destination) for local trunk calls was 30 to 40 percent in the early 1990s and 45 percent for international calls. The minimum international standard for efficiency rate was 60 percent and 40 percent for local trunk calls and international calls, respectively.
- The speed with which CI-TELCOM attended to service problems was 90 percent within three days (against 76 percent in 1990), and 97 percent within eight days.
- The number of service disruptions per year was 0.8 per subscriber, compared with the international standard of 0.3.
- The delay for a new connection was about twenty-five to thirty days, which is still long in comparison to international standards.

Fraud is another major problem that has been facing CI-TELCOM for many years. It generally takes two forms: internal, when employees perform clandestine installations or redirect telephone lines, and external, when it is performed by consumers. Fraud primarily affects international communications, which are relatively expensive, and represents an average loss of 12 million FF per year. In the early 1990s, CI-TELCOM began to address the problem aggressively by identifying and imprisoning individuals who had committed significant fraud.

Unpaid bills represent a third problem area for CI-TELCOM. In the early 1990s, the rate of unpaid bills in the Ivory Coast was 12 to 13 percent for ordinary private subscribers, 14 percent for embassies, 5.1 percent for large private-sector subscribers, 61 percent for government establishments, and 77 percent for the country's municipalities. Because this created financial problems for CI-TELCOM, the company began suspending the lines of the individuals in the public institutions who were responsible for the accumulation of too many unpaid bills.

Relationships with special partners were a fourth source of problems for CI-TELCOM in the 1990s. For example, RTI is a special client of CI-TELCOM because it in effect uses the country's telecommunications circuits to retransmit events of international significance by satellite. However, CI-TELCOM is the only entity authorized to deal with Intelsat: it pays the rent fees and needs to be reimbursed by RTI. Unfortunately, by the early 1990s, RTI's payment arrears had reached 40 million FF.

The relationship between CI-TELCOM and RTI suffers from other problems as well. For example, the telecommunications administration tries to exercise a monopoly of the country's telecommunications infrastructure whereas RTI wants to preserve its autonomy in the transmitting of sound and images. Similarly, the communications and PT ministries could not agree on who would be responsible for controlling the domestic reception of satellite transmitted programs (DBS), and a committee created by the two ministries to regulate this reception could not come to an agreement.

Although telecommunications in the Ivory Coast is well established, its management, as we have seen, is characterized by difficulties. The attempts to solve the Ivory Coast's telecommunications problems are described in the following sections.

8.3.3.4 The New Telecommunications Law and Privatization of CI-TELCOM

In January 1995, the government offered a new telecommunications bill to replace the law of 1976. This new law was inspired by the global movement toward deregulation. The bill entailed the following:

- The existence of a ministry responsible for defining a national telecommunications policy—determining the general objectives and acting as an arbitrator for telecommunications issues.
- The creation of a national public body responsible for the regulation and selection of private companies to exploit various new telecommunications services (such as data transmission, message services, cellular radiotelephones, and the like), as well as the allocation of the frequencies for these services. Its financing will be secured by dues paid by the users of the frequencies and user companies.

With respect to radio and television, the Ministry of Communications, specifically, le Conseil National de la Communication Audiovisuelle, would select the television and radio channels while the new institution would assign the frequencies. This new institution was said to be inspired by the American Federal Communications Commission (FCC), but it was to remain under the administrative supervision of the telecommunications minister insofar as the texts that regulate public bodies in the Ivory Coast would not permit it to be completely autonomous.

- The permission of greater competition at the level of telephone service. This choice was justified by (1) the state's decision to pull out of productive sectors and privatize them and (2) the acknowledgment that telecommunications evolve too quickly for one company alone to satisfy the needs of the population. Under the new law, however, the monopoly of the Ivory Coast's telephone service would continue and be given to CI-TELCOM to assure the amortization of the existing equipment. All other private-sector companies, however, could be called on to build local networks if CI-TELCOM were unable to perform the task. Moreover, the supply of terminals to the system's subscribers would be liberalized with the authorizations to be delivered to the telecommunications companies for a definite amount of time (for example, fifteen years).

The transfer of CI-TELCOM to the private sector has also been at the center of a heated debate since 1990. The former prime minister (1990–93) wanted to transfer the state's share of CI-TELECOM's capital (98 percent) to domestic companies and/or a foreign partner with solid experience in telecommunications. The PT minister, the chairman of the board of directors of CI-TELCOM, and the union of telecommunications personnel (SYNAPOSTEL) approved the transformation of CI-TELCOM into a private company, but they wanted it to remain in the hands of the state. This position led to the dismissal of the minister and caused the union to fear layoffs following the state's pullout. Management, in turn, argued that CI-TELCOM did not need private or foreign partners to be run well, and some opposition parties supported by a part of the press disapproved of the state's pullout and warned against the involvement of a foreign partner in a sector so strategic to the country. Nevertheless, the privatization process continued. In 1998, it led to the selection of France Télécom's subsidiary FCR as the majority holder, with 51 percent of CI-TELCOM, for about \$200. About 15 percent were sold to private investors on the stock exchange. The remaining 35 percent was kept by the state, with the possibility of subsequent sale to private investors.

