6
The Congo

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The Republic of Congo (formerly known as Zaire) is the third largest country on the African continent with 2,345,000 square kilometers. It is also one of the most populous countries with more than 41 million inhabitants. For over a decade, the country has faced several serious economic and political challenges that have affected the prospects of this otherwise resource-rich country.

This chapter discusses the development of the Congo's telecommunications sector. It presents the state of telecommunications in the Congo as of the mid-1990s and assesses the obstacles confronting further development. The conclusion provides broad recommendations for improving the current state of telecommunications and for moving the Congo's telecommunications sector into the twenty-first century.

6.1 The Colonial Period

Telecommunications technology was introduced into the country during the colonial period solely for the colonial power and its administration. The Belgian Congo was a region of intense economic activity, and because the productive units were scattered, considerable resources were placed into telecommunications (relative to other African colonies). The telecommunications system linked the several production units within the Belgian Congo and the capital Leopoldville, which is now called Kinshasa. The Belgians invested in infrastructure expecting the country to remain a colony. The events of 1959–60 went against all Belgian expectations.

6.2 Postindependence

The Congo gained its independence in 1960. Telecommunications was placed under the administration of the National Office of Zaire for Post and Telecommunications (the ONPTZ). Having had no role in the development of the system, however, and no experience in technology or management, the newly independent

nation and its citizens did not realize the importance of telecommunications for social and economic development. During the 1960s and the 1970s, for example, children were still making toys out of the wires used for telecommunications. Further, the lack of political stability during the postindependence era resulted in a discontinuity of telecommunications development. Subsequently, there has been no strategy for thirty years; each administration has simply restarted the same telecommunications projects. Since independence, ONPTZ has continuously blamed the poor service on the antiquated and obsolete equipment it is forced to use. While this is partially true, other questions must be answered.

When the telecommunications data from 1980 to 1988 is examined, it is evident that while the network was antiquated, it was still underutilized. In 1985, the number of telephones was 38,845. By 1988, these figures had dropped dramatically, except the number of major lines, which grew from 29,010 to 29,186. With respect to traffic volume, 1985 was the year with the greatest volume: for national calls, volume changed 786.3 percent (1,604,000 more calls) over 1980; 598 percent (or 1,549,000 calls) over 1982; and 343 percent (or 1,400,000 calls) over 1988. Thus, there is considerable room for increased utilization of the current network. The government invested an estimated U.S.$33.1 million in telecommunications infrastructure in 1988 and employed 6.75 (±0.025) percent of the population in the telecommunications industry. According to the ITU, the number of main lines in Zaire increased from 26,600 main lines in 1980 to 29,186 in 1988. Meanwhile, the amount of customer premises equipment (CPE) connected jumped from an estimated 27,300 in 1980 to 38,845 in 1985, only to fall back down to 32,116 in 1988.

In the 90s, the following telecommunications development projects were under way:

1. Installation of 8,000 lines for the town of Kinshasa, divided into four digital telephone exchanges using system S 1240. (Financed by Belgium for a total cost of 350 million Belgian francs. Supplier: Alcatel-Bell telephone.)
2. Installation of two central telephone exchanges with 9,000 lines, one in Kinshasa with 6,000 lines and the other in Kisangani with 3,000 lines. (Financed by Italy with a U.S.$9.3 million fund. Supplier: Alcatel-Siette.)
3. Installation of a digital microwave system with large capacity (34 megabits per second) linking Kinshasa to the port of Matadi and serving the towns of Kasangulu, Inkisi, Mbanza Ngungu, Lufutoto, Tmba, Lukala, Kimpese, and Songololo. (Financed by France for a cost of 20.5 million French francs. Supplier: Alcatel-ATFH.)

The following telecommunications projects were announced:

1. The construction of a trunk network associated with the four telephone exchanges just mentioned. (Financing by Belgium for 368 million Belgian francs, of which 100 million was agreed on for the first phase. Supplier: Belca.)
2. Acquisition of exchanges and trunk networks in Bukavu, Gbadolite, and Goma. (Financing by Italy for U.S.$15.4 million. Supplier: Alcatel-Siette.)

3. Study of the reorganization of telecommunications at the national level. (Financing by the World Bank for U.S.$750,000. Execution agent: Tracte-Bell.)
4. Implementation of the completed studies for the restoration of the telecommunications network of the town of Kinshasa and the restructuring of the ONPTZ at a cost of U.S.$80 million.

In 1991, ONPTZ began using Intelsat's Planned Domestic Service to extend service to the rural areas via a 36 Mhz bandwidth leased transponder and fourteen standard Z earth stations supplied by Telespace of France. Zaire uses microwave relay links for national trunks and international links to neighboring countries. Microwave relay links were utilized along the following routes:

Kinshasa–Mbanza Ngungu–Matadi
Lubumbashi–Likazi Kolwezi (in good condition)
Goma–Bukavu–Uvira
Bukavu-Cyangugu (Rwanda)
Lubumbashi-Tshingolo
Kinshasa-Brazzaville (Congo)
Kananga–Mbuji Mayi (in good condition)

Thus, by the early 1990s, ONPTZ was making some headway in improving and expanding telecommunications service. The political troubles of the 1990s, leading to the eventual ouster of President Mobuto, imperiled these projects. Demand was clearly shown: in 1993, for example, 10,420 were on the waiting list even as line capacity increased by over 70 percent from 30,000 lines in 1988 to 51,000 lines in 1991. But the collapse of the economy and of the Mobuto regime put telecommunications development on hold.

6.3 The Present

6.3.1. Domestic Telecommunications

It is extremely difficult in the mid-1990s to make a call from Kinshasa to Bukavu—a distance of 2,000 kilometers, and telephone calling between Bukavu and Goma—only 200 kilometers away—is often impossible.

Further, telecommunications continue to be plagued by the same problems that cripple the rest of the country's public sector: inflation and nonindexed salaries lead government employees to personal entrepreneurship. For example, communications with Europe are often sold by individuals with access to a business line who charge others for the use of their phones. Similarly, some ONPTZ employees sold minutes or hours of international calls to private individuals. These calls were then undertaxed and the money divided among the participating employees.

In 1993, Zaire's minister of Telecommunications presented an urgent priority plan that concerned the city of Kinshasa, the ten regional capitals, the town of Gbadolite, some other important towns, and the Panaftel (Pan-African Telecom-

munications) project. In this program, the qualitative and quantitative objectives of the restoration and modernization plan for Zaire's telecommunications were defined as follows:

1. Attain 100,000 telephone lines by the end of 1995, compared with 34,000 at the end of 1993.[1]
2. Attain 4,000 telex lines by the same date.
3. Link Kinshasa, the capital, with all the regional capitals through an efficient transmission system.
4. Link Zaire to all the neighboring countries by microwave relay links.
5. Improve the quality of service by installing new central telephone exchanges and some new cable networks to replace the antiquated ones.
6. Reorganize the satellite telecommunications service and build several terrestrial stations including a type A international station.

6.3.2 International Telecommunications

The state of Zaire's international telephone communications is little better than its domestic system. In the mid-1990s, for example, it had become extremely difficult to reach Kinshasa directly from Europe, sometimes requiring repeated attempts over several days to make a single connection. Officially, this situation is attributed to network congestion, but the actual problem is efficient routing. The only effective route for foreign calls is through an operator in Kinshasa. Even then, however, it is practically impossible for an international caller to reach Bukavu via Kinshasa. One way to contact Bukavu from Paris or Brussels is to make a connection with a town like Cyangugu, on the border between Zaire and Rwanda, and hope that someone in Cyangugu will relay the message to Bukavu.[2]

The ONPTZ had practically no control over receipts, and the big departments of the state, which are the largest consumers of telecommunications, did not pay their bills. This, combined with the free fall of the local currency in the 1990s, meant that Zaire could no longer pay the bills for international communications. This situation reached drastic portions in 1993 when Intelsat threatened to disconnect Zaire because of failure to settle its accounts. In 1994, Zaire paid U.S.$1.2 billion to Intelsat and averted having its international link to the world severed.