8.4 The Future: Telecommunications Development Plans

The master development plan for telecommunications, which covers the period 1985–2005, anticipated 500,000 telephone subscribers (i.e., about 2.3 telephones per 100 inhabitants) and 13,000 telex connections by the year 2005, as well as the provision of complete satellite coverage for the country. Investments for the ten-year period 1991–2000 alone were estimated to be 5 billion FF.

Between 1993 and 2002, the Ivory Coast's analogous system was to be transformed into a digital network thanks mostly to the use of optical fibers and the introduction of large new public-access services such as videotex, cellular radiotelephone, and cable distribution. The Ivory Coast also placed great hope in the Regional African Satellite Communications project (RASCOM)—whose headquarters it hosts—to improve its telecommunications system.

The private sector and foreign corporations will be widely involved in the future. For instance, Teleglobe (Canada), France Telecom (France), and Comstar (United States) were authorized by the government to develop cellular radiotelephone networks in the country.

8.5 Conclusion

It has been a little more than a century since telecommunications services, beginning with the telegraph, first appeared in the Ivory Coast. During the colonial period, the network developed to facilitate the exploitation of the country and to link it to the "mother country" (France). Telecommunications equipment was installed in the areas where raw material and crops were available. After independence, the Ivory Coast's telecommunications equipment was expanded, diversi-

fied, and modernized while its management operated under state monopoly conditions and according to the principles of the national administration. In the nearly four decades following independence in 1960, the number of telephone subscribers in the Ivory Coast multiplied by a factor of twenty-eight while the population increased only by a factor of four. For technology and the supply of telecommunications material, however, the country is still almost totally dependent on Western countries, especially France.

Considering the quality of services and access to those services, there is need of a vigorous policy in order to accomplish the following:

- Improve quality and viability of the domestic network.
- Minimize errors of invoicing.
- Fight fraud and nonpayment of bills.
- Improve the delays of connecting a new subscriber and take care of subscriber's line disruptions.
- Promote public phone cabins, including rural settings.
- Improve the quality of the telematics network and reduce tariffs.
- Promote a better access to telephones across society and geography.

Faced with the rapid evolution of telecommunications technology and a telecommunications management system at the international level, together with the incapacity of the national telecommunications body to address the quantitative and qualitative needs of economic agents and the general public, the government made the decision to privatize the sector against the position of the telecommunications trade union and leftist political parties.

Despite its weaknesses, the Ivory Coast's telecommunications system is considered one of the most effective and advanced in sub-Saharan Africa and a significant number of companies and international organizations have set up their regional or African headquarters in Abidjan.

Abbreviations

AOF	French West Africa
CAPTEAO	Administrative Conference for Postal and Telecommunications for West African States
CEDEAO	Economic Community for West African States
CI-TELCOM	Ivory Coast Telecommunications
DGT	Directorate General of Telecommunications
FCR	France Câbles et Radio
FF	French francs
INTELCI	International Telecommunications Company of the Ivory Coast
ISAPT	Higher African Institute for Post and Telecommunications
ITU	International Telecommunication Union
MPT	Postal and Telecommunications Ministry
ONP	National Office of Postal Services

ONT	National Office of Telecommunications
OPT	Postal and Telecommunications Office
PATU	Pan-African Telecommunications Union
PDCI-RDA	Parti Démocratique de Côte d'Ivoire, Rassemblement Démocratique Africain (Ivory Coast Democratic Party-African Democratic Union)
PT	Post and Telecommunications
RTI	Ivory Coast Radio and Television Broadcasting
SIPE	Ivory Coast Company for Savings and Postal Services
SYTRANPAC	Information Transmission System
SYTRAN	Transactional Systems
UAPT	African Union for Postal Services and Telecommunica- tions
UPAT	Pan-African Union for Telecommunications

Notes

1. *Les Echos*, no. 14 (1983): 6–7.
2. *Ivoire Télécom*, no. 1 (December 1991): 1–4.
3. *Soir Info*, no. 196 (February 17–19, 1995).

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- Ivoire Télécom*, published by CI-TELCOM in Abidjan since December 1991, has replaced *Les Ondes*, published by ONT.