6.3.3 Solar-Powered Telephone Stations

A project of the Belgian-Zaire Development Cooperation for the restoration and installation of eighty-six solar-powered telephone stations was in the execution phase in late 1993. Thirty-six stations were being installed before the breakup of the Development Cooperation. Providing service to rural locations was one of the objectives of these stations.

Solar-powered technology is useful in a country like the Congo where distances are great and intense solar energy exists in abundance. However, the technology is

expensive when photocells are used. In addition, the infrastructure can be stolen and/or vandalized easily. An intermediate solution to these issues is to locate the solar-powered communications devices in protected areas.

6.3.4 Cellular Telephony

The ONPTZ was dealt a hard blow in 1989 when TELECEL, a mobile carrier operating its own telecommunications system, was authorized by the government. Launched in Kinshasa, TELECEL has extended service to Lubumbashi, Goma, and other locations. The ministries and the major companies who were clients of the ONPTZ were first to subscribe to TELECEL. In 1992, TELECEL had 4,200 subscribers. It offered a better quality of service than the ONPTZ, but only the elite could afford to subscribe to it. Subsequently, some argued that TELECEL's success was merely another manifestation of the inequity and centralization that has characterized Zaire's society. Further, it is ironic that much of the ONPTZ's low service quality resulted from nonpayment of telephone receipts by the state departments, exactly those who migrated to the new TELECEL: in 1994, government ministers and officials owned 1,000 TELECEL accounts.[3] As of 1993, TELECEL maintained a virtual monopoly over telecommunications, as the ONPTZ's service was completely unreliable. In 1995, the cellular operator had an estimated 6,500 subscribers using the service throughout the country.

Originally, TELECEL was allotted both the A and B bands; however, in 1994, there was new entry into the cellular market—Comcell. Subsequently, TELECEL was ordered to cease transmission over the B band. The company refused to move out of the B band, stating that it would require U.S.$30 million to restructure its services. In April 1994, armed men raided TELECEL transmitters, cutting cables and causing the network to go down for thirty-six hours.

Comcell eventually completed construction of its own earth station and began building its central exchange. In 1994, it had 1,000 subscribers and a capacity for 3,000 simultaneous connections. Another firm, Transglobal Telecom, was poised to enter the wireless market. Thus, by 1995, we find a scenario in which the PTT had ground to a halt and private companies were moving in to provide adequate communications to those who could afford the service—the elite.

The introduction of competition in the Congolese market is expected to result in lower airtime rates in the short run. In a country where cellular telephony is used as a substitute for wireline telephony and where airtime rates are as high as U.S.$6 per minute for international calls, competition is bound to have a positive effect on the market. In the future, as cellular phone service continues to spread to the mass market, other wireless technologies will be increasingly used to provide communication to both the business and consumer markets in major cities like Kinshasa, Lubumbashi, Mbuji Mayi, and Matadi. These include mobile satellite technology and wireless local loop technology, all of which need a commitment from the government to allocate spectrum. There is evidence of a growing trend toward this necessary development. For example, the IDM Satellite

Division has become a key telecommunications provider for Congo, signing a $12 million deal to set up a wireless network. The deal includes a long-distance communications project.

6.4 The Future

A question remains about the type of technology that should be implemented in the Congo in order to address the bottom line: better quality, reliable, low cost, and profitable communications throughout the country. When social and business factors are taken into account, it is clear that there is a need for immediate voice and fax communications, and later data and Internet-type communications. When the geographic and economic factors are taken into account, it becomes evident that the cost- and time-effective technology to be used in upgrading and extending the Congo's telecommunications network is wireless communications.

Specific wireless solutions include:

- *Cellular and personal communications services (PCS) technologies.* These could be implemented in a multiple carrier environment allowing the entire country to be covered and leveraging the entrepreneurial spirit of private parties. The government could set directions by allocating the frequency spectrum and by suggesting a standard such as the Advanced Mobile Phone System (AMPS), which is already used by TELECEL and Comcell. A digital standard like the Global System for Mobile Communications (GSM) should not be disregarded, but some consistency with existing systems is also desirable.
- *Wireless local loop technologies.* These are at the intersection of wireless and wireline technologies and could be used to rapidly bolster the existing public telecommunications network. Alternatively, licenses could be given to a private organization who would then compete with the PTT. Motorola, among other equipment vendors, has introduced its Wireless Local Loop system (WiLL) in several African countries already. The vendor could push its system through the existing channels in the Congo where it has a long-standing presence.
- *Satellite technology.* Already used in the Congo to a large extent in public telephony and television, the technology could be extended in the form of mobile satellite services provided by private parties. COMSAT's Planet 1 system offers competitive, ubiquitous communications. Iridium, a 66 Low Earth Orbit (LEO) satellite system, has made agreements with local service providers throughout Africa, including the Congo. And the IDM Satellite Division has already become a key telecommunications provider for the Congo, signing a $12 million deal to set up a wireless network. The deal includes a long-distance satellite communications project, and the company has drafted a trio of contracts covering wireless communications, billing systems, and long-distance calls.

- *Private or Specialized Mobile Radio (PMR or SMR) systems.* These trunking systems, which were already widely used in the Congo, could be upgraded with the advanced technologies, including digital and encryption.

5.0 Conclusion

In 1994, the Congo's telephone penetration was estimated at 0.09 DELs per 100 inhabitants. It was estimated that in order to reach the goal of 1 data exchange line (DEL) per 100, a total of U.S.$600 million would have to be invested. Despite the tremendous needs of the telecommunications sector, by 1994, the ONPTZ had ground to a halt. It had more than 100 employees per 1,000 main lines, which was among the highest in the world. As a result, salaries and fringe benefits accounted for 80 percent of the ONPTZ's earnings. Additional expenses including "cream skimming" that occurred with the licensing of the several wireless providers and the shock of a U.S.$1.2 billion retroactive payment to Intelsat that cut into funding that the ONPTZ could have used to improve service.

It is imperative to extend the network beyond Kinshasa, whose centralized role is in any case slowly wearing away. The political changes put into place after Mobuto's fall already give a larger degree of autonomy to the Congo's regions.

The third goal for the sector is to define a more precise administrative framework by separating the postal service and telecommunications. These two sectors face enormous challenges that in many cases can no longer be encompassed by a single ministry or a single national office. Also, the two sectors are managed differently and have different human resources requirements.

The fourth goal of the Congo's future telecommunications policy will be to clarify issues at the organizational level: the sector's operational structures; the responsibilities at different levels, as well as the responsibilities assigned to the regions and to Kinshasa; and the delegation of powers.

The country's telecommunications accounting and financial system also needs to be revised. The tariff system, the collection methods, and the internal controls structure must be reviewed and adjusted. Billing must be automated, and information technology employed to facilitate management.

Finally, the Congo must develop a campaign for training and informing its population in the use and advantages of telecommunications. In a country in which oral communication has historically been important, the widespread adoption and effective use of the telephone and other telecommunications services would translate into good business.

Notes

1. Because of numerous factors, including the failure of twisted pair wiring and attempts to transition to new technology, the number of lines decreased from 51,000 in 1991 to 34,000 in 1993.

2. Seeking an alternative to such haphazard methods of international communication, the authorities of the Catholic University of Bukavu opted in the 1990s for a private tele-

phone line in Rwanda and a fax—avoiding the Congo's international telephone system altogether.

3. The telecommunications sector, however, was not the only victim of the spirit of privatization that pervaded the Congo's power structure in the late 1980s and early 1990s. The national airline, Air Zaire, was also sacrificed for Scibe-Zaire, a new airline whose fares were inaccessible to the average citizen and whose planes were said by some to be simply Air Zaire craft with a new coat of paint.

Bibliography

African Research Bulletin. 1994. "Communications and Transport." *African Research Bulletin: Economic Financial and Technical Series.* September 16–October 15.

Datapro. 1992. Zaire: The Commercial and Regulatory Environment. In *Telecommunications in Africa.* Delran: Datapro Information Services Group.

International Telecommunications Union. 1990. African Conference for the Development of Telecommunications (CAD 5–90). Working paper, vol. 2, Harare, Zimbabwe, December 6–11.

_____. *African Telecommunications Indicators.* Geneva: International Telecommunications Union.